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Відділ науково-бібліографічної інформації**

**Коронавірусна хвороба:
дослідження, лікування,
вплив на суспільство**

Бібліографія зарубіжної літератури

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До покажчика включено бібліографію зарубіжних наукових публікацій щодо коронавірусної хвороби Covid-19, які відображені в електронних базах даних. Бібліографічний список публікацій англійською мовою, систематизовано за абеткою авторів. Покажчик має універсальний характер та охоплює широке коло праць з медицини, економіки, психології, освіти та інших сфер, пов'язаних з життєдіяльністю людини в умовах пандемії. До посібника включено 626 бібліографічних записів. Це статті з наукових журналів, опубліковані у 2020–2021 рр., що мають статус “відкритого доступу”. Для лікарів, вчених, дослідників та широкого кола користувачів, які цікавляться питаннями коронавірусної хвороби Covid-19, її лікування та подолання наслідків пандемії.

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Передмова

Останні два роки Землю вразила глобальна пандемія SARS-CoV-2, яка не оминула жодної країни. Через небажання застосування соціальних обмежень та інших непопулярних рішень, світ занадто пізно почав реагувати на стрімке розповсюдження хвороби. Дорогоцінний час було втрачено. Раптові та потужні хвилі хвороби забрали життя мільйонів людей. Неспроможність стримати поширення хвороби змусила держави світу поспіхом приймати найжорстокіші карантинні заходи за останні 100 років.

В усьому світі вчені досліджують питання розповсюдження та лікування коронавірусної хвороби. Були залучені численні людські та матеріальні ресурси задля якомога швидшого дослідження та приборкання не тільки самої хвороби, а й вивчення її впливу на різноманітні сфери життя суспільства.

Обсяг та охоплення досліджень вражає вже зараз. Міжнародні наукометричні бази (ScienceDirect, Web of Science та ін.) безперервно поповнюються тисячами публікацій, заголовки яких включають термін “Covid-19”.

Метою даного покажчика є висвітлення наукових досліджень щодо Covid-19, що можуть цікавити вчених, які працюють в різних галузях науки. Джерелами інформації є міжнародні наукові бази даних ScienceDirect (компанія Elsevier), Pub Med (Національний центр біотехнологічної інформації США), Web of Science (компанія Clarivate Analytics). Бібліографічний список публікацій англійською мовою, систематизовано за абеткою авторів. Бібліографічний запис містить прізвища авторів, назву публікації, відомості про видання (рік, номер, сторінки часопису), гіперпосилання до повного тексту та реферат. У деяких випадках наведено методологію, висновки і результати дослідження.

Покажчик має універсальний характер та охоплює широке коло праць з медицини, економіки, психології, освіти та інших сфер, пов'язаних з життєдіяльністю людини в умовах пандемії. Географія джерел охоплює десятки країн світу, що дає змогу науковцям збагачувати власні знання передовим міжнародним досвідом.

До бібліографії включено 626 бібліографічних записів, що мають статус “відкритого доступу”. Переважна більшість представлених документів – це статті з наукових журналів, опублікованих у 2020–2021 рр. Покажчик охоплює, як всесвітньо відомі медичні часописи (“The Lancet”, “Vaccine”, “Public Health” тощо), так і нові електронні видання (“Scientific African”, “EBioMedicine” та ін.).

Покажчик включає список періодичних видань, розміщених за абеткою.

З огляду на те, що доступність електронних інформаційних ресурсів має мінливий характер, ми намагалися віднайти повні тексти документів у різних базах даних. Переважно була опрацьована база даних ScienceDirect, адже вона дає змогу безкоштовного перегляду бібліографічних джерел для будь-яких користувачів. Добір документів закінчено у жовтні 2021 р.

Висловлюю слова щирої подяки моїм колегам відділу науково-бібліографічної інформації НБУВ за їх підтримку і професіоналізм.

Андрій Жабін

Бібліографія

1. Abbas J. Exploring the impact of COVID-19 on tourism: transformational potential and implications for a sustainable recovery of the travel and leisure industry / J. Abbas, R. Mubeen, P. T. Iorember [et al.] // Current Research in Behavioral Sciences. – 2021. – Vol. 2. – P. 100033. – URL: <https://www.sciencedirect.com/science/article/pii/S2666518221000206>

The study stipulates phases to observe the proposed mechanism in formulating the travel and leisure industry's recovery strategies. The present pandemic COVID-19 has resulted in global challenges, economic and healthcare crises, and posed spillover impacts on the global industries, including tourism and travel that the major contributor to the service industry worldwide. The tourism and leisure industry has faced the COVID-19 tourism impacts hardest-hit and lies among the most damaged global industries. The leisure and internal tourism indicated a steep decline amounting to 2.86 trillion US dollars, which quantified more than 50% revenue losses. In the first step, the study explores the consequences and settings of the COVID-19 pandemic and how innovation and change can contribute to the tourism industry's revival to the next normal. Thus, the study determines that tourism enterprises and scholars must consider and change the basic principles, main assumptions, and organizational situations related to research and practice framework through rebuilding and establishing the tourism sector. In the second step, the study discusses direct COVID-19 tourism impacts, attitudes, and practices in gaining the leisure industry's boom and recovery. In the third phase, the study proposes to observe the characteristics and COVID-19 tourism consequences on the travel and tourism research. The findings provide insights in regaining the tourism industry's operational activities and offer helpful suggestions to government officials, scholars, and tourism firms to reinvest in the tourism industry to set it back to a normal position.

2. Abdeldayem O. M. Viral outbreaks detection and surveillance using wastewater-based epidemiology, viral air sampling, and machine learning techniques: A comprehensive review and outlook / O. M. Abdeldayem, A. M. Dabbish, M. M. Habashy [et al.] // Science of The Total Environment. – 2021. – Vol. 803. – P. 149834. – URL: <https://www.sciencedirect.com/science/article/pii/S0048969721049093>

A viral outbreak is a global challenge that affects public health and safety. The coronavirus disease 2019 (COVID-19) has been spreading globally, affecting millions of people worldwide, and led to significant loss of lives and deterioration of the global economy. The current adverse effects caused by the COVID-19 pandemic demands finding new detection methods for future viral outbreaks. The environment's transmission pathways include and are not limited to air, surface water, and wastewater environments. The wastewater surveillance, known as

wastewater-based epidemiology (WBE), can potentially monitor viral outbreaks and provide a complementary clinical testing method. Another investigated outbreak surveillance technique that has not been yet implemented in a sufficient number of studies is the surveillance of Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) in the air. Artificial intelligence (AI) and its related machine learning (ML) and deep learning (DL) technologies are currently emerging techniques for detecting viral outbreaks using global data. To date, there are no reports that illustrate the potential of using WBE with AI to detect viral outbreaks. This study investigates the transmission pathways of SARS-CoV-2 in the environment and provides current updates on the surveillance of viral outbreaks using WBE, viral air sampling, and AI. It also proposes a novel framework based on an ensemble of ML and DL algorithms to provide a beneficial supportive tool for decision-makers. The framework exploits available data from reliable sources to discover meaningful insights and knowledge that allows researchers and practitioners to build efficient methods and protocols that accurately monitor and detect viral outbreaks. The proposed framework could provide early detection of viruses, forecast risk maps and vulnerable areas, and estimate the number of infected citizens.

3. Abdelrahman Z. Comparisons of the immunological landscape between COVID-19, influenza, and respiratory syncytial virus patients by clustering analysis / Z. Abdelrahman, Z. Chen, H. Lyu [et al.] // Computational and Structural Biotechnology Journal. – 2021. – Vol. 19. – P. 2347–2355. – URL: <https://www.sciencedirect.com/science/article/pii/S2001037021001550>

Background

COVID-19 has stronger infectivity and a higher risk for severity than most other contagious respiratory illnesses. The mechanisms underlying this difference remain unclear.

Methods

We compared the immunological landscape between COVID-19 and two other contagious respiratory illnesses (influenza and respiratory syncytial virus (RSV)) by clustering analysis of the three diseases based on 27 immune signatures' scores.

Results

We identified three immune subtypes: Immunity-H, Immunity-M, and Immunity-L, which displayed high, medium, and low immune signatures, respectively. We found 20%, 35.5%, and 44.5% of COVID-19 cases included in Immunity-H, Immunity-M, and Immunity-L, respectively; all influenza cases were included in Immunity-H; 66.7% and 33.3% of RSV cases belonged to Immunity-H and Immunity-L, respectively. These data indicate that most COVID-19 patients have weaker immune signatures than influenza and RSV patients, as evidenced by 22 of the 27 immune signatures having lower enrichment scores in COVID-19 than

in influenza and/or RSV. The Immunity-M COVID-19 patients had the highest expression levels of ACE2 and IL-6 and lowest viral loads and were the youngest. In contrast, the Immunity-H COVID-19 patients had the lowest expression levels of ACE2 and IL-6 and highest viral loads and were the oldest. Most immune signatures had lower enrichment levels in the intensive care unit (ICU) than in non-ICU patients. Gene ontology analysis showed that the innate and adaptive immune responses were significantly downregulated in COVID-19 versus healthy individuals.

Conclusions

Compared to influenza and RSV, COVID-19 displayed significantly different immunological profiles. Elevated immune signatures are associated with better prognosis in COVID-19 patients.

4. AbouKorin S. A. A. Role of urban planning characteristics in forming pandemic resilient cities – Case study of Covid-19 impacts on European cities within England, Germany and Italy / S. A. A. AbouKorin, H. Han, M. G. N. Mahran [et al.] // Cities. – 2021. – Vol. 118. – P. 103324. – URL: <https://www.sciencedirect.com/science/article/pii/S0264275121002249>

In recent decades, the world has witnessed a variety of emerging infectious diseases, some of which developed to pandemic world threatening outbreaks, the ongoing COVID-19 is known to be taking the lead in claiming lives around the globe and thus, urging people to trail its increasing figures. Therefore, this research aims to emphasize the role of urban planning in containing such outbreaks through running a series of analytical and statistical studies on European cities, worst inflicted region, to analyze the main urban features they share and that may be propagating the disease spread according to their population size, density, form, intracity connectivity and intercity connectivity. This study, as far as we know of, is the first practice to evaluate both the individual and combined impacts of these factors on recorded rates of infections. According to the context of this research, it is concluded that the diversity found in urban features are, to a large degree, related to cities being more vulnerable than others. Intracity connectivity through public transport is found to be the possible prime factor of this study, and is followed by population size, density, and intercity connectivity. Urban morphology seems to also contribute to such outbreak, with both radial and grid cities being associated to higher infections rates as to linear cities. Henceforth, setting priorities in post-pandemic urban planning schemes is essential for planning resilient cities that are capable to thrive and maintain functionality with lowest possible infections amid else possible diseases that are to follow in severity.

5. Abumalloh R. A. The impact of coronavirus pandemic (COVID-19) on education: The role of virtual and remote laboratories in education / R. A. Abumalloh, S. Asadi, M. Nilashi [et al.] // Technology in Society. – 2021. –

To avoid the spread of the COVID-19 crisis, many countries worldwide have temporarily shut down their academic organizations. National and international closures affect over 91% of the education community of the world. E-learning is the only effective manner for educational institutions to coordinate the learning process during the global lockdown and quarantine period. Many educational institutions have instructed their students through remote learning technologies to face the effect of local closures and promote the continuity of the education process. This study examines the expected benefits of e-learning during the COVID-19 pandemic by providing a new model to investigate this issue using a survey collected from the students at Imam Abdulrahman Bin Faisal University. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed on 179 useable responses. This study applied Push-Pull-Mooring theory and examined how push, pull, and mooring variables impact learners to switch to virtual and remote educational laboratories. The Protection Motivation theory was employed to explain how the potential health risk and environmental threat can influence the expected benefits from e-learning services. The findings revealed that the push factor (environmental threat) is significantly related to perceived benefits. The pull factors (e-learning motivation, perceived information sharing, and social distancing) significantly impact learners' benefits. The mooring factor, namely perceived security, significantly impacts learners' benefits.

6. Acosta-Ampudia Y. COVID-19 convalescent plasma composition and immunological effects in severe patients / Y. Acosta-Ampudia, D. M. Monsalve, J.-M. Anaya [et al.] // Journal of Autoimmunity. – 2021. – Vol. 118. – P. 102598. – URL: <https://www.sciencedirect.com/science/article/pii/S0896841121000068>

Convalescent plasma (CP) has emerged as a treatment for COVID-19. However, the composition and mechanism of action are not fully known. Therefore, we undertook a two-phase controlled study in which, first the immunological and metabolomic status of recovered and severe patients were evaluated. Secondly, the 28-day effect of CP on the immune response in severe patients was assessed. Nineteen recovered COVID-19 patients, 18 hospitalized patients with severe disease, and 16 pre-pandemic controls were included. Patients with severe disease were treated with CP transfusion and standard therapy (i.e., plasma recipients, n = 9) or standard therapy alone (n = 9). Clinical and biological assessments were done on day 0 and during follow-up on days 4, 7, 14, and 28. Clinical parameters, viral load, total immunoglobulin (Ig) G and IgA anti-S1-SARS-CoV-2 antibodies, neutralizing antibodies (NAbs), autoantibodies, cytokines, T and B cells, and metabolomic and lipidomic profiles were examined. Total IgG and IgA anti-S1-SARS-CoV-2 antibodies were key factors for CP selection and correlated with NAbs. In severe COVID-19 patients, mostly

interleukin (IL)-6 ($P = <0.0001$), IL-10 ($P = <0.0001$), IP-10 ($P = <0.0001$), fatty acyls and glycerophospholipids were higher than in recovered patients. Latent autoimmunity and anti-IFN- α antibodies were observed in both recovered and severe patients. COVID-19 CP induced an early but transient cytokine profile modification and increases IgG anti-S1-SARS-CoV-2 antibodies. At day 28 post-transfusion, a decrease in activated, effector and effector memory CD4+ ($P < 0.05$) and activated and effector CD8+ ($P < 0.01$) T cells and naïve B cells ($P = 0.001$), and an increase in non-classical memory B cells ($P = <0.0001$) and central memory CD4+ T cells ($P = 0.0252$) were observed. Moreover, IL-6/IFN- γ ($P = 0.0089$) and IL-6/IL-10 ($P = 0.0180$) ratios decreased in plasma recipients compared to those who received standard therapy alone. These results may have therapeutic implications and justify further post-COVID-19 studies.

7. Acosta A. Immediate effects of COVID-19 on the global dairy sector / A. Acosta, S. McCorrison, F. Nicolli [et al.] // *Agricultural Systems*. – 2021. – Vol. 192. – P. 103177. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X2100130X>

CONTEXT

The emergence and rapid spread of the coronavirus disease (COVID-19) has posed an unprecedented threat to both societies and economies. The dairy sector is an example of the challenges that food supply chains have faced due to the pandemic.

OBJECTIVE

This study aims to provide primary evidence of the immediate effects of COVID-19 on the global dairy sector, particularly focusing on the outcome of the implemented response mechanisms, and the potential medium and long-term implications of the pandemic on the sector.

METHODS

We employed a longitudinal qualitative analysis framework that combines the use of questionnaires, media-search, focus-group discussions, semi-structured interviews, and secondary evidence reviews. Information was gathered at two points in time: three months after the beginning of the outbreak and one year later. We applied this framework in five different geographical regions: Africa, Asia, Europe, Latin America, and North America.

RESULTS AND CONCLUSIONS

Our study indicates that the pandemic has been perceived as a series of episodes affecting the sector from both demand and supply sides. These waves have impacted the sector differently depending on regions and countries' trade profiles, relative resource scarcity, per capita income, and market structure. Although in one year the sector has mostly recovered from the shock, the analysis

concludes that the pandemic has accelerated on-going structural changes taking place in the dairy sector.

SIGNIFICANCE

The study expands existing knowledge about the effects of the pandemic on the dairy sector and adds to the newly evolving literature about the medium and long-term effects of the COVID-19 on food systems across the globe. Despite the preliminary nature of the results, they provide important insights to inform sectorial policy discussions.

8. Addis S. G. Knowledge, attitude and practice of patients with chronic diseases towards COVID-19 pandemic in Dessie town hospitals, Northeast Ethiopia / S. G. Addis, A. D. Nega, D. G. Miretu // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 3. – P. 847–856. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1871402121001090>

Corona virus disease-19 first detected in China, December 2019. The government of Ethiopia takes preventive measures but the number of peoples infected with COVID-19 has been increased. Control of the pandemic requires changing of knowledge, attitude and practice of people. Hence, the objective of this study was to assess chronic disease patients' knowledge, attitude and practice towards COVID-19 pandemic.

Methods

Institution based cross-sectional study was done among 413 chronic disease patients from July 20 to August 5, 2020 in Dessie town hospitals. Multinomial logistic regression analysis was used and significant association declared at p-value of <0.05.

Results

From the total participants 34.6%, 81.4% and 40.7% had good knowledge, attitude and practice while 35.1%, 12.1% and 24.7% had moderate knowledge, attitude and practice towards COVID-19 pandemic, respectively. In multinomial logistic regression young age, urban residency, attainment of secondary education and presence of additional co-morbidity were predictors of moderate knowledge whereas urban residency, not attended formal education and presence of additional co-morbidity were predictors of good knowledge about COVID-19. Household family size and presence of additional co-morbidity were factors significantly associated with moderate practice of COVID-19 prevention methods. Furthermore, male sex, household family size, knowledge of COVID-19 and attitude towards COVID-19 were factors significantly associated with good practice of COVID-19 prevention methods.

Conclusion

Significant number of chronic disease patients had poor knowledge and practice towards COVID-19. Therefore, government, health professionals, Medias, researchers and health institution should do to improve the gaps of chronic diseases patients.

9. Adhikari J. COVID-19 impacts on agriculture and food systems in Nepal: Implications for SDGs / J. Adhikari, J. Timsina, S. R. Khadka [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 186. – P. 102990. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X20308519>

The objective of this study was to understand the impacts of COVID-19 crisis in agriculture and food systems in Nepal and assess the effectiveness of measures to deal with this crisis. The study draws policy implications, especially for farming systems resilience and the achievement of SDGs 1 and 2. The findings are based on (i) three panel discussions over six months with policy makers and experts working at grassroots to understand and manage the crisis, (ii) key informants' interviews, and (iii) an extensive literature review. Results revealed that the lockdown and transport restrictions have had severe consequences, raising questions on the achievement of SDGs 1 and 2, especially in the already vulnerable regions dependent on food-aid. This crisis has also exposed the strengths and limitations of both subsistence and commercial farming systems in terms of resiliency, offering important lessons for policy makers. Traditional subsistence farming appears to be somewhat resilient, with a potential to contribute to key pillars of food security, especially access and stability, though with limited contributions to food availability because of low productivity. On the other hand, commercial farming - limited to the periphery of market centres, cities, and emerging towns and in the accessible areas - was more impacted due to the lack of resilient supply networks to reach even the local market. Lower resiliency of commercial farming was also evident because of its growing dependence on inputs (mainly seeds and fertilizer) on distant markets located in foreign countries. The observation of crisis over eight months unleashed by the pandemic clearly revealed that wage labourers, indigenous people, and women from marginalized groups and regions already vulnerable in food security and malnutrition suffered more due to COVID-19 as they lost both external support and the coping mechanisms. The findings have implications for policies to improve both subsistence and commercial farming systems – in particular the former by improving the productivity through quality inputs and by diversifying, promoting and protecting the indigenous food system, while the latter through sustainable intensification by building reliant supply network linking farming with markets and guarantying the supply of inputs.

10. Adigwe O. P. COVID-19 vaccine hesitancy and willingness to pay: Emergent factors from a cross-sectional study in Nigeria / O. P. Adigwe // Vaccine: X. – 2021. – Vol. 9. – P. 100112. – URL: <https://www.sciencedirect.com/science/article/pii/S2590136221000292>

Introduction

Prior to the COVID-19 pandemic, it took at least several years to develop vaccines for prevention of infectious diseases. The COVID-19 vaccine is the first to be developed within a period of one year. The expediency associated with the development of the COVID-19 vaccine has however been hampered by vaccine hesitancy and other relevant factors that could influence consequent immunisation. This study aimed at investigating factors associated with vaccine hesitancy and willingness to pay for COVID-19 vaccination.

Methods

A cross-sectional approach was used to undertake online and physical data collection with a validated questionnaire.

Results

A total of 1767 valid responses were received, female participants were in the minority (42.2%), majority (54.9%) of the study participants were between the ages of 18 and 30 years, and more than half (53.8%) of the participants were educated up to first degree level. Slightly above half (52.9%) of the study participants indicated that they were worried about side effects that may be associated with COVID-19 vaccines, and this may likely prevent them from taking the vaccine. A strong majority (85.1%) of the study participants indicated that COVID-19 vaccine should be administered at no cost to citizens. Only a quarter (26%) of the participants were willing to pay a fee for COVID-19 vaccination. Also, older participants and those that had been previously infected with COVID-19 were more likely to pay for COVID-19 vaccination.

Conclusion

This study provides critical insights which could influence immunisation efforts during the pandemic. An early understanding of population perceptions of the COVID-19 vaccine can be invaluable in designing successful campaigns. This is even more critical, given supply limitations, access issues and vaccines' inequity occasioned by the international scramble.

11. Ahmad W. COVID-19 Pandemic and firm-level dynamics in the USA, UK, Europe, and Japan / W. Ahmad, A. M. Kutan, R. J. K. Chahal [et al.] // International Review of Financial Analysis. – 2021. – Vol. 78. – P. 101888. – URL: <https://www.sciencedirect.com/science/article/pii/S1057521921002155>

This paper examines the impact of the coronavirus pandemic during its first and second waves for the USA, UK, Europe, and Japan. We explore the firm-level dynamics and exhibit the impact of coronavirus events on large and small firms and firms' idiosyncratic risk. We find that the intensity of the impact of the coronavirus pandemic events is not uniform for firms. The Blank Swan events in March 2020 exhibit stronger impact the second wave till April 2021. The second

wave analysis reveals the sign of recovery and receding effect of the pandemic. The idiosyncratic analysis shows the positive impact of the coronavirus and stringency measures on the idiosyncratic risk.

12. Ahmar A. S. Will COVID-19 confirmed cases in the USA reach 3 million? A forecasting approach by using SutteARIMA Method / A. S. Ahmar, A. E. Boj // Current Research in Behavioral Sciences. – 2020. – Vol. 1. – P. 100002. – URL: <https://www.sciencedirect.com/science/article/pii/S2666518220300024>

Objectives

Forecasting the number of COVID-19 cases in the USA can provide an overview and projection of the development of COVID-19 cases in the US so that policy makers can determine the steps that must be taken. This study aimed to determine whether COVID-19 confirmed cases in the USA would reach 3 million cases with the SutteARIMA method forecasting approach.

Methods

Data from this study were obtained from the Worldometer data on 15 February 2020 to 2 July 2020. Data from 15 February 2020 to 25 June 2020 were used to performance data fitting (26 June 2020–2 July 2020). Data fitting is used to examine the extent of the accuracy of the SutteARIMA method in predicting data. To examine the level of the data accuracy, the MAPE method was used in this study.

Results

The results of forecasting data fitting on 26 June 2020 – 2 July 2020: 2,544,732; 2,590,888; 2,632,477; 2,671,055; 2,711,798; 2,755,128; 2,803,729. The accuracy of SutteARIMA for the period of 26 June 2020–2 July 2020 based on MAPE was 0.539% and the forecasting results that had been obtained were 3 million confirmed cases, namely from 05 to 06 June 2020: 1,981,299; 2,005,706; 2,030,283; 2,055,031.

Conclusions

The SutteARIMA method predicted that 2 million confirmed cases of COVID-19 will be obtained on the WHO situation report on days 168–170 or 05–07 June 2020.

13. Agius R. M. Reaffirming health and safety precautionary principles for COVID-19 in the UK / R. M. Agius, D. Kendrick, H. F. Sewell [et al.] // The Lancet. – 2021. – Vol. 397, № 10271. – P. 274. – URL: <https://www.sciencedirect.com/science/article/pii/S014067362100088X>

In their case for a sustainable UK strategy for COVID-19, Deepti Gurdasani and colleagues recommend “restoration of an adequate health and safety

inspectorate”. We do not believe that the UK Health and Safety Executive (HSE) should, like Public Health England, be made a scapegoat for lack of ministerial direction but rather that the HSE should be restored the wherewithal to fulfil its mandate.

The HSE needs to step up in this pandemic, independently of political influence, and to firmly enforce occupational hygiene measures for source control, including regular staff testing, segregation, and ventilation. Moreover, the HSE should apply precautionary principles with regards to the proliferating evidence for aerosol transmission of severe acute respiratory syndrome coronavirus 2.

14. Aiano F. COVID-19 outbreaks following full reopening of primary and secondary schools in England: Cross-sectional national surveillance, November 2020 / F. Aiano, A. A. Mensah, K. McOwat [et al.] // *The Lancet Regional Health - Europe*. – 2021. – Vol. 6. – P. 100120. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000971>

Background

The full reopening of schools in September 2020 was associated with an increase in COVID-19 cases and outbreaks in educational settings across England.

Methods

Primary and secondary schools reporting an outbreak (≥ 2 laboratory-confirmed cases within 14 days) to Public Health England (PHE) between 31 August and 18 October 2020 were contacted in November 2020 to complete an online questionnaire.

Interpretation

There were 969 school outbreaks reported to PHE, comprising 2% ($n = 450$) of primary schools and 10% ($n = 519$) of secondary schools in England. Of the 369 geographically-representative schools contacted, 179 completed the questionnaire (100 primary schools, 79 secondary schools) and 2,314 cases were reported. Outbreaks were larger and across more year groups in secondary schools than in primary schools. Teaching staff were more likely to be the index case in primary (48/100, 48%) than secondary (25/79, 32%) school outbreaks ($P = 0.027$). When an outbreak occurred, attack rates were higher in staff (881/17,362; 5.07%; 95% CI, 4.75–5.41) than students, especially primary school teaching staff (378/3852; 9.81%; 95% CI, 8.90–10.82%) compared to secondary school teaching staff (284/7146; 3.97%; 95% CI, 3.79–5.69%). Secondary school students (1105/91,919; 1.20%; 95% CI, 1.13–1.28%) had higher attack rates than primary school students (328/39,027; 0.84%; 95% CI, 0.75–0.94%).

Conclusions

A higher proportion of secondary schools than primary schools reported a COVID-19 outbreak and experienced larger outbreaks across multiple school year

groups. The higher attack rate among teaching staff during an outbreak, especially in primary schools, suggests that additional protective measures may be needed.

15. Airaksinen J. Big Five personality traits and COVID-19 precautionary behaviors among older adults in Europe / J. Airaksinen, K. Komulainen, M. Jokela [et al.] // Aging and Health Research. – 2021. – Vol. 1, № 4. – P. 100038. – URL: <https://www.sciencedirect.com/science/article/pii/S2667032121000366>

Objectives

Taking precautions against COVID-19 is important among older adults who have a greater risk for severe illness if infected. We examined whether Big Five personality traits are associated with COVID-19 precautionary behaviors among older adults in Europe.

Method

We used data from the Survey of Health, Aging, and Retirement in Europe (N = 34 629). Personality was self-reported in 2017 using the BFI-10 inventory. COVID-19 precautionary behaviors – wearing a mask, limiting in-person contacts, keeping a distance to others, washing hands, and using a disinfectant – were assessed in the summer of 2020 through self-reports. Associations between personality and precautionary behaviors were examined with multilevel random-intercept logistic regression models. The models were adjusted for age, gender, and educational attainment.

Results

Personality traits were differentially associated with precautionary behaviors, with higher openness, conscientiousness, and neuroticism showing the most consistent associations. The pattern of associations between personality traits and precautionary behaviors varied depending on the specific behavior. The associations were relatively weak in comparison to those between sociodemographic factors and precautionary behaviors.

Conclusions

Among older adults, taking COVID-19 precautionary behaviors was most consistently related to higher openness, conscientiousness, and neuroticism, suggesting that precautionary behaviors may be motivated by multiple psychological differences.

16. Alam G. M. Online technology: Sustainable higher education or diploma disease for emerging society during emergency—comparison between pre and during COVID-19 / G. M. Alam, S. Asimiran // Technological Forecasting and Social Change. – 2021. – Vol. 172. – P. 121034. – URL: <https://www.sciencedirect.com/science/article/pii/S0040162521004662>

Even as the pandemic rages on across the globe, the notion of shutting down higher education has never been an option; instead, finding ways to circumvent it has led to a greater reliance on online technology delivery of courses and programs. Although this is not meant as a complete substitute, critics argue that online education has widened the ‘diploma disease’ crisis. They argued that this would lead to serious long-term problems which may become irreversible. This comparative study was conducted using an ‘empirical survey’ with 120 students from each group (before and during COVID-19, giving a total of 240 samples/students) to conduct an in-depth study of the academic and job-ready performance of graduates. Findings show that pre-pandemic students did poorly academically compared to during-pandemic counterparts. On the other hand, pre-pandemic graduates achieved better job-readiness scores which included both aptitude and practicum. Moreover, both groups achieved well in terms of academic performance compared to their job-readiness scores. This leads to the question: is it the role of HE to value the concept of sustainable production or to produce certificates/qualifications? Apparently, the HE system has used COVID-19 as an excuse to extend the “diploma disease crisis”, a situation that must be addressed by devising a proper policy framework.

17. Aldossari K. K. COVID-19 vaccine hesitancy among patients with diabetes in Saudi Arabia / K. K. Aldossari, M. B. Alharbi, S. M. Alkahtani [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 5. – P. 102271. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121002915>

Background and aims

The survey aimed to assess COVID-19 vaccine acceptance and hesitancy rate among patients with diabetes and address barriers and beliefs that affect acceptance to take COVID-19 vaccine.

Methods

A quantitative research approach with cross-sectional design was used to collect data from March–May’2021. Saudi residents with diabetes, aged ≥ 18 years were included.

Results

Of the total 709 participants, 42.2% had family member with COVID-19, 14.7% had COVID-19, 34.0% had been with someone who had COVID-19. 34.7% of participants taken COVID-19 vaccination, 36.2% were willing to take, while 79.0% supported COVID-19 vaccine. Main reasons behind uncertainties towards vaccinations were relatively fast production, not many trials done and about genetic component. 44.6% got information about COVID-19 and vaccination through television, social media, and ministry website. On adjusting models,

female gender, longer duration of diabetes and no history of influenza vaccine significantly associated with COVID vaccine uptake.

Conclusion

Participants are willing to vaccinate but show some fear and misinformation. It is imperative that due efforts are made for increasing vaccine willingness, and availability of precise information holds key to success. Otherwise, state will have to continue to funnel in resources towards post-on-set disease management, consuming a lot more resources than preventive measures like vaccination.

18. Alharbi N. K. Nationwide Seroprevalence of SARS-CoV-2 in Saudi Arabia / N. K. Alharbi, S. Alghnam, A. Algaissi [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 7. – P. 832–838. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121000988>

Background

Estimated seroprevalence of Coronavirus Infectious Disease 2019 (COVID-19), caused by the Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2) is a critical evidence for a better evaluation of the virus spread and monitoring the progress of COVID-19 pandemic in a population. In the Kingdom of Saudi Arabia (KSA), SARS-CoV-2 seroprevalence has been reported in specific regions, but an extensive nationwide study has not been reported. Here, we report a nationwide study to determine the prevalence of SARS-CoV-2 in the population of KSA during the pandemic, using serum samples from healthy blood donors, non-COVID patients and healthcare workers (HCWs) in six different regions of the kingdom, with addition samples from COVID-19 patients.

Methods

A total of 11,703 serum samples were collected from different regions of the KSA including; 5395 samples from residual healthy blood donors (D); 5877 samples from non-COVID patients collected through residual sera at clinical biochemistry labs from non-COVID patients (P); and 400 samples from consented HCWs. To determine the seroprevalence of SARS-CoV-2, all serum samples, in addition to positive control sera from RT-PCR confirmed COVID-19 patients, were subjected to in-house ELISA with a sample pooling strategy, which was further validated by testing individual samples that make up some of the pools, with a statistical estimation method to report seroprevalence estimates.

Results

Overall (combining D and P groups) seroprevalence estimate was around 11% in Saudi Arabia; and was 5.1% (Riyadh), 1.5% (Jazan), 18.4% (Qassim), 20.8% (Hail), 14.7% (ER; Alahsa), and 18.8% in Makkah. Makkah samples were only D group and had a rate of 24.4% and 12.8% in the cities of Makkah and Jeddah, respectively. The seroprevalence in Saudi Arabia across the sampled areas would be 12 times the reported COVID-19 infection rate. Among HCWs, 7.5%

(4.95–10.16 CI 95%) had reactive antibodies to SARS-CoV-2 without reporting any previously confirmed infection. This was higher in HCWs with hypertension. The study also presents the demographics and prevalence of co-morbidities in HCWs and subset of non-COVID-19 population.

Interpretation

Our study estimates the overall national serological prevalence of COVID-19 in Saudi Arabia to be 11%, with an apparent disparity between regions. This indicates the prevalence of asymptomatic or mild unreported COVID-19 cases.

19. Ali M. F. Investigating stress, anxiety, social support and sex satisfaction on physical education and sports teachers during the COVID-19 pandemic / M. F. Ali, S. Kundra, M. A. Alam [et al.] // Heliyon. – 2021. – Vol. 7, № 8. – P. e07860. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021019630>

Academia was no exception to the widespread impact of Coronavirus Disease (COVID-19). There is only a small amount of research conducted with regard to the consequences of the Pandemic in Fiji. Thus, in order to gather a longitudinal dataset, a cross-sectional survey was conducted from February to August 2020. 300 physical education and sports teachers used Google Forms to complete an online survey. There are questions on the form about age, gender, marital status, and other daily activities. A similar survey was conducted to study the long-term psychological effects (coronavirus fear and fascination with COVID-19). The characteristics of society have been explored. Efforts have been made to use different sets of psychological data, showing the anticipated results. Sex, age, marital status, and family type are significantly affected by stress, anxiety, sexual satisfaction, and social support. There is a substantial difference between marital status, gender, and social support when it comes to the Pandemic. According to research findings, fifty per cent of secondary school physical education and sports teachers in Fiji may have been affected by the Pandemic. Considerations should be taken to keep teachers calm during a pandemic. Because of this, it is necessary to submit some practical recommendations in order to minimize the adverse effects of this problem.

20. Aljomah L. Pediatrics COVID-19 and neurological manifestations: Single tertiary centre experience / L. Aljomah, S. Almedlej, D. Baarmah [et al.] // eNeurologicalSci. – 2021. – Vol. 24. – P. 100355. – URL: <https://www.sciencedirect.com/science/article/pii/S2405650221000472>

Importance

Coronavirus disease 2019 (COVID-19) is a severe acute respiratory syndrome that is caused by a novel coronavirus 2 (SARS-CoV-2). It originated in China late December 2019 and was declared a global pandemic on March 12,

2020. Most reports of COVID-19 cases either presented with neurological manifestations or complications involve adults. Only few cases were reported in pediatric patients

Objective

To report COVID-19 pediatric cases with neurological manifestations and identify the wide spectrum of its manifestations.

Design, setting, and participants

This was a retrospective, observational case series. Data of pediatric patients infected by SARS-CoV-2 presenting with neurological manifestations at King Abdullah Specialized Children Hospital in King Abdulaziz Medical City in Riyadh were collected from May 23 to June 30, 2020.

Results

We encountered 5 COVID-19 cases with neurological manifestations. Three patients who were previously healthy had new-onset neurological symptoms. Symptoms and signs included encephalopathy, ataxia, headache, seizure, papilledema, ophthalmoplegia, hyporeflexia, and different clinical spectra, such as Miller Fisher syndrome, meningoencephalitis, and idiopathic intracranial hypertension. Other patients attending our center were incidentally found to be SARS-CoV-2-positive, which caused a delay in the investigations required to reach diagnosis.

Conclusions and relevance

Our cases highlight the wide clinical spectrum of neurological manifestations in COVID-19 patients. Given the paucity of information about pediatric COVID-19 cases with neurological symptoms, we here reported these cases to shed light on the association between SARS-CoV-2 and neurological presentation. Moreover, our study indicates that many investigations are being delayed and could affect diagnosis and treatment.

21. AlKetbi L. M. B. COVID-19 vaccine acceptance among healthcare workers in the United Arab Emirates / L. M. B. AlKetbi, J. A. Elharake, S. A. Memari [et al.] // IJID Regions. – 2021. – Vol. 1. – P. 20–26. – URL: <https://www.sciencedirect.com/science/article/pii/S2772707621000035>

Background

COVID-19 vaccine hesitancy among healthcare workers (HCWs) is a threat to any healthcare system. Vaccine hesitancy can increase infection risk among HCWs and patients, while also impacting the patients' decision to accept the vaccine. Our study assessed COVID-19 vaccine acceptance among HCWs in United Arab Emirates (UAE).

Methods

Using purposive sampling, UAE HCWs registered in the Abu Dhabi Department of Health (DOH) email database were invited to complete an online questionnaire, between November 2020 and February 2021, to understand COVID-19 vaccine acceptance and hesitancy, and trust in sources of information. Simple logistic regression was used to assess the associations between demographic factors with COVID-19 vaccine acceptance.

Results

Of the 2832 HCWs who participated in the study, 1963 (69.9%) were aged between 25 and 44 years and 1748 (61.7%) were females. Overall, 2525 (89.2%) of the HCW population said they would accept a COVID-19 vaccine. HCWs who were 55+ years of age, male, and physicians/surgeons were more likely to accept a COVID-19 vaccine (OR 3.1, 95% CI 1.5–6.2, $p = 0.002$; OR 1.8, 95% CI 1.3–2.4, $p < 0.001$; and OR 1.8, 95% CI 1.1–2.9; $p = 0.01$, respectively). The most reliable sources for COVID-19 vaccine information were the UAE government (91.6%), healthcare providers (86.8%), health officials (86.3%), and the World Health Organization (WHO; 81.1%).

Conclusions

COVID-19 vaccine acceptance was high among the UAE HCW population. Several factors were identified as significant determinants of vaccine acceptance. UAE healthcare authorities can utilize these findings to develop public health messaging campaigns for HCWs to best address COVID-19 vaccine concerns — particularly when the government is vaccinating its general population.

22. Al-Mashdali A. F. Aortic arch thrombosis complicated by an embolic stroke in a patient with COVID-19: A case / A. F. Al-Mashdali, H. N. Al-Dubai, A. F. Al-Warqi // Annals of Medicine and Surgery. – 2021. – Vol. 69. – P. 102760. – URL: <https://www.sciencedirect.com/science/article/pii/S204908012100710X>

Introduction

Aortic thrombosis is an uncommon condition with serious embolic complications. COVID-19 is currently recognized to be associated with both venous and arterial thrombosis. However, only a limited number of COVID-19 cases associated with aortic thrombosis have been reported in the literature since the beginning of the pandemic.

Case presentation

A 66-year-old lady was admitted to our hospital with acute ischemic stroke. Floating aortic arch thrombus was detected incidentally on CT imaging. Interestingly, the patient reported a history of fever and cough and was found to have COVID-19 pneumonia based on nasopharyngeal polymerase chain reaction (PCR) and imaging. The patient received three months of anticoagulant therapy, and repeated imaging study did not reveal any aortic thrombus.

Clinical discussion

COVID-19 related aortic thrombosis has been reported chiefly in severe cases. The SARS-CoV-2 can directly infect the endothelium of the vessels, which might explain the occurrence of arterial thrombosis in milder COVID-19 cases with the absence of the hyperinflammatory state. The management guideline for aortic thrombosis is scarce and based only on case reports and series.

Conclusion

Aortic thrombosis is a devastating condition that can be easily missed without clinical suspicion. Our patient developed acute ischemic stroke, most likely embolic originating from the aortic thrombus. The clinician should consider this condition in any COVID-19 patient presenting with thromboembolic events, such as stroke or acute limb ischemia. Further study is required to explain the pathophysiology of arterial/venous thrombosis in mild-moderate COVID-19 cases.

23. Al-qaness M. A. A. Efficient artificial intelligence forecasting models for COVID-19 outbreak in Russia and Brazil / M. A. A. Al-qaness, A. I. Saba, A. H. Elsheikh [et al.] // Process Safety and Environmental Protection. – 2021. – Vol. 149. – P. 399–409. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0957582020318668>

COVID-19 is a new member of the Coronaviridae family that has serious effects on respiratory, gastrointestinal, and neurological systems. COVID-19 spreads quickly worldwide and affects more than 41.5 million persons (till 23 October 2020). It has a high hazard to the safety and health of people all over the world. COVID-19 has been declared as a global pandemic by the World Health Organization (WHO). Therefore, strict special policies and plans should be made to face this pandemic. Forecasting COVID-19 cases in hotspot regions is a critical issue, as it helps the policymakers to develop their future plans. In this paper, we propose a new short term forecasting model using an enhanced version of the adaptive neuro-fuzzy inference system (ANFIS). An improved marine predators algorithm (MPA), called chaotic MPA (CMPA), is applied to enhance the ANFIS and to avoid its shortcomings. More so, we compared the proposed CMPA with three artificial intelligence-based models include the original ANFIS, and two modified versions of ANFIS model using both of the original marine predators algorithm (MPA) and particle swarm optimization (PSO). The forecasting accuracy of the models was compared using different statistical assessment criteria. CMPA significantly outperformed all other investigated models.

24. Alroqi K. F. Seroprevalence of SARS-CoV-2 among high-risk healthcare workers in a MERS-CoV endemic area / K. F. Alroqi, E. Masuadi, L. Alabda [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 9. – P. 1268–1273. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121002483>

Introduction

Healthcare workers (HCWs) in Saudi Arabia are a unique population who have had exposures to the Middle East Respiratory Syndrome coronavirus (MERS-CoV) and Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). It follows that HCWs from this country could have pre-existing MERS-CoV antibodies that may either protect from coronavirus disease 2019 (COVID-19) infection or cause false SARS-CoV-2 seropositive results. In this article, we report the seroprevalence of MERS-CoV and SARS-CoV-2 among high-risk healthcare workers in Riyadh city, Saudi Arabia.

Methods

This is a cross-sectional study enrolling 420 high-risk HCWs who are physically in contact with COVID-19 patients in three tertiary hospitals in Riyadh city. The participants were recruited between the 1st of July to the end of December 2020. A 3 ml of the venous blood samples were collected and tested for the presence of IgG antibodies against the spike proteins of SARS-CoV-2 and MERS-CoV using enzyme-linked immunosorbent assay (ELISA).

Results

The overall prevalence of SARS-CoV-2 in high-risk HCWs was 14.8% based on SARS-CoV-2 IgG testing while only 7.4% were positive by Polymerase Chain Reaction (PCR) for viral RNA. Most of the SARS-CoV-2 seropositive HCWs had symptoms and the most frequent symptoms were body aches, fever, cough, loss of smell and taste, and headache. The seroprevalence of MERS-CoV IgG was 1% (4 participants) and only one participant had dual seropositivity against MERS-CoV and SARS-CoV-2. Three MERS-CoV positive samples (75%) turned to be negative after using in-house ELISA and none of the MERS-CoV seropositive samples had detectable neutralization activity.

Conclusion

Our SARS-CoV-2 seroprevalence results were higher than reported regional seroprevalence studies. This finding was expected and similar to other international findings that targeted high-risk HCWs. Our results provide evidence that the SARS-CoV-2 seropositivity in Saudi Arabia similar to other countries was due to exposure to SARS-CoV-2 rather than MERS-CoV antibody.

25. Al-Salihia M. M. Optic neuritis concomitant with pituitary macroadenoma in a patient with active COVID-19 infection: A case report / M. M. Al-Salihia, M. Rahman, M. S. Al-Jebur [et al.] // International Journal of Surgery Open. – 2021. – Vol. 35. – P. 100390. – URL: <https://www.sciencedirect.com/science/article/pii/S2405857221000814>

Introduction and importance

Several neuro-ophthalmic manifestations have been reported with coronavirus disease 2019 (COVID-19) infection. However, isolated optic neuritis was infrequently reported in humans with COVID-19. If it occurred, optic neuritis was usually a part of a demyelinating syndrome.

Case presentation

In this paper, we report a case of optic neuritis concomitant with an undiagnosed pituitary macroadenoma discovered during active COVID-19 infection. The case was a 33-year-old woman with infertility who was recently found to have a pituitary macroadenoma secreting prolactin. During active COVID-19 infection, the patient developed optic neuritis that responded well to corticosteroids. Brain imaging and hormonal profile negated the presence of any demyelinating disease or pituitary apoplexy.

Clinical discussion

A dilemma of whether optic neuritis occurring concomitantly with pituitary macroadenoma is just a coincidence, or there is an association remains unresolved. Whether COVID-19 infection might precipitate optic neuritis in patients with pituitary macroadenoma or not remains an issue to be answered by observing data from future case reports about similar findings.

Conclusion

Optic neuritis in concomitant with pituitary macroadenoma following COVID-19 infection represents a dilemma of whether the visual symptoms are attributed to the tumor or COVID-19 infection.

26. Alshammari M. A. COVID-19: A new challenge for mental health and policymaking recommendations / M. A. Alshammari, T. K. Alshammari // Journal of Infection and Public Health. – 2021. – Vol. 14, № 8. – P. 1065–1068. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121001611>

The coronavirus disease 2019 (COVID-19) infection has emerged lately, leading to a serious public health threat. The clinical features associated with COVID-19 are yet to be conclusively documented. Caution is needed when interpreting the severity of the symptoms as most of the diagnosed patients are those attending clinical assessments. Features of COVID-19 are far from understood. There is a suggested increased risk of COVID-19 infection among people with mental health disorders, which is primarily attributable to the challenges associated with limited resources. There are a variety of reasons why individuals with mental health disorders are more susceptible to infectious diseases. There is currently no specific recommended antiviral treatment. The interventions now used are supportive treatments to alleviate the symptoms and invasive mechanical ventilation. In this review, we discuss the adverse events associated with COVID-19 vaccinations. We further highlight the need to develop guidelines and recommendations for managing patients with mental health. It is

evident from this review, there is a need to provide training programs with interprofessional, multidisciplinary communication channels.

27. Al-Shannaq Y. Psychological impacts during the COVID-19 outbreak among adult population in Jordan: A cross-sectional study / Y. Al-Shannaq, A. A. Mohammad // Heliyon. – 2021. – Vol. 7, № 8. – P. e07826. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021019290>

In response to the initial outbreak of the Coronavirus Disease 2019 (COVID-19) pandemic and the pandemic-related restraints and preventive measures implemented, the global population has been experiencing a wide range of immediate psychological reactions, such as fear and psychological distress. The present study aimed to assess the psychological impacts of the COVID-19 pandemic among a sample of adults during the national lockdown implemented in Jordan. A quantitative, descriptive, correlational, cross-sectional design was used. An anonymous online questionnaire was used to collect data on the participants' sociodemographic characteristics, the changes in daily life they had experienced, their fear of COVID-19, and their depression, anxiety, and stress levels. A total of 725 Jordanian adults aged 18–65 years (mean = 33.7, SD = 9.3) were included in this study, with most of the participants being female (n = 409, 56.4%). The majority of the participants reported changes in their daily routines and activities during the COVID-19 lockdown, with 62.8% of the participants reporting weight changes, 92% reporting increased social media use, and 86.5% reporting increased mobile phone use and checking. Further, 41.4% of the participants reported high levels of fear of COVID-19, while 41.8%, 24.5%, and 22.8% reported mild to extremely severe depression, anxiety, and stress symptoms, respectively. Female participants had significantly higher levels of fear of COVID-19 and stress than did males. Fear of COVID-19 was significantly positively correlated with depression, anxiety, and stress scores. Anxiety, stress, gender, having physical disorders, and having mental disorders were identified as being significant predictive factors of fear of COVID-19. The findings of this study highlight the urgent need to pay further attention towards maintaining the psychological well-being of the public during this global crisis. The findings may guide the development of appropriate public health strategies aimed at promoting healthy living, improving mental health, and reducing fear and other psychological problems among at-risk groups during the COVID-19 pandemic. Additionally, the findings may guide further qualitative, longitudinal, and experimental studies both during and after the lockdown.

28. Aman J. Imatinib in patients with severe COVID-19: a randomised, double-blind, placebo-controlled, clinical trial / J. Aman, E. Duijvelaar, L. Botros [et al.] // The Lancet Respiratory Medicine. – 2021. – Vol. 9, №9. – P. 957–968. – URL: <https://www.sciencedirect.com/science/article/pii/S221326002100237X>

Summary

Background

The major complication of COVID-19 is hypoxaemic respiratory failure from capillary leak and alveolar oedema. Experimental and early clinical data suggest that the tyrosine-kinase inhibitor imatinib reverses pulmonary capillary leak.

Methods

This randomised, double-blind, placebo-controlled, clinical trial was done at 13 academic and non-academic teaching hospitals in the Netherlands. Hospitalised patients (aged ≥ 18 years) with COVID-19, as confirmed by an RT-PCR test for SARS-CoV-2, requiring supplemental oxygen to maintain a peripheral oxygen saturation of greater than 94% were eligible. Patients were excluded if they had severe pre-existing pulmonary disease, had pre-existing heart failure, had undergone active treatment of a haematological or non-haematological malignancy in the previous 12 months, had cytopenia, or were receiving concomitant treatment with medication known to strongly interact with imatinib. Patients were randomly assigned (1:1) to receive either oral imatinib, given as a loading dose of 800 mg on day 0 followed by 400 mg daily on days 1–9, or placebo. Randomisation was done with a computer-based clinical data management platform with variable block sizes (containing two, four, or six patients), stratified by study site. The primary outcome was time to discontinuation of mechanical ventilation and supplemental oxygen for more than 48 consecutive hours, while being alive during a 28-day period. Secondary outcomes included safety, mortality at 28 days, and the need for invasive mechanical ventilation. All efficacy and safety analyses were done in all randomised patients who had received at least one dose of study medication (modified intention-to-treat population). This study is registered with the EU Clinical Trials Register (EudraCT 2020–001236–10).

Findings

Between March 31, 2020, and Jan 4, 2021, 805 patients were screened, of whom 400 were eligible and randomly assigned to the imatinib group (n=204) or the placebo group (n=196). A total of 385 (96%) patients (median age 64 years [IQR 56–73]) received at least one dose of study medication and were included in the modified intention-to-treat population. Time to discontinuation of ventilation and supplemental oxygen for more than 48 h was not significantly different between the two groups (unadjusted hazard ratio [HR] 0.95 [95% CI 0.76–1.20]). At day 28, 15 (8%) of 197 patients had died in the imatinib group compared with 27 (14%) of 188 patients in the placebo group (unadjusted HR 0.51 [0.27–0.95]). After adjusting for baseline imbalances between the two groups (sex, obesity, diabetes, and cardiovascular disease) the HR for mortality was 0.52 (95% CI 0.26–1.05). The HR for mechanical ventilation in the imatinib group compared with the placebo group was 1.07 (0.63–1.80; p=0.81). The median duration of invasive mechanical ventilation was 7 days (IQR 3–13) in the imatinib group compared with 12 days (6–20) in the placebo group (p=0.0080). 91 (46%) of 197 patients in

the imatinib group and 82 (44%) of 188 patients in the placebo group had at least one grade 3 or higher adverse event. The safety evaluation revealed no imatinib-associated adverse events.

Interpretation

The study failed to meet its primary outcome, as imatinib did not reduce the time to discontinuation of ventilation and supplemental oxygen for more than 48 consecutive hours in patients with COVID-19 requiring supplemental oxygen. The observed effects on survival (although attenuated after adjustment for baseline imbalances) and duration of mechanical ventilation suggest that imatinib might confer clinical benefit in hospitalised patients with COVID-19, but further studies are required to validate these findings.

Funding

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29. Amerio A. COVID-19 lockdown impact on mental health in a large representative sample of Italian adults / A. Amerio, A. Lugo, C. Stival [et al.] // Journal of Affective Disorders. – 2020. – Vol. 298. – P. 398–404. – URL: <https://www.sciencedirect.com/science/article/pii/S0165032721005632>

Background

The potential benefits of the COVID-19 lockdown need to be carefully weighed versus the possible impact on people's daily life and negative mental health effects. We aimed to assess the prevalence of depression, anxiety, insomnia and quality of life before and during the COVID-19 lockdown, identifying subgroups at higher risk of mental distress as a consequence of COVID-19 associated restrictions.

Methods

Within the Lost in Italy project, a web-based cross-sectional study was conducted on a representative sample of 6003 Italian adults aged 18–74 recruited from April 27 to May 3, 2020, within the nation-wide stay-at-home order.

Results

The prevalence of depressive symptoms (PHQ-2 \geq 3) increased from 14.3% before lockdown to 33.2% during lockdown, anxiety symptoms (GAD-2 \geq 3) from 18.1% to 41.5%, insufficient sleep (\leq 6 h/day) from 33.7% to 41.1%, unsatisfactory sleep from 17.0% to 38.8% and unsatisfactory quality of life from 13.1% to 42.1%. Overall, 47.7% reported worsened depressive symptoms, 43.6% worsened anxiety symptoms, sleep quantity (31.5%) and quality (35.0%), and 64.1% worsened quality of life. A statistically significant relationship with all mental health outcomes considered was found for women vs. men (multivariate odds

ratio, OR between 1.13 and 1.63), for current vs. never smokers (OR between 1.15 and 1.25), and with increasing physical activity (p for trend < 0.001 for all the indicators). The use of at least one psychotropic drug increased by 20% compared to pre-lockdown (from 9.5% to 11.4%).

Conclusions

This is the first cross-sectional study conducted in Italy on a representative sample of adults to testify the huge implications of the lockdown on mental health.

30. Amini-Farsani Z. Prediction and analysis of microRNAs involved in COVID-19 inflammatory processes associated with the NF- κ B and JAK/STAT signaling pathways / Z. Amini-Farsani, M. Yadollahi-Farsani, S. Arab [et al.] // International Immunopharmacology. – 2021. – Vol. 100. – P. 108071. – URL: <https://www.sciencedirect.com/science/article/pii/S1567576921007074>

COVID-19 is the cause of a pandemic associated with substantial morbidity and mortality. As yet, there is no available approved drug to eradicate the virus. In this review article, we present an alternative study area that may contribute to the development of therapeutic targets for COVID-19. Growing evidence is revealing further pathophysiological mechanisms of COVID-19 related to the dysregulation of inflammation pathways that seem to play a critical role toward COVID-19 complications.

The NF- κ B and JAK/STAT signaling pathways are highly activated in acute inflammation, and the excessive activity of these pathways in COVID-19 patients likely exacerbates the inflammatory responses of the host. A group of non-coding RNAs (miRNAs) manage certain features of the inflammatory process. In this study, we discuss recent advances in our understanding of miRNAs and their connection to inflammatory responses. Additionally, we consider the link between perturbations in miRNA levels and the onset of COVID-19 disease.

Furthermore, previous studies published in the online databases, namely web of science, MEDLINE (PubMed), and Scopus, were reviewed for the potential role of miRNAs in the inflammatory manifestations of COVID-19. Moreover, we disclosed the interactions of inflammatory genes using STRING DB and designed interactions between miRNAs and target genes using Cytoscape software. Several miRNAs, particularly miR-9, miR-98, miR-223, and miR-214, play crucial roles in the regulation of NF- κ B and JAK-STAT signaling pathways as inflammatory regulators. Therefore, this group of miRNAs that mitigate inflammatory pathways can be further regarded as potential targets for far-reaching-therapeutic strategies in COVID-19 diseases.

31. Amorim W. S. Pandemics, global risks and adaptation: Challenges for a changing world / W. S. Amorim, J. B. S. O. A. Guerra // Research in

Uncertainty, insecurity and complexity are some of the terms defining, now and in the future, the development process of the human species on planet Earth. In order to minimize the impact of these challenges on our lives, we need data, studies and directives which allow us to create resilience and adapting strategies over time. However essential those actions may be, we constantly fail in preventing risks. In this sense, the present critical review aims to discuss the impacts originated in the new (COVID-19) pandemic and, simultaneously, the changes caused by this event within the international scenario.

32. Amornsiripanitch N. Patients characteristics related to screening mammography cancellation and rescheduling rates during the COVID-19 pandemic / N. Amornsiripanitch, S. A. Chikarmane, C. P. Bay [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 205–210. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121003016>

Purpose

To identify patient characteristics associated with screening mammography cancellations and rescheduling during the COVID-19 pandemic.

Methods

Scheduled screening mammograms during three time periods were retrospectively reviewed: state-mandated shutdown (3/17/2020-6/16/2020) during which screening mammography was cancelled, a period of 2 months immediately after screening mammography resumed (6/17/2020-8/16/2020), and a representative period prior to COVID-19 (6/17/2019-8/16/2019). Relative risk of cancellation before COVID-19 and after reopening was compared for age, race/ethnicity, insurance, history of chronic disease, and exam location, controlling for other collected variables. Risk of failure to reschedule was similarly compared between all 3 time periods.

Results

Overall cancellation rate after reopening was higher than before shutdown (7663/16595, 46% vs 5807/15792, 37%; $p < 0.001$). Relative risk of cancellation after reopening increased with age (1.20 vs 1.27 vs 1.36 for ages at 25th, 50th, and 75th quartile or 53, 61, and 70 years, respectively, $p < 0.001$). Relative risk of cancellation was also higher among Medicare patients (1.41) compared to Medicaid and those with other providers (1.26 and 1.21, respectively, $p < 0.001$) and non-whites compared to whites (1.34 vs 1.25, $p = 0.03$). Rescheduling rate during shutdown was higher than before COVID-19 and after reopening for all patients (10,658/13593, 78%, 3569/5807, 61%, and 4243/7663, respectively, 55%, $p < 0.001$). Relative risk of failure to reschedule missed mammogram was higher

in hospitals compared to outpatient settings both during shutdown and after reopening (0.62 vs 0.54, $p = 0.005$ and 1.29 vs 1.03, $p < 0.001$, respectively).

Conclusion

Minority race/ethnicity, Medicare insurance, and advanced age were associated with increased risk of screening mammogram cancellation during COVID-19.

33. Anderson M. Time to strengthen capacity in infectious disease control at the European level / M. Anderson, E. Mossialos // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 263–265. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306317>

The COVID-19 pandemic has made the European Commission reevaluate its role in member states health systems. In response, the European Union is planning to significantly increase investment to tackle cross-border health threats. The European Centre for Communicable Disease Prevention and Control is well positioned to capitalise upon this increased investment by designing and implementing a renewed European strategy for infection disease control. To secure meaningful and sustainable improvements, the European Centre for Communicable Disease Prevention and Control needs to be strengthened with more resources, an expanded geographical scope and legislative change.

34. Andaregie A. COVID-19 impact on jobs at private schools and colleges in Northern Ethiopia / A. Andaregie, T. Astatkie // International Journal of Educational Development. – 2021. – Vol. 85. – P. 102456. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321001097>

The disruptive effects of COVID-19 have impacted all sectors of our society including education. This study identified the factors influencing the private schools' and colleges' decision to reduce their teaching staff during the COVID-19 lockdown using survey data analyzed using Heckman two-step regression model. The results showed that age, accommodation level, hourly payment rate, tax grade level, money borrowed from government or banks, loan repayment suspension, tax payment deferral, the number of administrative employees, the student-to-administrative employee ratio, and the educational institution's category were the significant factors affecting teaching employee reduction during the lockdown. The results of this study can help the various education sector stakeholders to take coordinated measures to withstand COVID-19 type of shocks.

35. Anderson R. Library consultations and a global pandemic: An analysis of consultation difficulty during COVID-19 across multiple factors / R. Anderson, K. Fisher, J. Walker // The Journal of Academic Librarianship. – 2021. – Vol. 47, № 1. – P. 102273. – URL: <https://www.sciencedirect.com/science/article/pii/S0099133320301646>

The purpose of this study is to examine the relationship between librarians' perception of the difficulty of patron consultations and a variety of factors that characterize these interactions in the context of an academic library at a large public university. The study also provides insight into how changes in library service operations due to the global COVID-19 pandemic have affected the perceived difficulty of library consultations. Data samples were drawn from a LibInsight dataset and limited to consultations from Fall 2019 and Spring 2020 (N = 3331). Statistical analysis was conducted using ordinal logistic regression to quantify the relationship between perceptions of difficulty and factors indicating pre/post-COVID-19 modifications, patron type, scheduling, question format, library department, consultation duration, semester, and campus. Most notably, results indicate a statistically significant ($p < 0.001$) increase in the perceived difficulty of consultations that followed the closure of the library's physical spaces due to COVID-19, even when controlling for other factors in multiple model formulations. These results, as well as insights pertaining to other factors associated with library consultations and perceptions of difficulty, have implications for how librarians frame, understand, and manage their workloads. Additionally, findings may provide library service managers with the evidence needed to better coordinate and evaluate library services.

36. Armillei F. Did Covid-19 hit harder in peripheral areas? The case of Italian municipalities / F. Armillei, F. Filippucci, T. Fletcher // *Economics & Human Biology*. – 2021. – Vol. 42. – P. 101018. – URL: <https://www.sciencedirect.com/science/article/pii/S1570677X21000423>

The first wave of Covid-19 pandemic had a geographically heterogeneous impact even within the most severely hit regions. Exploiting a triple-differences methodology, we find that in Italy Covid-19 hit relatively harder in peripheral areas: the excess mortality in peripheral areas was almost double that of central ones in March 2020 (1.2 additional deaths every 1000 inhabitants). We leverage a rich dataset on Italian municipalities to explore mechanisms behind this gradient. We first show that socio-demographic and economic features at municipal level are highly collinear, making it hard to identify single-variable causal relationships. Using Principal Components Analysis we model excess mortality and show that areas with higher excess mortality have lower income, lower education, larger households, lower trade and higher industrial employments, and older population. Our findings highlight a strong centre-periphery gradient in the harshness of Covid-19, which we believe is also highly relevant from a policy-making standpoint.

37. Arora M. Airport pandemic response: An assessment of impacts and strategies after one year with COVID-19 / M. Arora, S. Tuchen, M. Nazemi [et al.] // *Transportation Research Interdisciplinary Perspectives*. – 2021. – Vol. 11.

<https://www.sciencedirect.com/science/article/pii/S259019822100155X>

The COVID-19 pandemic has caused an unprecedented crisis for the air transportation industry, affecting millions of aviation users and stakeholders. As the aviation sector has faced disease outbreaks and extreme events before—albeit not at the same scale—and will, in all likelihood, face them again, we provide an assessment in this study that a) gives an overview of the effects of the pandemic, b) categorizes the response mechanisms that were observed, and c) proposes a framework for a coordinated global response to future disease outbreaks. We highlight that of the many lessons, recommendations, and suggestions that emerged during previous outbreaks, few were introduced effectively into civil aviation practices and operations. Based on multiple data sources for passengers, cargo, and flight schedules, we assess the impact of COVID-19 on the global aviation industry and compare the data of some prominent airports to highlight the need for a coordinated response to effectively deal with future disruptions. As global aviation navigates its ongoing recovery, we discuss different responses during the pandemic including guidelines issued by bodies such as the International Civil Aviation Organization (ICAO), operational decisions such as closing terminals, increased cleaning frequencies, and mask mandates etc. We emphasize the need for resilience to accommodate disease outbreaks in future planning, design, and preparedness strategies for airports and airlines. We further argue that the existing civil aviation system needs a coordinated global response mechanism to combat future outbreaks and propose a framework with a threat response matrix to keep aviation safe and operational during future pandemics and mitigate socioeconomic fallout.

38. Arru C. Comparison of deep learning, radiomics and subjective assessment of chest CT findings in SARS-CoV-2 pneumonia / C. Arru, S. Ebrahimian, Z. Falaschi [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 58–66. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121002825>

Purpose

Comparison of deep learning algorithm, radiomics and subjective assessment of chest CT for predicting outcome (death or recovery) and intensive care unit (ICU) admission in patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

Methods

The multicenter, ethical committee-approved, retrospective study included non-contrast-enhanced chest CT of 221 SARS-CoV-2 positive patients from Italy (n = 196 patients; mean age 64 ± 16 years) and Denmark (n = 25; mean age 69 ± 13 years). A thoracic radiologist graded presence, type and extent of pulmonary opacities and severity of motion artifacts in each lung lobe on all chest CTs. Thin-section CT images were processed with CT Pneumonia Analysis Prototype

(Siemens Healthineers) which yielded segmentation masks from a deep learning (DL) algorithm to derive features of lung abnormalities such as opacity scores, mean HU, as well as volume and percentage of all-attenuation and high-attenuation (opacities >-200 HU) opacities. Separately, whole lung radiomics were obtained for all CT exams. Analysis of variance and multiple logistic regression were performed for data analysis.

Results

Moderate to severe respiratory motion artifacts affected nearly one-quarter of chest CTs in patients. Subjective severity assessment, DL-based features and radiomics predicted patient outcome (AUC 0.76 vs AUC 0.88 vs AUC 0.83) and need for ICU admission (AUC 0.77 vs AUC 0.80 vs 0.82). Excluding chest CT with motion artifacts, the performance of DL-based and radiomics features improve for predicting ICU admission.

Conclusion

DL-based and radiomics features of pulmonary opacities from chest CT were superior to subjective assessment for differentiating patients with favorable and adverse outcomes.

39. Asadi-Zeydabadi M. Analysis of COVID-19 pandemic in USA, using Topological Weighted Centroid / M. Asadi-Zeydabadi, M. Buscema, W. Lodwick [et al.] // Computers in Biology and Medicine. – 2021. – Vol. 136. – P. 104670. – URL: <https://www.sciencedirect.com/science/article/pii/S0010482521004649>

The first case of COVID-19 in USA was reported on January 20, 2020. The number of COVID-19 confirmed cases and death has increased since the first reported case and the outbreak has appeared in all states. This paper analyzes disease outbreak using Topological Weighted Centroid (TWC), which is a data driven intelligent geographical dynamical system that models disease spread in space and time. In this analysis the COVID-19 cases in USA on March 26, 2020 as provided by Johns Hopkins University is used. The COVID-19 outbreak is mapped by the TWC method. We were able to predict and capture some features of the pandemic spread using the early data. Although we have used the geographical distance from the latitude and longitude coordinates, our results indicate that one of the main paths of diseases spread are arguably airline routes. In this analysis, we used a large set of data. A modified version of TWC, is named TWC-Windowing to elaborate the effect of data from all places.

40. Assiri A. COVID-19 related treatment and outcomes among COVID-19 ICU patients: A retrospective cohort study / A. Assiri, M. J. Iqbal, A. Mohammed [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 9. – P. 1274–1278. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121002495>

Background

The COVID-19 pandemic remains an immediate and present concern, yet as of now there is still no approved therapeutic available for the treatment of COVID-19. This study aimed to investigate and report evidence concerning demographic characteristics and currently-used medications that contribute to the ultimate outcomes of COVID-19 ICU patients.

Methods

A retrospective cohort study was conducted among all COVID-19 patients in the Intensive Care Unit (ICU) of Asir Central Hospital in Saudi Arabia between the 1st and 30th of June 2020. Data extracted from patients' medical records included their demographics, home medications, medications used to treat COVID-19, treatment durations, ICU stay, hospital stay, and ultimate outcome (recovery or death). Descriptive statistics and regression modelling were used to analyze and compare the results. The study was approved by the Institutional Ethics Committees at both Asir Central Hospital and King Khalid University.

Results

A total of 118 patients with median age of 57 years having definite clinical and disease outcomes were included in the study. Male patients accounted for 87% of the study population, and more than 65% experienced at least one comorbidity. The mean hospital and ICU stay was 11.4 and 9.8 days, respectively. The most common drugs used were tocilizumab (31.4%), triple combination therapy (45.8%), favipiravir (56.8%), dexamethasone (86.7%), and enoxaparin (83%). Treatment with enoxaparin significantly reduced the length of ICU stay ($p = 0.04$) and was found to be associated with mortality reduction in patients aged 50–75 ($p = 0.03$), whereas the triple regimen therapy and tocilizumab significantly increased the length of ICU stay in all patients ($p = 0.01$, $p = 0.02$ respectively).

Conclusion

COVID-19 tends to affect males more significantly than females. The use of enoxaparin is an important part of COVID-19 treatment, especially for those above 50 years of age, while the use of triple combination therapy and tocilizumab in COVID-19 protocols should be reevaluated and restricted to patients who have high likelihood of benefit.

41. Atangana A. Modeling third waves of Covid-19 spread with piecewise differential and integral operators: Turkey, Spain and Czechia / A. Atangana, S. İ. Araz // Results in Physics. – 2021. – Vol. 29. – P. 104694. – URL: <https://www.sciencedirect.com/science/article/pii/S2211379721007737>

Several collected data representing the spread of some infectious diseases have demonstrated that the spread does not really exhibit homogeneous spread.

Clear examples can include the spread of Spanish flu and Covid-19. Collected data depicting numbers of daily new infections in the case of Covid-19 from countries like Turkey, Spain show three waves with different spread patterns, a clear indication of crossover behaviors. While modelers have suggested many mathematical models to depicting these behaviors, it becomes clear that their mathematical models cannot really capture the crossover behaviors, especially passage from deterministic resetting to stochastics. Very recently Atangana and Seda have suggested a concept of piecewise modeling consisting in defining a differential operator piece-wisely. The idea was first applied in chaos and outstanding patterns were captured. In this paper, we extend this concept to the field of epidemiology with the aim to depict waves with different patterns. Due to the novelty of this concept, a different approach to insure the existence and uniqueness of system solutions are presented. A piecewise numerical approach is presented to derive numerical solutions of such models. An illustrative example is presented and compared with collected data from 3 different countries including Turkey, Spain and Czechia. The obtained results let no doubt for us to conclude that this concept is a new window that will help mankind to better understand nature.

42. Atkinson J. G. Problems with the analysis in “Treatment with Hydroxychloroquine, Azithromycin, and Combination in Patients Hospitalized with COVID-19” / J. G. Atkinson // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 37. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306020>

Dear Editor,

I am writing to comment on the article “Treatment with Hydroxychloroquine, Azithromycin, and Combination in Patients Hospitalized with COVID-19” by Samia Arshad et al. (Arshad et al., 2020). In this observational study, the patients were deliberately assigned to the treatment protocols based on their underlying medical conditions. This introduces a bias into the study, and as with all observational studies, there is the hope that the subsequent adjustments, based on a regression model in this instance, will compensate for this bias. This hope is not justified. To understand why it is necessary to examine the results for individual variables in the regression model and judge whether they are plausible. If they are not plausible, then you can conclude that the regression model is almost certainly flawed.

The process of allocating patients to treatment groups results in the “neither drug” group having a disproportionately high share of patients with cardiovascular comorbidity. The Arshad et al. (2020) study finds that the Hazard Ratio for cardiovascular comorbidity is 1.062 (from Table 2 of Arshad et al., 2020) and is not statistically significant. Similarly, it finds that the Hazard Ratios for COPD comorbidity and Hypertension are not statistically significant. Other studies have shown the increased risk of death due to cardiovascular comorbidities to be around

300% (see, for example, Dhakal et al., 2020), not 6%, so the (not statistically significant) 6% is just not plausible. Other implausible results are that having a BMI of 30 or higher reduces that patient's risk of death by 22%, and being white increases it by 74%.

Another major flaw in the study is that it makes a substantial adjustment to the death rate if the patient receives ventilator support. A hypothetical thought experiment reveals the inappropriateness of such an adjustment. Consider a treatment protocol A which results in all the patients on that protocol requiring ventilator support, and which is being compared with a treatment protocol B in which none of the patients require ventilator support. If the actual death rate for protocol A was twice the actual death rate for protocol B, after making the Hazard Ratio adjustment of 2.159 for ventilator use (from Table 2), protocol A would be judged to have a lower death rate than protocol B. This is clearly not an appropriate result.

As a result of the flaws in the analysis, the conclusions reached in Arshad 2020 are invalid.

43. Attia Z. I. Rapid Exclusion of COVID Infection With the Artificial Intelligence Electrocardiogram / Z. I. Attia, S. Kapa, J. Dugan [et al.] // Mayo Clinic Proceedings. – 2021. – Vol. 98, № 8. – P. 2081–2094. – URL: <https://www.sciencedirect.com/science/article/pii/S0025619621004699>

Objective

To rapidly exclude severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection using artificial intelligence applied to the electrocardiogram (ECG).

Methods

A global, volunteer consortium from 4 continents identified patients with ECGs obtained around the time of polymerase chain reaction–confirmed COVID-19 diagnosis and age- and sex-matched controls from the same sites. Clinical characteristics, polymerase chain reaction results, and raw electrocardiographic data were collected. A convolutional neural network was trained using 26,153 ECGs (33.2% COVID positive), validated with 3826 ECGs (33.3% positive), and tested on 7870 ECGs not included in other sets (32.7% positive). Performance under different prevalence values was tested by adding control ECGs from a single high-volume site.

Results

The area under the curve for detection of acute COVID-19 infection in the test group was 0.767 (95% CI, 0.756 to 0.778; sensitivity, 98%; specificity, 10%; positive predictive value, 37%; negative predictive value, 91%). To more accurately reflect a real-world population, 50,905 normal controls were added to

adjust the COVID prevalence to approximately 5% (2657/58,555), resulting in an area under the curve of 0.780 (95% CI, 0.771 to 0.790) with a specificity of 12.1% and a negative predictive value of 99.2%.

Conclusion

Infection with SARS-CoV-2 results in electrocardiographic changes that permit the artificial intelligence-enhanced ECG to be used as a rapid screening test with a high negative predictive value (99.2%). This may permit the development of electrocardiography-based tools to rapidly screen individuals for pandemic control.

44. Atsız O. Can we imagine the meal-sharing economy without service providers? The impact of COVID-19 / O. Atsız, I. Cifci // Journal of Hospitality and Tourism Management. – 2021. – Vol. 49. – P. 172–177. – URL: <https://www.sciencedirect.com/science/article/pii/S1447677021001595>

The meal-sharing economy has taken significant scholarly attention recently; however, no study examines the impact of the current health crisis on meal-sharing economy platforms. This research attempts to bridge this gap by investigating the effect of the COVID-19 on the meal-sharing economy based on the service providers' perspective. For this purpose, thirteen interviews with meal-sharing service providers in Istanbul were conducted, and the data were examined through conventional content analysis. Findings showed that meal-sharing service providers have been facing unprecedented challenges since the outbreak. The findings also reveal a common consensus on the disruptive role of the coronavirus measures in terms of limiting meal-sharing activities. Moreover, it was indicated that the current health crisis has compelled service providers to redesign their events as online virtual activities. The results provide favorable theoretical and practical insights to guide the meal-sharing platforms for a health crisis adoption and revival of such platforms.

45. Avanesian G. How many students could continue learning during COVID-19-caused school closures? Introducing a new reachability indicator for measuring equity of remote learning / G. Avanesian, S. Mizunoya, D. Amaro // International Journal of Educational Development. – 2021. – Vol. 84. – P. 102421. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000742>

This paper proposes a new reachability indicator to analyze the effectiveness of remote learning policies adopted by ministries of education in response to school closures caused by the COVID-19 pandemic. The indicator provides the share of students that can potentially be reached by remote learning policies given the availability of necessary household assets such as radios, televisions, computers and internet access. The results of this analysis outline the stark inequities in access to remote learning, suggesting that at a minimum, more than 30 % of schoolchildren globally cannot be reached by remote learning policies due to

the high variation in access to assets for remote learning that exists within and between the world regions. The analysis finds that wealth and area of residence are key factors affecting the reachability of remote learning policies, suggesting that children who reside in rural areas and/or belong to the poorest households in their country are at the greatest risk of being left behind.

46. Aycock L. Levels of economic development and the spread of coronavirus disease 2019 (COVID-19) in 50 U.S. states and territories and 28 European countries: an association analysis of aggregated data / L. Aycock, X. Chen // Global Health Journal. – 2021. – Vol. 5, № 1. – P. 24–30. – URL: <https://www.sciencedirect.com/science/article/pii/S2414644721000063>

Background

The coronavirus disease 2019 (COVID-19) became a global pandemic within several months after it was first reported at the end of December, 2019. Countries in the Northern Hemisphere have been affected the most, including the United States and European countries. Contrary to the common knowledge that infectious diseases are more prevalent in low- and middle-income countries, COVID-19 appears to affect wealthy countries more. This paper attempts to quantify the relationship between COVID-19 infections and levels of economic development with data from the U.S. and Europe.

Methods

Public domain data on the confirmed COVID-19 cases during January 1 and May 31, 2020 by states and territories in the U.S. and by countries in Europe were included. Incidence rate was estimated using the 2019 total population. COVID-19 cases were associated with 2019 gross domestic product (GDP) using regression models after a logarithmic transformation of the data. The U.S. data and European data were analyzed separately, considering significant heterogeneity between the two.

Results

A total of 2 451 691 COVID-19 cases during a 5-month period were analyzed, including 1 787 414 from 50 U.S. states and territories and 664 277 from 28 European countries. The overall incidence rate was 5.393/1000 for the U.S. and 1.411/1 000 for European countries with large variations. \lg (total cases) was significantly associated with \lg (GDP) for U.S. states ($= 1.2579$, $P < 0.001$) and European countries ($= 0.7156$, $P < 0.001$), respectively.

Conclusion

This study demonstrated a positive correlation between COVID-19 case incidence and GDP in the United States and 28 European countries. Study findings suggest a potential role of high-level development in facilitating infectious disease spread, such as more advanced transportation system, large metropolitan cities with high population density, better domestic and international travel for

businesses, leisure, and more group activities. These factors must be considered in controlling the COVID-19 epidemic. This study focuses on the impact of economic development, many other factors might also have contributed to the rapid spread of COVID-19 in these countries and states, such as differences in national and statewide anti-epidemic strategies, people's behavior, and healthcare systems. Besides, low- and middle-income countries may have an artificially low COVID-19 case count just due to lack of diagnostic capabilities. Findings of this study also encourage future research with individual-level data to detect risk factors at the personal level to understand the risk of COVID-19.

47. Azab M. A. Optic neuritis post-COVID-19 infection. A case report with meta-analysis / M. A. Azab, S. F. Hasaneen, H. Hanifa [et al.] // Interdisciplinary Neurosurgery. – 2021. – Vol. 26 – P. 101320. – URL: <https://www.sciencedirect.com/science/article/pii/S2214751921002322>

Background

In December 2019, a global pandemic of Coronavirus 2019 (COVID-19) has invaded entire the world. The virus associated with the COVID-19 infections is SARS-CoV-2; the infections are mainly pulmonary manifesting as severe respiratory complications such as acute respiratory distress syndrome. However, there are some extra-pulmonary manifestations that are reported to be associated with SARS-CoV-2 from the published literature. We aim to report a case manifested as post-COVID-19 optic neuritis, in addition to make a quantitative analysis (meta-analysis) for the published similar case reports around the world.

Methods

We followed CARE guidelines for case reports. Also, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Case presentation

A 32-year-old male patient with no previous relevant medical history, presented to the ophthalmology clinic in a tertiary hospital. He complained of a sudden drop of vision in his left eye, throbbing left sided headaches, central scotoma, color depth affection, elevated intra-ocular pressure; two weeks post-COVID-19 infection.

Results

Post-COVID optic neuritis is a possible neurological complication of the novel coronavirus infection. It was shown that females were more affected by optic neuritis and retinal complications, the left eye is more liable to drop of visual acuity post-COVID-19 infection; while there was no significant difference between both eyes regarding accompanied vision loss or blindness.

Conclusions

Optic neuritis either unilateral or bilateral could be one of the possible viral manifestations after COVID-19 infection.

48. Badr H. S. Association between mobility patterns and COVID-19 transmission in the USA: a mathematical modelling study / H. S. Badr, H. Du, M. Marshall [et al.] // *The Lancet Infectious Diseases*. – 2020. – Vol. 20, № 11. – P. 1247–1254. – URL: <https://www.sciencedirect.com/science/article/pii/S1473309920305533>

Summary

Background

Within 4 months of COVID-19 first being reported in the USA, it spread to every state and to more than 90% of all counties. During this period, the US COVID-19 response was highly decentralised, with stay-at-home directives issued by state and local officials, subject to varying levels of enforcement. The absence of a centralised policy and timeline combined with the complex dynamics of human mobility and the variable intensity of local outbreaks makes assessing the effect of large-scale social distancing on COVID-19 transmission in the USA a challenge.

Methods

We used daily mobility data derived from aggregated and anonymised cell (mobile) phone data, provided by Teralytics (Zürich, Switzerland) from Jan 1 to April 20, 2020, to capture real-time trends in movement patterns for each US county, and used these data to generate a social distancing metric. We used epidemiological data to compute the COVID-19 growth rate ratio for a given county on a given day. Using these metrics, we evaluated how social distancing, measured by the relative change in mobility, affected the rate of new infections in the 25 counties in the USA with the highest number of confirmed cases on April 16, 2020, by fitting a statistical model for each county.

Findings

Our analysis revealed that mobility patterns are strongly correlated with decreased COVID-19 case growth rates for the most affected counties in the USA, with Pearson correlation coefficients above 0.7 for 20 of the 25 counties evaluated. Additionally, the effect of changes in mobility patterns, which dropped by 35–63% relative to the normal conditions, on COVID-19 transmission are not likely to be perceptible for 9–12 days, and potentially up to 3 weeks, which is consistent with the incubation time of severe acute respiratory syndrome coronavirus 2 plus additional time for reporting. We also show evidence that behavioural changes were already underway in many US counties days to weeks before state-level or local-level stay-at-home policies were implemented, implying that individuals anticipated public health directives where social distancing was adopted, despite a mixed political message.

Interpretation

This study strongly supports a role of social distancing as an effective way to mitigate COVID-19 transmission in the USA. Until a COVID-19 vaccine is widely available, social distancing will remain one of the primary measures to combat disease spread, and these findings should serve to support more timely policy making around social distancing in the USA in the future.

49. Bae K. H. Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic / K. H. Bae, S. E. Ghoul, Z. Gong [et al.] // Journal of Corporate Finance. – 2021. – Vol. 67. – P. 101876. – URL: <https://www.sciencedirect.com/science/article/pii/S0929119920303205>

The debate over how firm stakeholder engagement is tied to preserving shareholder wealth has received growing attention in recent years, especially in the wake of the COVID-19 crisis. Against this backdrop, we examine the relation between corporate social responsibility (CSR) and stock market returns during the COVID-19 pandemic-induced market crash and the post-crash recovery. Using a sample of 1750 U.S. firms and two major sources of CSR ratings, we find no evidence that CSR affected stock returns during the crash period. This result is robust to various sensitivity tests. In additional cross-sectional analysis, we find some supporting evidence, albeit weak, that the relation between CSR and stock returns during the pandemic-related crisis is more positive when CSR is congruent with a firm's institutional environment. We also find that Business Roundtable companies, which committed to protecting stakeholder interests prior to the pandemic, do not outperform during the pandemic crisis. We conclude that pre-crisis CSR is not effective at shielding shareholder wealth from the adverse effects of a crisis, suggesting a potential disconnect between firms' CSR orientation (ratings) and actual actions. Our evidence suggests that investors can distinguish between genuine CSR and firms engaging in cheap talk.

50. Bakaloudi D. R. A critical update on the role of mild and serious vitamin D deficiency prevalence and the COVID-19 epidemic in Europe / D. R. Bakaloudi, M. Chourdakis // Nutrition. – 2022. – Vol. 93. – P. 111441. – URL: <https://www.sciencedirect.com/science/article/pii/S0899900721003038>

Objectives

Coronavirus disease 2019 (COVID-19) has emerged as a pandemic, affecting nearly 180 million people worldwide as of June 22, 2021. Previous studies have examined the association between the mean vitamin D (Vit D) concentration of each country and COVID-19 infection and mortality rate in European countries. The aim of the present study was to critically evaluate the relationship between prevalence of mild and severe Vit D deficiency in each country and COVID-19 infection, recovery, and mortality using updated data and a different methodological approach.

Methods

Information on Vit D concentration or deficiency for each country was retrieved through a literature search. COVID-19 infections and mortalities per million people and total recoveries, as of June 22, 2021, were obtained. The associations between Vit D deficiency and COVID-19 infection, recovery, and mortality were explored using correlation coefficients and scatterplots.

Results

Non-significant correlations were observed between both number of COVID-19 infections ($r = 0.363$, $P = 0.116$) and number of recoveries ($r = 0.388$, $P = 0.091$) and the prevalence of mild Vit D deficiency (<50 nmol/L). Similarly, non-significant correlations were observed between both infections ($r = 0.215$, $P = 0.392$) and recoveries ($r = 0.242$, $P = 0.332$) and the prevalence of severe Vit D deficiency (<30 nmol/L). Significant correlations were found between COVID-19 mortality and prevalence of both mild Vit D deficiency ($r = 0.634$, $P = 0.003$) and severe Vit D deficiency ($r = 0.538$, $P = 0.021$).

Conclusions

The prevalence of neither mild nor severe Vit D deficiency was associated with the number of COVID-19 infections in European countries. Thus, it is an important parameter to consider when implementing preventive measures to face COVID-19.

51. Balwinder-Singh. Agricultural labor, COVID-19, and potential implications for food security and air quality in the breadbasket of India / Balwinder-Singh, P. B. Shirsath, M. L. Jat [et al.] // *Agricultural Systems*. – 2020. – Vol. 185. – P. 102954. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X20308155>

To contain the COVID-19 pandemic, India imposed a national lockdown at the end of March 2020, a decision that resulted in a massive reverse migration as many workers across economic sectors returned to their home regions. Migrants provide the foundations of the agricultural workforce in the ‘breadbasket’ states of Punjab and Haryana in Northwest India. There are mounting concerns that near and potentially longer-term reductions in labor availability may jeopardize agricultural production and consequently national food security. The timing of rice transplanting at the beginning of the summer monsoon season has a cascading influence on productivity of the entire rice-wheat cropping system. To assess the potential for COVID-related reductions in the agriculture workforce to disrupt production of the dominant rice-wheat cropping pattern in these states, we use a spatial ex ante modelling framework to evaluate four scenarios representing a range of plausible labor constraints on the timing of rice transplanting. Averaged over both states, results suggest that rice productivity losses under all delay scenarios would be low as compare to those for wheat, with total system productivity loss estimates ranging from 9%, to 21%, equivalent to economic

losses of USD \$674 m to \$1.48 billion. Late rice transplanting and harvesting can also aggravate winter air pollution with concomitant health risks. Technological options such as direct seeded rice, staggered nursery transplanting, and crop diversification away from rice can help address these challenges but require new approaches to policy and incentives for change.

52. Bamakan S. M. H. Bullwhip effect reduction map for COVID-19 vaccine supply chain / S. M. H. Bamakan, P. Malekinejad, M. Ziaeeian [et al.] // Sustainable Operations and Computers. – 2021. – Vol. 2. – P. 139–148. – URL: <https://www.sciencedirect.com/science/article/pii/S2666412721000234>

The growing COVID-19 virus pandemic outbreak causes an urgent need to produce its vaccine. Pharmaceutical companies would encounter a massive wave of unforeseen demand for the COVID-19 Vaccine after the vaccine production that could lead to a bullwhip effect in the COVID-19 Vaccine Supply Chain (CVSC). The main objective of this study is to design a cognitive map based on the influential factors on the Bullwhip Effect Reduction (BER) of CVSC. Hence, in the first step, the affecting factors on the BER of CVSC are identified and ranked based on their importance from the pharmaceutical experts using the AHP technique. In the second step, 13 out of 18 identified factors are considered for further analyzing and understanding their relationship by Fuzzy Cognitive Mapping (FCM) technique. Furthermore, three different forward scenarios and three backward scenarios are carefully constructed to find the optimal solution for BER on pharmaceutical organizations. The obtained results show that the flexibility factor is the starting point of the backward scenario, which reduces the bullwhip effect in CVSC. Beside, by improving the inventory management and reliability factor, it would be effectively possible to control the lead-time factor and consequently, overcome the bullwhip effect in CVSC.

53. Banerjee S. The impact of COVID-19 on oncology professionals: results of the ESMO Resilience Task Force survey collaboration / S. Banerjee, K. H. J. Lim, K. Murali [et al.] // ESMO Open. – 2021. – Vol. 6, № 2. – P. 100058. – URL: <https://www.sciencedirect.com/science/article/pii/S2059702921000132>

Background

The impact of the coronavirus disease 2019 (COVID-19) pandemic on well-being has the potential for serious negative consequences on work, home life, and patient care. The European Society for Medical Oncology (ESMO) Resilience Task Force collaboration set out to investigate well-being in oncology over time since COVID-19.

Methods

Two online anonymous surveys were conducted (survey I: April/May 2020; survey II: July/August 2020). Statistical analyses were performed to examine group differences, associations, and predictors of key outcomes: (i) well-

being/distress [expanded Well-being Index (eWBI; 9 items)]; (ii) burnout (1 item from eWBI); (iii) job performance since COVID-19 (JP-CV; 2 items).

Results

Responses from survey I (1520 participants from 101 countries) indicate that COVID-19 is impacting oncology professionals; in particular, 25% of participants indicated being at risk of distress (poor well-being, eWBI ≥ 4), 38% reported feeling burnout, and 66% reported not being able to perform their job compared with the pre-COVID-19 period. Higher JP-CV was associated with better well-being and not feeling burnout ($P < 0.01$). Differences were seen in well-being and JP-CV between countries ($P < 0.001$) and were related to country COVID-19 crude mortality rate ($P < 0.05$). Consistent predictors of well-being, burnout, and JP-CV were psychological resilience and changes to work hours. In survey II, among 272 participants who completed both surveys, while JP-CV improved (38% versus 54%, $P < 0.001$), eWBI scores ≥ 4 and burnout rates were significantly higher compared with survey I (22% versus 31%, $P = 0.01$; and 35% versus 49%, $P = 0.001$, respectively), suggesting well-being and burnout have worsened over a 3-month period during the COVID-19 pandemic.

54. Bansal H. Diagnostic comparison of biochemical profile in patients with Covid-19, dengue and Acute Febrile illness: Implications for patient management / H. Bansal, V. Kumar, R. Mehta [et al.] // Clinical Epidemiology and Global Health. – 2021. – Vol. 12. – P. 100844. – URL: <https://www.sciencedirect.com/science/article/pii/S2213398421001524>

Purpose

Although there are specific laboratory tests available for the diagnosis of Covid-19 and dengue, during the present pandemic era of prioritized focus on Covid-19 assessment, there are possibilities that persons with dengue may remain undiagnosed. The present study explores the role of biochemical markers in the differential diagnosis of Covid-19 and dengue.

Methods

A total of 212 participants with Acute Febrile Illness were tested for Covid-19 and dengue at the secondary care hospital, Civil Hospital Narwana, Haryana, India. The Covid-19 and dengue diagnosis were performed using standard tests followed by hematological profiling which included neutrophil lymphocyte ratio (NLR), platelet count, Vitamin D3 assessment, SGOT, SGPT, and SPO2 concentration levels.

Results

Out of 212 participants, 118 were diagnosed with Covid-19 positive only, 18 dengue positive only, 5 co-infected with Covid-19 and dengue, and 71 persons with Acute Febrile Illness (control group). ANOVA revealed that mean SPO2 was significantly lower in Covid-19 and dengue than control, while SGPT and SGOT

levels of Covid-19 and dengue patients were significantly higher than the control group. The mean NLR was significantly higher in Covid-19 and dengue than control and Vitamin D3 levels were significantly reduced for Covid-19 patients. Besides, thrombocytopenia was observed only in dengue patients.

Conclusion

The results advocate the potential use of combinations of these makers in differential diagnosis of these two fatal viral conditions and can help by enabling the adaptation of the therapeutic conduct to the needs of individual patients.

55. Bar S. Impacts of partial to complete COVID-19 lockdown on NO₂ and PM_{2.5} levels in major urban cities of Europe and USA / S. Bar, B. R. Parida, S. P. Mandal [et al.] // Cities. – 2021. – Vol. 117. – P. 103308. – URL: <https://www.sciencedirect.com/science/article/pii/S0264275121002080>

SARS CoV-2 (COVID-19) coronavirus has been causing enormous suffering, death, and economic losses worldwide. There are rigorous containment measures on industries, non-essential business, transportation, and citizen mobility to check the spread. The lockdowns may have an advantageous impact on reducing the atmospheric pollutants. This study has analyzed the change in atmospheric pollutants, based on the Sentinel-5Ps and ground-station observed data during partial to complete lockdown period in 2020. Results revealed that the mean tropospheric NO₂ concentration substantially dropped in 2020 due to lockdown against the same period in 2019 by 18–40% over the major urban areas located in Europe (i.e. Madrid, Milan, Paris) and the USA (i.e. New York, Boston, and Springfield). Conversely, urban areas with partial to no lockdown measures (i.e. Warsaw, Pierre, Bismarck, and Lincoln) exhibited a relatively lower dropdown in mean NO₂ concentration (3 to 7.5%). The role of meteorological variability was found to be negligible. Nevertheless, the reduced levels of atmospheric pollutants were primarily attributed to the shutdown of vehicles, power plants, and industrial emissions. Improvement in air quality during COVID-19 may be temporary, but regulatory bodies should learn to reduce air pollution on a long-term basis concerning the trade-offs between the environment, society, and economic growth. The intersection of urban design, health, and environment should be addressed by policy-makers to protect public health and sustainable urban policies could be adopted to build urban resilience against any future emergencies.

56. Barbour N. A statistical assessment of work-from-home participation during different stages of the COVID-19 pandemic / N. Barbour, N. Menon, F. Mannering // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 11. – P. 100441. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221001470>

Responses to the COVID-19 pandemic have dramatically transformed industry, healthcare, mobility, and education. Many workers have been forced to

shift to work-from-home, adjust their commute patterns, and/or adopt new behaviors. Particularly important in the context of mitigating transportation-related emissions is the shift to work-from-home. This paper focuses on two major shifts along different stages of the pandemic. First, it investigates switching to work-from-home during the pandemic, followed by assessing the likelihood of continuing to work-from-home as opposed to returning to the workplace. This second assessment, being conditioned on workers having experienced work-from-home as the result of the pandemic, allows important insights into the factors affecting work-from-home probabilities. Using a survey collected in July and August of 2020, it is found that nearly 50 percent of the respondents who did not work-from-home before but started to work-from-home during the COVID-19 pandemic, indicated the willingness to continue work-from-home. A total of 1,275 observations collected using the survey questionnaire, that was administered through a U.S. nationwide panel (Prime Panels), were used in the model estimation. The methodological approach used to study work-from-home probabilities in this paper captures the complexities of human behavior by considering the effects of unobserved heterogeneity in a multivariate context, which allows for new insights into the effect of explanatory variables on the likelihood of working from home. Random parameters logit model estimations (with heterogeneity in the means and variances of random parameters) revealed additional insights into factors affecting work-from-home probabilities. It was found that gender, age, income, the presence of children, education, residential location, or job sectors including marketing, information technologies, business, or administration/administrative support all played significant roles in explaining these behavioral shifts and post-pandemic preferences.

57. Barouki R. The COVID-19 pandemic and global environmental change: Emerging research needs / R. Barouki, M. Kogevinas, K. Audouze [et al.] // Environment International. – 2021. – Vol. 146. – P. 106272. – URL: <https://www.sciencedirect.com/science/article/pii/S0160412020322273>

The outbreak of COVID-19 raised numerous questions on the interactions between the occurrence of new infections, the environment, climate and health. The European Union requested the H2020 HERA project which aims at setting priorities in research on environment, climate and health, to identify relevant research needs regarding Covid-19. The emergence and spread of SARS-CoV-2 appears to be related to urbanization, habitat destruction, live animal trade, intensive livestock farming and global travel. The contribution of climate and air pollution requires additional studies. Importantly, the severity of COVID-19 depends on the interactions between the viral infection, ageing and chronic diseases such as metabolic, respiratory and cardiovascular diseases and obesity which are themselves influenced by environmental stressors. The mechanisms of these interactions deserve additional scrutiny. Both the pandemic and the social response to the disease have elicited an array of behavioural and societal changes that may remain long after the pandemic and that may have long term health

effects including on mental health. Recovery plans are currently being discussed or implemented and the environmental and health impacts of those plans are not clearly foreseen. Clearly, COVID-19 will have a long-lasting impact on the environmental health field and will open new research perspectives and policy needs.

58. Barrutia J. M. Effect of the COVID-19 pandemic on public managers' attitudes toward digital transformation / J. M. Barrutia, C. Echebarria // Technology in Society. – 2021. – Vol. 67. – P. 101776. – URL: <https://www.sciencedirect.com/science/article/pii/S0160791X21002517>

The COVID-19 pandemic has induced a process of digital acceleration and has likely changed the attitudes of local public managers toward information and communication technology (ICT). While this attitude change has been reasonably argued, it has not been systematically measured. This study narrows this gap by measuring the attitudes of public managers before and after the outbreak of the COVID-19 pandemic. Overall, this study finds that the pandemic has led public managers to be more confident in the capacity of ICT to help cities achieve their economic, social, and environmental goals and respond to challenges. Both explicit and implicit measures confirmed attitude changes. The explicit measures also indicated that the change in public managers' attitude toward ICT was similar to their change in attitude toward scientific progress and greater than their change in attitude toward other issues that have played a major role during the pandemic, namely, climate change, citizen participation, and privacy.

59. Bartscher A. K. Social capital and the spread of covid-19: Insights from european countries / A. K. Bartscher, S. Seitz, S. Sieglöcher [et al.] // Journal of Health Economics. – 2021. – Vol. 80. – P. 102531. – URL: <https://www.sciencedirect.com/science/article/pii/S0167629621001168>

We investigate the effect of social capital on health outcomes during the Covid-19 pandemic in independent analyses for Austria, Germany, Great Britain, Italy, the Netherlands, Sweden and Switzerland. Exploiting detailed geographical variation within countries, we show that a one-standard-deviation increase in social capital leads to between 14% and 34% fewer Covid-19 cases per capita accumulated from mid-March until end of June 2020, as well as between 6% and 35% fewer excess deaths per capita. Our results highlight the positive health returns of strengthening social capital.

60. Bayle C. Asymptomatic SARS COV-2 carriers among nursing home staff: A source of contamination for residents? / C. Bayle, D. Cantin, J.-S. Vidal [et al.] // Infectious Diseases Now. – 2021. – Vol. 51, № 2. – P. 197–200. – URL: <https://www.sciencedirect.com/science/article/pii/S2666991920000184>

Objectives

To show that circulation of SARS-COV-2 in nursing homes in France can come from staff as well as residents' families, whether they are known or not to have had COVID-19.

Methods

This study reports a screening campaign of asymptomatic staff working in elderly nursing homes in Paris where the virus had been circulating actively in March and April 2020.

Results

Before the screening campaign, the rate of symptomatic COVID-19 was 23.3% among the residents and 12.1% among their home employees. Within a 72 h screening period, all employees not known to have the virus were screened by RT-PCR in nasopharyngeal swabs. Among the 241 screened employees, 32 (13.3%) tested positive for SARS-CoV-2 on RT-PCR. SARS-CoV-2 carriers and non-carriers did not differ in term of gender, age or type of staff. Staff carrying SARS-CoV-2 were strictly asymptomatic in 75% of cases while during the days following or before the test, 25% presented mild symptoms of COVID-19. Considering both symptomatic and asymptomatic cases, 66 out of 281 (23.5%) of the home employees had been carriers for COVID-19.

Conclusion

Screening for viral carriage of asymptomatic staff in nursing homes can avoid contact and transmission to frequently severely vulnerable residents.

61. Benita F. The main factors influencing COVID-19 spread and deaths in Mexico: A comparison between phases I and II / F. Benita, F. Gasca-Sanchez // Applied Geography. – 2021. – Vol. 134. – P. 102523. – URL: <https://www.sciencedirect.com/science/article/pii/S0143622821001399>

This article investigates the geographical spread of confirmed COVID-19 cases and deaths across municipalities in Mexico. It focuses on the spread dynamics and containment of the virus between Phase I (from March 23 to May 31, 2020) and Phase II (from June 1 to August 22, 2020) of the social distancing measures. It also examines municipal-level factors associated with cumulative COVID-19 cases and deaths to understand the spatial determinants of the pandemic. The analysis of the geographic pattern of the pandemic via spatial scan statistics revealed a fast spread among municipalities. During Phase I, clusters of infections and deaths were mainly located at the country's center, whereas in Phase II, these clusters dispersed to the rest of the country. The regression results from the zero-inflated negative binomial regression analysis suggested that income inequality, the prevalence of obesity and diabetes, and concentration of fine particulate matter (PM 2.5) are strongly positively associated with confirmed cases and deaths regardless of lockdown.

62. Benjamin L. A. Antiphospholipid antibodies and neurological manifestations in acute COVID-19: A single-centre cross-sectional study / L. A. Benjamin, R. W. Paterson, R. Moll [et al.] // *EClinicalMedicine*. – 2021. – Vol. 39. – P. 101070. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021003503>

Background

A high prevalence of antiphospholipid antibodies has been reported in case series of patients with neurological manifestations and COVID-19; however, the pathogenicity of antiphospholipid antibodies in COVID-19 neurology remains unclear.

Methods

This single-centre cross-sectional study included 106 adult patients: 30 hospitalised COVID-neurological cases, 47 non-neurological COVID-hospitalised controls, and 29 COVID-non-hospitalised controls, recruited between March and July 2020. We evaluated nine antiphospholipid antibodies: anticardiolipin antibodies [aCL] IgA, IgM, IgG; anti-beta-2 glycoprotein-1 [a β 2GPI] IgA, IgM, IgG; anti-phosphatidylserine/prothrombin [aPS/PT] IgM, IgG; and anti-domain I β 2GPI (aD1 β 2GPI) IgG.

Findings

There was a high prevalence of antiphospholipid antibodies in the COVID-neurological (73.3%) and non-neurological COVID-hospitalised controls (76.6%) in contrast to the COVID-non-hospitalised controls (48.2%). aPS/PT IgG titres were significantly higher in the COVID-neurological group compared to both control groups ($p < 0.001$). Moderate-high titre of aPS/PT IgG was found in 2 out of 3 (67%) patients with acute disseminated encephalomyelitis [ADEM]. aPS/PT IgG titres negatively correlated with oxygen requirement (FiO_2 $R = -0.15$ $p = 0.040$) and was associated with venous thromboembolism ($p = 0.043$). In contrast, aCL IgA ($p < 0.001$) and IgG ($p < 0.001$) was associated with non-neurological COVID-hospitalised controls compared to the other groups and correlated positively with d-dimer and creatinine but negatively with FiO_2 .

Interpretation

Our findings show that aPS/PT IgG is associated with COVID-19-associated ADEM. In contrast, aCL IgA and IgG are seen much more frequently in non-neurological hospitalised patients with COVID-19. Characterisation of antiphospholipid antibody persistence and potential longitudinal clinical impact are required to guide appropriate management.

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63. Benson N. U. COVID pollution: impact of COVID-19 pandemic on global plastic waste footprint / N. U. Benson, D. E. Bassey, T. Palanisami // Heliyon. – 2021. – Vol. 7, № 2. – P. e06343. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021004485>

Plastic products have played significant roles in protecting people during the COVID-19 pandemic. The widespread use of personal protective gear created a massive disruption in the supply chain and waste disposal system. Millions of discarded single-use plastics (masks, gloves, aprons, and bottles of sanitizers) have been added to the terrestrial environment and could cause a surge in plastics washing up the ocean coastlines and littering the seabed. This paper attempts to assess the environmental footprints of the global plastic wastes generated during COVID-19 and analyze the potential impacts associated with plastic pollution. The amount of plastic wastes generated worldwide since the outbreak is estimated at 1.6 million tonnes/day. We estimate that approximately 3.4 billion single-use facemasks/face shields are discarded daily as a result of COVID-19 pandemic, globally. Our comprehensive data analysis does indicate that COVID-19 will reverse the momentum of years-long global battle to reduce plastic waste pollution. As governments are looking to turbo-charge the economy by supporting businesses weather the pandemic, there is an opportunity to rebuild new industries that can innovate new reusable or non-plastic PPEs. The unanticipated occurrence of a pandemic of this scale has resulted in unmanageable levels of biomedical plastic wastes. This expert insight attempts to raise awareness for the adoption of dynamic waste management strategies targeted at reducing environmental contamination by plastics generated during the COVID-19 pandemic.

64. Berardelli I. The impact of the COVID-19 pandemic on suicide ideation and suicide attempts in a sample of psychiatric inpatients / I. Berardelli, S. Sarubbi, M. Pompili [et al.] // Psychiatry Research. – 2021. – Vol. 303. – P. 114072. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121003693>

There has been little research reported regarding both suicide ideation and suicide attempts during the COVID-19 pandemic and government lockdown restrictions in Italy, one of the countries most affected by the pandemic. We investigated whether the frequency of suicide ideation and suicide attempts differed between psychiatric patients admitted to a psychiatric unit before and during the COVID-19 pandemic and government lockdown restrictions. We also assessed psychiatric diagnosis, length of hospitalization, and types of admission. We collected data on 632 psychiatric patients admitted to a public psychiatric clinic. Patients were divided into two different groups according to their admission before or during the COVID-19 pandemic. Our results showed that only suicide attempts, but not suicide ideation, were more frequent in psychiatric patients admitted during the COVID-19 pandemic than before. Furthermore, mood disorder diagnoses were more frequent during the COVID-19 pandemic than before the pandemic. The types of admission and the mean length of hospitalization did not differ between the two groups. In conclusion the present study results adds consistent knowledge on the phenomenon of suicide during the challenging time of the pandemic, pointing to continuing effort in suicide prevention measures.

65. Berg T. W. Suggestions for global coagulation assays for the assessment of COVID-19 associated hypercoagulability / T. W. van de Berg, A.-M. M. Hulshof, H. M. H. Spronk [et al.] // Thrombosis Research. – 2021. – Vol. 201. – P. 84–89. – URL: <https://www.sciencedirect.com/science/article/pii/S0049384821000815>

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) infection is associated with a clear prothrombotic phenotype. Although the exact pathophysiological mechanisms are not yet fully understood, thrombosis is clearly a highly important in the prognosis and outcome of COVID-19. As such, there is a need for diagnostic analysis and quantification of the coagulation potential in these patients, both at diagnosis and follow-up. Global coagulation assays like thrombin generation (TG) and rotational thromboelastometry (ROTEM) might be suitable in estimating COVID-19 associated coagulopathy and thrombosis risk. Therefore, we aimed at validating both assays for samples with high levels of fibrinogen and in the presence of anticoagulant heparins, such as commonly observed for COVID-19 ICU patients.

Materials and methods

Calibrated Automated Thrombography (CAT) was optimized to assess plasma thrombin generation in the presence of heparins. The final conditions with either 10 µg/mL Ellagic acid (EA) or PPP Reagent HIGH (high tissue factor; HPPH) were validated according to the EP5 protocol for within-run and between-run variability. Overall variability was well below 10%. To estimate the influences of heparins and high fibrinogen levels, CAT was performed on spiked plasma

aliquots from 13 healthy volunteers. Comparable to the CAT method, tPA-ROTEM was used to validate the effect of high fibrinogen and heparins on clotting time, clot firmness and clot lysis parameters.

Results

Our adjusted COVID-19 assay showed a heparin dose dependent decrease in peak height and endogenous thrombin potential (ETP) for both EA and HPPH triggered variants. High fibrinogen did not alter the inhibitory effect of either LMWH or UFH, nor did it influence the peak height or ETP in any of the conditions. The tPA-ROTEM showed a significant prolongation in clotting time with the additions of heparin, which normalized with the addition of high fibrinogen. MCF was markedly increased in all hyperfibrinogenemic conditions. A trend towards increased lysis time and, thus, decreased fibrinolysis was observed.

Conclusion

Thrombin generation and tPA-ROTEM protocols for measurements in the COVID-19 populations were adjusted and validated. The adjusted thrombin generation assay shows good sensitivity for measurements in heparin spiked plasma. High levels of fibrinogen did not alter the assay or the effectiveness of heparins as measured in this assay. t-PA ROTEM was effective in measurement of both high fibrinogen and heparins spiked samples and was sensitive to the expected relevant coagulant changes by these conditions. No clear fibrinolytic effect was observed in different conditions.

66. Berta L. Automatic lung segmentation in COVID-19 patients: Impact on quantitative computed tomography analysis / L. Berta, F. Rizzetto, C. De Mattia [et al.] // Physica Medica. – 2021. – Vol. 87. – P. 115–122. – URL: <https://www.sciencedirect.com/science/article/pii/S1120179721002210>

Purpose

To assess the impact of lung segmentation accuracy in an automatic pipeline for quantitative analysis of CT images.

Methods

Four different platforms for automatic lung segmentation based on convolutional neural network (CNN), region-growing technique and atlas-based algorithm were considered. The platforms were tested using CT images of 55 COVID-19 patients with severe lung impairment. Four radiologists assessed the segmentations using a 5-point qualitative score (QS). For each CT series, a manually revised reference segmentation (RS) was obtained. Histogram-based quantitative metrics (QM) were calculated from CT histogram using lung segmentations from all platforms and RS. Dice index (DI) and differences of QMs (Δ QMs) were calculated between RS and other segmentations.

Results

Highest QS and lower Δ QMs values were associated to the CNN algorithm. However, only 45% CNN segmentations were judged to need no or only minimal corrections, and in only 17 cases (31%), automatic segmentations provided RS without manual corrections. Median values of the DI for the four algorithms ranged from 0.993 to 0.904. Significant differences for all QMs calculated between automatic segmentations and RS were found both when data were pooled together and stratified according to QS, indicating a relationship between qualitative and quantitative measurements. The most unstable QM was the histogram 90th percentile, with median Δ QMs values ranging from 10HU and 158HU between different algorithms.

Conclusions

None of tested algorithms provided fully reliable segmentation. Segmentation accuracy impacts differently on different quantitative metrics, and each of them should be individually evaluated according to the purpose of subsequent analyses.

67. Best J. Coronavirus Disease 2019: the Pivotal Role of UK Clinical Oncology and the UK Coronavirus Cancer Monitoring Project / J. Best, T. Starkey, A. Chatterjee [et al.] // Clinical Oncology. – 2021. – Vol. 33, № 1. – P. e50–e53. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0936655520302338>

The UK is currently in the middle of the coronavirus disease 2019 (COVID-19) pandemic. The causative virus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a novel strain of coronavirus previously unidentified in humans and thought to be of zoonotic origin [1]. SARS-CoV-2 exposure may result in a wide variety of outcomes, ranging from asymptomatic infection to the development of respiratory failure requiring ventilatory support [2]. COVID-19 is extremely contagious and as of 20 May 2020, there were over 250 000 cases and 35 000 deaths reported in the UK alone [3,4].

Globally there has been huge disruption to everyday life. Without a vaccine or effective treatment, governments are reliant upon strategies such as social distancing and quarantine measures to limit SARS-CoV-2 infection to a level that can be managed by healthcare systems [5]. Furthermore, the additional burden placed on healthcare services will probably affect the quality of care for patients suffering with unrelated health problems. This is of particular relevance to oncologists, as prompt diagnosis and treatment can make significant difference to patient outcomes. In addition, individuals with a significant comorbidity such as cancer may be particularly vulnerable to coronavirus infection as a potential consequence of their immunosuppressed state.

68. Bhaskaran K. HIV infection and COVID-19 death: a population-based cohort analysis of UK primary care data and linked national death

registrations within the OpenSAFELY platform / K. Bhaskaran, C. T. Rentsch, B. MacKenna [et al.] // *The Lancet HIV*. – 2021. – Vol. 8, № 1. – P. e24–e32. – URL: <https://www.sciencedirect.com/science/article/pii/S2352301820303052>

Background

Whether HIV infection is associated with risk of death due to COVID-19 is unclear. We aimed to investigate this association in a large-scale population-based study in England.

Methods

We did a retrospective cohort study. Working on behalf of NHS England, we used the OpenSAFELY platform to analyse routinely collected electronic primary care data linked to national death registrations. We included all adults (aged ≥ 18 years) alive and in follow-up on Feb 1, 2020, and with at least 1 year of continuous registration with a general practitioner before this date. People with a primary care record for HIV infection were compared with people without HIV. The outcome was COVID-19 death, defined as the presence of International Classification of Diseases 10 codes U07.1 or U07.2 anywhere on the death certificate. Cox regression models were used to estimate the association between HIV infection and COVID-19 death; they were initially adjusted for age and sex, then we added adjustment for index of multiple deprivation and ethnicity, and then for a broad range of comorbidities. Interaction terms were added to assess effect modification by age, sex, ethnicity, comorbidities, and calendar time.

Results

17 282 905 adults were included, of whom 27 480 (0.16%) had HIV recorded. People living with HIV were more likely to be male, of Black ethnicity, and from a more deprived geographical area than the general population. 14 882 COVID-19 deaths occurred during the study period, with 25 among people with HIV. People living with HIV had higher risk of COVID-19 death than those without HIV after adjusting for age and sex: hazard ratio (HR) 2.90 (95% CI 1.96–4.30; $p < 0.0001$). The association was attenuated, but risk remained high, after adjustment for deprivation, ethnicity, smoking and obesity: adjusted HR 2.59 (95% CI 1.74–3.84; $p < 0.0001$). There was some evidence that the association was larger among people of Black ethnicity: HR 4.31 (95% CI 2.42–7.65) versus 1.84 (1.03–3.26) in non-Black individuals (p -interaction=0.044).

69. Bikdeli B. COVID-19 and Thrombotic or Thromboembolic Disease: Implications for Prevention, Antithrombotic Therapy, and Follow-Up: JACC State-of-the-Art Review / B. Bikdeli, M. V. Madhavan, D. Jimenez [et al.] // *Journal of the American College of Cardiology*. – 2020. – Vol. 75, №23. – P. 2950–2973. – URL: <https://www.sciencedirect.com/science/article/pii/S0735109720350087>

Coronavirus disease-2019 (COVID-19), a viral respiratory illness caused by the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2), may predispose patients to thrombotic disease, both in the venous and arterial circulations, because of excessive inflammation, platelet activation, endothelial dysfunction, and stasis. In addition, many patients receiving antithrombotic therapy for thrombotic disease may develop COVID-19, which can have implications for choice, dosing, and laboratory monitoring of antithrombotic therapy. Moreover, during a time with much focus on COVID-19, it is critical to consider how to optimize the available technology to care for patients without COVID-19 who have thrombotic disease. Herein, the authors review the current understanding of the pathogenesis, epidemiology, management, and outcomes of patients with COVID-19 who develop venous or arterial thrombosis, of those with pre-existing thrombotic disease who develop COVID-19, or those who need prevention or care for their thrombotic disease during the COVID-19 pandemic.

70. Bisanzio D. Use of Twitter social media activity as a proxy for human mobility to predict the spatiotemporal spread of COVID-19 at global scale / D. Bisanzio, M. U. G. Kraemer, I. I. Bogoch [et al] // Geospatial Health. – 2020. – Vol. 15, № 1. – P. 19–24. – URL: <https://pubmed.ncbi.nlm.nih.gov/32575957/>

As of February 27, 2020, 82,294 confirmed cases of coronavirus disease (COVID-19) have been reported since December 2019, including 2,804 deaths, with cases reported throughout China, as well as in 45 international locations outside of mainland China. We predict the spatiotemporal spread of reported COVID-19 cases at the global level during the first few weeks of the current outbreak by analyzing openly available geolocated Twitter social media data.

71. Bhaskaran K. Factors associated with deaths due to COVID-19 versus other causes: population-based cohort analysis of UK primary care data and linked national death registrations within the OpenSAFELY platform / K. Bhaskaran, S. Baconb, S. J. W. Evans [et al.] // The Lancet Regional Health - Europe. – 2020. – Vol. 6. – P. 100109. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000867>

Background

Mortality from COVID-19 shows a strong relationship with age and pre-existing medical conditions, as does mortality from other causes. We aimed to investigate how specific factors are differentially associated with COVID-19 mortality as compared to mortality from causes other than COVID-19.

Methods

Working on behalf of NHS England, we carried out a cohort study within the OpenSAFELY platform. Primary care data from England were linked to national death registrations. We included all adults (aged ≥ 18 years) in the database on 1st February 2020 and with >1 year of continuous prior registration;

the cut-off date for deaths was 9th November 2020. Associations between individual-level characteristics and COVID-19 and non-COVID deaths, classified according to the presence of a COVID-19 code as the underlying cause of death on the death certificate, were estimated by fitting age- and sex-adjusted logistic models for these two outcomes.

Findings

17,456,515 individuals were included. 17,063 died from COVID-19 and 134,316 from other causes. Most factors associated with COVID-19 death were similarly associated with non-COVID death, but the magnitudes of association differed. Older age was more strongly associated with COVID-19 death than non-COVID death (e.g. ORs 40.7 [95% CI 37.7-43.8] and 29.6 [28.9-30.3] respectively for ≥ 80 vs 50-59 years), as was male sex, deprivation, obesity, and some comorbidities. Smoking, history of cancer and chronic liver disease had stronger associations with non-COVID than COVID-19 death. All non-white ethnic groups had higher odds than white of COVID-19 death (OR for Black: 2.20 [1.96-2.47], South Asian: 2.33 [2.16-2.52]), but lower odds than white of non-COVID death (Black: 0.88 [0.83-0.94], South Asian: 0.78 [0.75-0.81]).

Interpretation

Similar associations of most individual-level factors with COVID-19 and non-COVID death suggest that COVID-19 largely multiplies existing risks faced by patients, with some notable exceptions. Identifying the unique factors contributing to the excess COVID-19 mortality risk among non-white groups is a priority to inform efforts to reduce deaths from COVID-19.

Funding

Wellcome, Royal Society, National Institute for Health Research, National Institute for Health Research Oxford Biomedical Research Centre, UK Medical Research Council, Health Data Research UK.

72. Blazy J. M. Immediate impacts of COVID-19 crisis on agricultural and food systems in the Caribbean / J. M. Blazy, F. Causeret, S. Guyader // Agricultural Systems. – 2021. – Vol. 190. – P. 103106. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21000597>

Context

In a region already plagued by food insecurity and challenges to the sustainability of the agricultural sector, the COVID-19 pandemic was a brutal shock in the Caribbean with immediate and significant socio-economic consequences.

Objective

In this paper, we assessed what are the immediate impacts of the COVID-19 crisis on the agricultural and food systems of the Caribbean.

Methods

To this end, we conducted online surveys among farmers, households and experts of the region. We assessed the nature, strength and reversibility of the impacts but also the factors of resilience in the face of the crisis.

Results and conclusions

Our study shows that the COVID-19 crisis has had strong impacts on Caribbean farmers and has weakened agricultural systems. The main impacts identified were a drop in income, production losses due to difficulties in marketing through conventional channels, but also difficulties in managing the farming systems due to reduced access to inputs and labor. In order to cope, farmers have adapted to be more self-sufficient: reduction in the size of cultivated areas, search for short marketing channels, diversification of production and reorientation towards the needs of the local market, recourse to mutual aid between farmers. If these effects appear to be non-irreversible in an island like Guadeloupe, the situation is different in other islands of the region where farmers have had to sell livestock, seek new off-farm income and sometimes sell land to cope. In terms of impacts on food systems, the crisis has led to strong constraints such as a reduction in food intake and diversity and increased reliance on family and social mutual aid. Our study also shows that the crisis has had an impact on consumer behavior and their perception of the importance of the agricultural sector: reduction of food waste, return to fresh and local products, adaptation of the diet, consumption of new products, and cultivation of food gardens. Finally, our study shows that the crisis has had an effect of strengthening the links between farmers and the rest of the population.

Significance

Thus if the crisis has had seriously damaging consequences, it can also be the trigger and catalyst for an agro-ecological transition and the development of a circular and territorialized bio-economy to strengthen the resilience of Caribbean agricultural and food systems and facilitate the achievement of sustainability and food security objectives.

73. Boekhorst F. The influence of the COVID-19 outbreak on European trainees in obstetrics and gynaecology: A survey of the impact on training and trainee / F. Boekhorst, H. Khattak, E. G. Topcu [et al.] // European Journal of Obstetrics & Gynecology and Reproductive Biology. – 2021. – Vol. 261. – P. 52–58. – URL: <https://www.sciencedirect.com/science/article/pii/S0301211521001664>

Objective

The purpose of this study is to evaluate how the obstetrics and gynaecology residency program and trainees have been affected by the Corona Virus Disease-19 (COVID-19) pandemic in Europe.

Study Design

This study is a cross-sectional explorative survey using an online questionnaire. The questionnaire comprised of 40 questions that were subdivided into 4 subjects; workload, specialist training aspects in obstetrics and gynaecology, health and safety of the trainee and women's health and maternal health issues. Inclusion criteria consisted of being a trainee in Obstetrics and Gynaecology (ObGyn) at the time of the COVID-19 pandemic in Europe or trainees who had recently finished their training during the time of the outbreak. Taking part in the survey was voluntary. The questionnaire was shared on the website of the European Network for Trainees in Obstetrics and Gynaecology (ENTOG), ENTOG social media, in the ENTOG-newsletter and through the national representatives of ENTOG.

Results

110 ObGyn trainees from 25 different countries responded to the questionnaire. Almost all trainees (95 %, N = 105) reported an effect on their training due to COVID-19 pandemic. Training was interrupted in 21 % of cases (n = 23). Trainees observed a decrease in educational activities or lectures and a decrease in number of patients. The possibility of training surgical skills decreased, because 67 % (N = 74) trainees reported that surgeries were cancelled. Trainees expressed concerns about reaching the goals of their ObGyn specialist training in 60 % (n = 66) of cases. A decrease in workload was experienced during the first COVID-19 wave in Europe by 60 % (n = 66) of trainees. On average these trainees worked 33 % less hours compared to a normal workweek. Although 22 % (n = 24) were expected to be available continuously for 24 h a day and 7 days a week for unscheduled duties, 15 % (n = 16) were deployed to work on special COVID-units. Concerning preparation, 45 % of the trainees (n = 50) had not received any training for treating COVID-positive patients. Trainees claimed to have enough personal protective equipment (PPE), although problems were reported. Any form of psychosocial support was arranged for 65 % of trainees (n = 71) by the hospital or department. The results of the survey suggest that obstetric care was not affected much (92 % (n = 102) of the respondents said at least necessary care continued) while patients in need for reproductive medicine were affected the most; out of the 110 departments 58 % (n = 60) were closed and 35 % (n = 36) reduced their activities. Access to family planning and benign gynaecology were also significantly reduced; 77 % and 87 % respectively of the departments were less accessible or only open to emergency cases.

Conclusion

COVID-19 pandemic has had a tremendous effect on the ObGyn training in Europe. Exposure to learning opportunities, surgeries and teaching has been decreased during the outbreak and may result in a decrease in quality of care provided to women in the future if impairment of training is not recovered.

74. Bok S. Validation of the COVID-19 Disbelief Scale: Conditional indirect effects of religiosity and COVID-19 fear on intent to vaccinate / S. Bok, D. E. Martin, M. Lee // Acta Psychologica. – 2021. – Vol. 219. – P. 103382. – URL: <https://www.sciencedirect.com/science/article/pii/S0001691821001323>

The COVID-19 pandemic uprooted economies, infected millions, and altered behaviors. Yet, the invisible nature of the disease, paralleled symptoms to the common flu, and misinformation generated COVID-19 disbelief. Many believed COVID-19 was a hoax. Many believed case numbers were fabricated. Others claimed it was a ruse for sociopolitical reasons. The construction of the 8-item COVID-19 Disbelief Scale (CDS) measures the false belief COVID-19 was not real and life-threatening. The CDS demonstrated discriminant validity and robust reliability across two studies. Predictive analysis evinced COVID-19 disbelievers feared COVID-19 less and had lower intent to get vaccinated. In the U.S., certain religious organizations spread misinformation. Religiosity associated with greater COVID-19 disbelief. Among disbelievers, conditional indirect effects of religiosity associated with greater COVID-19 fear and higher intent to get vaccinated. The moderated mediation model validated utility of the CDS as a concise instrument to study variable relationships.

75. Boldrinia T. Consequences of the COVID-19 pandemic on admissions to general hospital psychiatric wards in Italy: Reduced psychiatric hospitalizations and increased suicidality / T. Boldrinia, P. Girardia, M. Clerici [et al.] // Progress in Neuro-Psychopharmacology and Biological Psychiatry. – 2021. – Vol. 110. – P. 110304. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0278584621000634>

Aims. The present investigation aimed at evaluating differences in psychiatric hospitalizations in Italy during and after the lockdown due to the novel coronavirus disease 2019 (COVID-19), compared to the same periods in 2018 and 2019.

Methods. We obtained and analyzed anonymized data on psychiatric admissions (n = 4550) from 12 general hospital psychiatric wards (GHPWs) in different Italian regions (catchment area = 3.71 millions of inhabitants). Using a mixed-effects Poisson regression model, we compared admission characteristics across three periods: (a) March 1–June 30, 2018 and 2019; (b) March 1–April 30, 2020 (i.e., lockdown); and (c) May 1–June 30, 2020 (i.e., post-lockdown).

76. Borzouei S. Predictors of COVID-19 related death in diabetes patients: A case-control study in Iran / S. Borzouei, M. Mohammadian-khosnoudb, T. Omid [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 4. – P. 102149. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121001600>

Identifying the predictors of COVID-19 related death in diabetes patients can assist physicians for detecting risk factors related to the worse outcome in these patients. In this study we investigated the predictors of the death in patients with diabetes compared with non-diabetic COVID-19 patients.

Methods

In the present case-control study, the case group were diabetic patients with COVID-19 and the control group included Non-diabetic COVID-19 patients. The data source regarding the demographic characteristics, clinical symptoms, laboratory, and radiological findings on admission as well as the complications, treatment, and outcomes during hospitalization were gathered from their medical record through two trained nurses. Adjusted and unadjusted odds ratios (OR) estimate were calculated using the simple and multiple logistic regression through backward model.

Results

The mean (SD) age of the case group was higher than that of the control group; [65.24 (12.40) years vs. 59.35 (17.34) years, respectively ($P < 0.001$)]. Results of the adjusted logistic regression model showed that, advanced age (+60 year) (OR = 5.13, $P = 0.006$), addiction (OR = 5.26, $P = 0.033$), high level of Blood urea nitrogen (OR = 5.85, $P < 0.001$), and high level of Alkaline Phosphatase (OR = 3.38, $P = 0.012$) in diabetic patients were significantly associated with increase the odds of death in COVID-19 patients.

Conclusion

We found that in COVID-19 patients with diabetes; advanced age, addiction, high level of BUN and Alp and in non-diabetic COVID-19 patients advanced age, dyspnea, high level of BUN and SGOT were associated with increase risk of death in these patients.

77. Botella A. G. Recommendations on intervention for hepatobiliary oncological surgery during the COVID-19 pandemic / A. G. Botella, M. A. G. Bravo, M. D. Martino [et al.] // Cirugía Española. – 2021. – Vol. 99, № 3. – P. 174–182. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2173507721000661>

The SARS-CoV-2 (COVID-19) pandemic requires an analysis in the field of oncological surgery, both on the risk of infection, with very relevant clinical consequences, and on the need to generate plans to minimize the impact on possible restrictions on health resources.

The AEC is making a proposal for the management of patients with hepatopancreatobiliary (HPB) malignancies in the different pandemic scenarios in order to offer the maximum benefit to patients, minimising the risks of COVID-19 infection, and optimising the healthcare resources available at any time. This requires the coordination of the different treatment options between the

departments involved in the management of these patients: medical oncology, radiotherapy oncology, surgery, anaesthesia, radiology, endoscopy department and intensive care.

The goal is offer effective treatments, adapted to the available resources, without compromising patients and healthcare professionals' safety.

78. Bragatto P. The impact of the COVID-19 pandemic on the safety management in Italian Seveso industries / P. Bragatto, T. Vair, M. F. Milazz [et al.] // Journal of Loss Prevention in the Process Industries. – 2021. – Vol. 70. – P. 104393. – URL: <https://www.sciencedirect.com/science/article/pii/S095042302100005X>

The paper discusses the impact of the COVID-19 pandemic on the Italian chemical and process industries, where Directive 2012/18/EU Seveso III, for the control of Major Accident Hazard (MAH), is enforced. The Safety Management System (SMS) for the control of MAH, which has been mandatory for 20 years in Italian Seveso Establishments, has been highly stressed by the external pressure, related in some way to the COVID-19 pandemic. Fairly, most companies, in particular in oil and gas sectors, have demonstrated an adequate capability to reconcile operation continuity and health requirements. This experience is providing the establishment operators and the regulators with valuable suggestions for the improvements of the SMS-MAH. Within this framework, an innovative organisational resilience model is proposed, aiming at the development of a higher capability to face future new crisis. The current SMS-MAH already includes some basic pillars to enhance resilience, which were valuable during the pandemic crisis, but a full and rationale development is still needed. Starting from the first pandemic phase experience, this paper presents a novel tool to assess the degree of “resilience” of a SMS-MAH. It is based on a questionnaire, featuring 25 questions grouped into eight items, according to the typical SMS-MAH structure. A two level AHP model has been developed in order to define the weights to be assigned to each point. The AHP panel included industrial practitioners, regulators, authorities and researchers. The results are based on the COVID-19 experience and consequently the developed model is tailored to face health emergencies, but the approach may be easily transferred to other external crises.

79. Brailovskaia J. The association between depression symptoms, psychological burden caused by Covid-19 and physical activity: An investigation in Germany, Italy, Russia, and Spain / J. Brailovskaia, F. Cosci, G. Mansueto [et al.] // Psychiatry Research. – 2021. – Vol. 295. – P. 113596. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0165178120332571>

The outbreak of Covid-19 required the re-organization of everyday life. While some people accepted this challenge, other experienced the current situation

as a heavy burden that impedes the adaptation to the new life conditions. The present study investigated factors that can impact the level of burden caused by Covid-19. Burden, depression symptoms and frequency of physical activity (e.g., jogging, cycling) were assessed via online surveys in overall 1,931 people from four countries (Germany: N = 625; Italy: N = 936; Russia: N = 230; Spain: N = 140). Similar result patterns were found in all country-specific samples. Burden by Covid-19 was significantly positively associated with depression symptoms, while it was significantly negatively linked to physical activity. Moreover, physical activity buffered the association between depression symptoms and burden. The present cross-national findings emphasize the protective effect of physical activity specifically in times of Covid-19. This issue should be addressed in governmental programs to longitudinally protect mental and physical health and to enhance the willingness to adhere to the anti-Covid-19 measures among the population.

80. Brailovskaia J. The relationship between social media use, stress symptoms and burden caused by coronavirus (Covid-19) in Germany and Italy: A cross-sectional and longitudinal investigation / J. Brailovskaia, F. Cosci, G. Mansueto [et al.] // Journal of Affective Disorders Reports. – 2021. – Vol. 3. – P. 1000067. – URL: <https://www.sciencedirect.com/science/article/pii/S2666915320300676>

Introduction

The need for “social distancing” to reduce the spread of Covid-19 is accompanied by an increase of social media use (SMU). Many people engage in intensive online activity to find information about the current Covid-19 situation and to interact about it with other users. The present study investigated the extent of SMU as Covid-19 information source and its relationship with stress symptoms and burden caused by the pandemic in Germany and Italy.

Methods

Cross-national longitudinal (Germany, N = 501; 3-months period) and cross-sectional (Italy, N = 951) data on Covid-19 information sources, stress symptoms and burden caused by Covid-19 were collected via online surveys.

Results

About 50% of the German sample and about 60% of the Italian sample frequently used SM as Covid-19 information source. Cross-sectional analyses in both countries revealed that SMU is positively associated with stress symptoms and experienced burden. Moreover, stress symptoms mediated the link between SMU and burden. This was also confirmed by longitudinal analyses in Germany (burden assessed three months after SMU and stress symptoms).

Limitations

The mostly female and relatively young sample composition limits the generalizability of present findings. Only two European countries were investigated.

Conclusions

The present findings reveal a potential negative impact of enhanced SMU on individual mental health state and behavior. Additionally, they emphasize the significance of a conscious and cautious use of SM as information source specifically during the pandemic.

81. Breier M. The role of business model innovation in the hospitality industry during the COVID-19 crisis / M. Breier, A. Kallmuenzer, T. Clauss [et al.] // International Journal of Hospitality Management. – 2021. – Vol. 92. – P. 102723. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431920302759>

The hospitality industry worldwide is among the hardest-hit industries from the COVID-19 lockdowns. Initial theoretical and practical observations in the hospitality industry indicate that business model innovation (BMI) might be a solution to recover from and successfully cope with the COVID-19 crisis. Interestingly, some firms in the hospitality industry already started to successfully adapt their business models. This study explores the why and how of these successful recovery attempts through BMI by conducting a multiple case study of six hospitality firms in Austria. We rely on interview data from managers together with one of their main stammgasts for each case, which we triangulate with secondary data for the analysis. Findings show that BMI is applied during and after the crisis to create new revenue streams and secure a higher level of liquidity, with an important role of stammgasts.

82. Brinca P. Measuring labor supply and demand shocks during COVID-19 / P. Brinca, J. B. Duarte, M. Faria-e-Castro // European Economic Review. – 2021. – Vol. 139. – P. 103901. – URL: <https://www.sciencedirect.com/science/article/pii/S0014292121002130>

We measure labor demand and supply shocks at the sector level around the COVID-19 outbreak by estimating a Bayesian structural vector autoregression on monthly statistics of hours worked and real wages. Most sectors were subject to large negative labor supply and demand shocks in March and April 2020, with substantial heterogeneity in the size of shocks across sectors. Our estimates suggest that two-thirds of the drop in the aggregate growth rate of hours in March and April 2020 are attributable to labor supply. We validate our estimates of supply shocks by showing that they are correlated with sectoral measures of telework.

83. Bruin S. Clinical features and prognostic factors in Covid-19: A prospective cohort study / S. Bruin, L. D. Bos, M. A. Roon [et al.] //

Background

Mortality rates are high among hospitalized patients with COVID-19, especially in those intubated on the ICU. Insight in pathways associated with unfavourable outcome may lead to new treatment strategies.

Methods

We performed a prospective cohort study of patients with COVID-19 admitted to general ward or ICU who underwent serial blood sampling. To provide insight in the pathways involved in disease progression, associations were estimated between outcome risk and serial measurements of 64 biomarkers in potential important pathways of COVID-19 infection (inflammation, tissue damage, complement system, coagulation and fibrinolysis) using joint models combining Cox regression and linear mixed-effects models. For patients admitted to the general ward, the primary outcome was admission to the ICU or mortality (unfavourable outcome). For patients admitted to the ICU, the primary outcome was 12-week mortality.

Findings

A total of 219 patients were included: 136 (62%) on the ward and 119 patients (54%) on the ICU; 36 patients (26%) were included in both cohorts because they were transferred from general ward to ICU. On the general ward, 54 of 136 patients (40%) had an unfavourable outcome and 31 (23%) patients died. On the ICU, 54 out of 119 patients (45%) died. Unfavourable outcome on the general ward was associated with changes in concentrations of IL-6, IL-8, IL-10, soluble Receptor for Advanced Glycation End Products (sRAGE), vascular cell adhesion molecule 1 (VCAM-1) and Pentraxin-3. Death on the ICU was associated with changes in IL-6, IL-8, IL-10, sRAGE, VCAM-1, Pentraxin-3, urokinase-type plasminogen activator receptor, IL-1-receptor antagonist, CD14, procalcitonin, tumor necrosis factor alfa, tissue factor, complement component 5a, Growth arrest-specific 6, angiopoietin 2, and lactoferrin. Pathway analysis showed that unfavourable outcome on the ward was mainly driven by chemotaxis and interleukin production, whereas death on ICU was associated with a variety of pathways including chemotaxis, cell-cell adhesion, innate host response mechanisms, including the complement system, viral life cycle regulation, angiogenesis, wound healing and response to corticosteroids.

Interpretation

Clinical deterioration in patients with severe COVID-19 involves multiple pathways, including chemotaxis and interleukin production, but also endothelial dysfunction, the complement system, and immunothrombosis. Prognostic markers showed considerable overlap between general ward and ICU patients, but we

identified distinct differences between groups that should be considered in the development and timing of interventional therapies in COVID-19.

Funding

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84. Brutto O. H. D. SARS-CoV-2-related mortality in a rural Latin American population / O. H. D. Brutto, A. F. Costa, R. M. Mera [et al.] // *International Journal of Infectious Diseases*. – 2020. – Vol. 99. – P. 226–228. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306305>

A sudden increase in adult mortality associated with respiratory diseases was noticed in Atahualpa (a rural Ecuadorian village), coinciding with the introduction of SARS-CoV-2 in the region. From a total of 1,852 individuals aged ≥ 18 years, 40 deaths occurred between January and June, 2020. In addition, a seroprevalence survey showed that 45% of the adult population have SARS-CoV-2 antibodies. Verbal autopsies revealed SARS-CoV-2 as the most likely cause of death in 29 cases. The mean age of suspected or confirmed SARS-CoV-2 cases was 76.9 ± 12.1 years, while that of those dying from unrelated causes was 60.3 ± 20.4 years ($p = 0.003$). The overall mortality rate was 21.6 per 1,000 population (95% C.I.: 15.9 – 29.2), almost three-quarters of it due to SARS-CoV-2 (15.7 per 1,000; 95% C.I.: 11 – 22.4). This configures a 266% of excess mortality when compared to 5.9 per 1,000 (95% C.I.: 3.3 – 10.6) deaths from other causes. When SARS-CoV-2 mortality rate was calculated in individuals aged ≥ 60 years, it raised up to 68.9 per 1,000 (95% C.I.: 47.8 – 98.4). After peaking in April and May, mortality significantly decreased. It is possible that the high proportion of infected individuals and the resulting herd immunity contributed to the observed reduction in mortality.

85. Budd T. An assessment of air passenger confidence a year into the COVID-19 crisis: A segmentation analysis of passengers in Norway / T. Budd, P. Suau-Sanchez, N. Halpern [et al.] // *Journal of Transport Geography*. – 2021. – Vol. 96. – P. 103204. – URL: <https://www.sciencedirect.com/science/article/pii/S096669232100257X>

The COVID-19 crisis has become the most intense and long-lasting in the history of aviation. There is already a significant literature on the immediate impact of the outbreak, as well as on speculation on the future evolution of the industry. This paper seeks to contribute to this discussion by assessing a year into the crisis the demand related aspects and passenger behavioural impacts of the pandemic. Specifically, the paper aims to identify discrete market segments of air passengers according to their shared attitudes and preferences about air travel in light of the COVID-19 crisis, as well as past behaviour and future travel intentions. To achieve this, we analyse data from a large ($n = 2096$) online questionnaire

survey of air passengers in Norway. The cluster analysis identifies four distinct passenger segments, with each displaying varying attitudes, behaviours, and levels of concern about air travel. One of these groups, described as the ‘Apprehensive Elders’, were identified as having the highest level of concern about flying, and subsequently showed a sharp decline in their intention to travel in the future. Another group, termed the ‘Cautious Commuters’, showed similarly enhanced levels of concerns about flying, but maintained a high propensity to fly following the pandemic despite these concerns. Regarding possible interventions to increase confidence in flying in the future, across all segments the data shows a clear preference for more ‘traditional’ active interventions, including wearing of face masks and enforcement of physical distancing, over and above passive or technological interventions. Norway represents a valuable case as a possible signal for future policy and practice in relation to the recovery of air travel following the pandemic. The findings have important implications for air transport managers and decision makers in terms of managing the perceptions and expectations of different passenger groups as air travel begins to return.

86. Buggs-Saxton C. Care of Pediatric Patients with Diabetes During the Coronavirus Disease 2019 (COVID-19) Pandemic / C. Buggs-Saxton // Pediatric Clinics of North America. – 2021. – Vol. 68, № 5. – P. 1093–1101. – URL: <https://www.sciencedirect.com/science/article/pii/S0031395521000912>

Coronavirus disease 2019 and diabetes

The coronavirus disease 2019 (COVID-19), which is caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), created a pandemic in March 2020 with now more than 120 million cases and more than 2.5 million deaths worldwide. Early observations from studies in China, Italy, England, and the United States reported that adults with diabetes were more vulnerable to developing severe complications of COVID-19 including severe acute respiratory syndrome (SARS) with multiorgan failure and death.^{1, 2, 3} As type 2 diabetes (T2D) is the more common form of diabetes in adults, it was unclear during the early phase of the pandemic if there was a similar increased risk of morbidity among individuals with type 1 diabetes (T1D) and COVID-19. One study of hospitalized adult patients with COVID-19 in the United Kingdom reported that of the 23,698 patients who died, one-third had diabetes with 31.4% T2D compared with 1.5% T1D.⁴ Observations in adults with T2D and COVID-19 reported higher morbidity in individuals with a history of microvascular and macrovascular complications associated with diabetes.⁵ Therefore, early during the COVID-19 pandemic diabetes was one of the major pre-existing conditions associated with increased morbidity and mortality.

87. Caballero-Morales S.-O. Innovation as recovery strategy for SMEs in emerging economies during the COVID-19 pandemic / S.-O. Caballero-Morales // Research in International Business and Finance. – 2021. –

The quarantine and disruption of non-essential activities as measure to contain the COVID-19 pandemic has negatively affected all economies around the World. This has had a deeper impact on small and medium enterprises (SMEs) in emerging economies because they have very limited resources and vulnerable supply chain and business-to-business/business-to-clients relationships. In this context, it is expected that after the pandemic many of these enterprises will disappear as the “new normality” will require changes in business and infrastructure management. To reduce this risk, innovation is identified as a key aspect of business recovery in the ongoing and post-COVID-19 pandemic period. This work presents a multidisciplinary methodological approach to guide these enterprises to innovate their products for new markets and making a better use of their limited available resources. As an example of this approach, the research-supported development of a new product for a family-owned SME was performed in a zone with high COVID-19 risk. The results provide insight regarding innovation as a survival tool for SMEs during and after the COVID-19 contingency, and the use of digital resources is identified as the main facilitator for networking and research-based design of innovative products within the “social distance” context.

88. Cabello A. COVID-19 in people living with HIV: A multicenter case-series study / A. Cabello, B. Zamarro, S. Nistal [et al.] // International Journal of Infectious Diseases. – 2021. – Vol. 102. – P. 310–315. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220322645>

Objectives

Information on how COVID-19 affects people living with HIV (PLHIV) remains scarce.

Methods

An observational study was conducted in four public hospitals in Madrid. All HIV patients with confirmed or suspected COVID-19 were included and compared with COVID-19 patients without HIV infection.

Results

Sixty-three patients with HIV infection and confirmed or suspected COVID-19 were analyzed. The median age was 46 years (IQR: 37–56 years), and 88.9% were men. The median duration of HIV infection was 10.8 years (IQR: 6.5–16.8 years), and 96.8% were on antiretroviral therapy. 84.1% had previous comorbidities. The most common symptoms were fever (66.1%), cough (66.1%) and dyspnea (46.8%). Pneumonia was found in 47.5%, 28.6% of patients had severe disease, and 32.3% were admitted to hospital. The ICU admission rate and the mortality rate were both 3.17%. A significant association was observed

between age, arterial hypertension, overweight, and diabetes mellitus and the severity of COVID-19. No association was observed between HIV-related factors and the severity of COVID-19. The rate of COVID-19 in HIV-patients was 1.68%. Similar hospitalization (31.74% vs 32.57%) and ICU admission (3.17% vs 2%) rates were observed with non-HIV infected patients. A lower mortality rate during hospitalization (10% vs 21.37%) and a lower global mortality rate (3.17% vs 6.96%) were also observed.

Conclusions

Established poor prognostic factors for COVID-19 patients, such as age and comorbidities, remain the main determinants for PLHIV. Neither the HIV severity nor the type of ARV treatment seem to influence the outcome of COVID-19. Large prospective cohorts are needed in order to establish the differences between HIV-positive and HIV-negative patients.

89. Calatia R. Preliminary suicide trends during the COVID-19 pandemic in Milan, Italy / R. Calatia, G. Gentile, M. Fornaro [et al.] // Journal of Psychiatric Research. – 2021. – Vol. 143. – P. 21–22. – URL: <https://www.sciencedirect.com/science/article/pii/S0022395621005288>

Europe was the second most affected continent by the 2019 coronavirus disease (COVID-19) pandemic, with Italy paying very high death tolls, especially in Lombardy, a region in Northern Italy. The pandemic profoundly impacted mental health and the world's rates of suicide since its outbreak. COVID-19-related suicide rates nonetheless followed a non-linear trend over the pandemic, decreasing after the COVID-19 outbreak, then raising during an extended follow-up period. Thus, we aimed to further assess the suicide rates in Lombardy. We carried out a retrospective analysis of all the autopsies performed in the year 2020 and within the first four months of the year 2021 through the database of the Institute of Forensic Medicine in Milan. In the year 2020, the recorded suicides decreased in comparison to 2016-2019 (21.19-22.97% of the autopsies), being 98 (18.08% out of 542 autopsies), while, in the first 4 months of the year 2021, 35 suicides were documented (185 autopsies, overall). Since the region of Lombardy was severely affected by COVID-19 since the early months of the year 2020, the extended retrospective follow-up allowed for firmer conclusions and insights about the need to extend the follow-up of COVID-19 pandemic beyond the first months after the outbreak, worldwide. This is with special emphasis towards the need to allocate the proper funds for mental health prevention for the general population as well as the most vulnerable ones, such as people with severe mental illness and caregivers, frontline health workers, and others bereaved by COVID-19.

90. Calvo C. Recommendations on the clinical management of the COVID-19 infection by the «new coronavirus» SARS-CoV2. Spanish Paediatric Association working group / C. Calvo, M. G. López-Hortelano, J. C. de C. Vicente [et al.] // Anales de Pediatría (English Edition). – 2020. –

On 31 December 2019, the Wuhan Municipal Committee of Health and Healthcare (Hubei Province, China) reported that there were 27 cases of pneumonia of unknown origin with symptoms starting on the 8 December. There were 7 serious cases with common exposure in market with shellfish, fish, and live animals, in the city of Wuhan. On 7 January 2020, the Chinese authorities identified that the agent causing the outbreak was a new type of virus of the Coronaviridae family, temporarily called «new coronavirus», 2019-nCoV. On January 30th, 2020, the World Health Organisation (WHO) declared the outbreak an International Emergency. On 11 February 2020 the WHO assigned it the name of SARS-CoV2 and COVID-19 (SARS-CoV2 and COVID-19).

The Ministry of Health summoned the Specialties Societies to prepare a clinical protocol for the management of COVID-19. The Spanish Paediatric Association appointed a Working Group of the Societies of Paediatric Infectious Diseases and Paediatric Intensive Care to prepare the present recommendations with the evidence available at the time of preparing them.

Resumen

El 31 de diciembre de 2019, la Comisión Municipal de Salud y Sanidad de Wuhan (provincia de Hubei, China) informó sobre la existencia de 27 casos de neumonía de etiología desconocida con inicio de síntomas el 8 de diciembre, incluyendo siete casos graves, con exposición común a un mercado de marisco, pescado y animales vivos en la ciudad de Wuhan. El 7 de enero de 2020, las autoridades chinas identificaron como agente causante del brote un nuevo tipo de virus de la familia Coronaviridae, denominado temporalmente “nuevo coronavirus”, 2019-nCoV. El 30 de enero de 2020 la Organización Mundial de la Salud declara el brote un Emergencia Internacional. El día 11 de febrero la OMS le asigna el nombre de COVID-19 (Coronavirus Infectious Disease). El Ministerio de Sanidad convoca a las Sociedades de Especialidades para la elaboración de un protocolo clínico de manejo de la infección por COVID -19. La Asociación Española de Pediatría nombra un grupo de trabajo de las Sociedades de Infectología Pediátrica y Cuidados Intensivos Pediátricos que se encargan de elaborar las presentes recomendaciones con la evidencia disponible en el momento de su realización.

91. Campos-Ferreira D. COVID-19 challenges: From SARS-CoV-2 infection to effective point-of-care diagnosis by electrochemical biosensing platforms / D. Campos-Ferreira, V. Visani, C. Córdula [et al.] // Biochemical Engineering Journal. – 2021. – Vol. 176. – P. 108200. – URL: <https://www.sciencedirect.com/science/article/pii/S1369703X2100276X>

In January 2020, the World Health Organization (WHO) identified a new zoonotic virus, SARS-CoV-2, responsible for causing the COVID-19 (coronavirus disease 2019). Since then, there has been a collaborative trend between the scientific community and industry. Multidisciplinary research networks try to understand the whole SARS-CoV-2 pathophysiology and its relationship with the different grades of severity presented by COVID-19. The scientific community has gathered all the data in the quickly developed vaccines that offer a protective effect for all variants of the virus and promote new diagnostic alternatives able to have a high standard of efficiency, added to shorter response analysis time and portability. The industry enters in the context of accelerating the path taken by science until obtaining the final product. In this review, we show the principal diagnostic methods developed during the COVID-19 pandemic. However, when we observe the diagnostic tools section of an efficient infection outbreak containment report and the features required for such tools, we could observe a highlight of electrochemical biosensing platforms. Such devices present a high standard of analytical performance, are low-cost tools, easy to handle and interpret, and can be used in the most remote and low-resource regions. Therefore, probably, they are the ideal point-of-care diagnostic tools for pandemic scenarios.

92. Campos-Murguía A. Liver fibrosis in patients with metabolic associated fatty liver disease is a risk factor for adverse outcomes in COVID-19 / A. Campos-Murguía, B. M. Román-Calleja, I. VicenteToledo-Coronado // Digestive and Liver Disease. – 2021. – Vol. 53, № 5. – P. 525–533. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1590865821000347>

Background

Metabolic diseases are risk factors for severe Coronavirus disease (COVID-19), which have a close relationship with metabolic dysfunction-associated fatty liver disease (MAFLD).

Aims

To evaluate the presence of MAFLD and fibrosis in patients with COVID-19 and its association with prognosis.

Methods

Retrospective cohort study. In hospitalized patients with COVID-19, the presence of liver steatosis was determined by computed tomography scan (CT). Liver fibrosis was assessed using the NAFLD fibrosis score (NFS score), and when altered, the AST to platelet ratio index (APRI) score. Mann-Whitney U, Student's t-test, logistic regression analysis, Kaplan-Meier curves and Cox regression analysis were used.

93. Cao X. Seeking transnational social protection during a global pandemic: The case of Chinese immigrants in the United States / X. Cao, K. C.-Y. Sun // Social Science & Medicine. – 2021. – Vol. 287. – P. 114378. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621007103>

Drawing on in-depth interviews with Chinese immigrants in the U.S. during the COVID-19 pandemic, this article examines the construction of immigrants' transnational social safety net and its gaps as the pandemic struck their home and host societies successively. Building upon the scholarship on transnational migration and transnational social protection, we argue that understanding how immigrants manage moments of crisis requires a cross-border optic. As we show, transnational connections can be translated into valuable material and immaterial resources. However, such protections are contingent upon the reception of their local receiving communities. The perceived hierarchy between the sending and receiving society, coupled with the U.S.' lack of experience with infectious disease outbreaks, limits the extent to which immigrants could put their transnational knowledge and resources to use. Our analyses shed new light upon the circumstances that empower and constrain immigrants as the global pandemic unsettles their daily routines.

94. Cappelle F. An analysis of the reach and effectiveness of distance learning in India during school closures due to COVID-19 / F. Van Cappelle, V. Chopra, J. Ackers [et al.] // International Journal of Educational Development. – 2021. – Vol. 85. – P. 102439. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000924>

In India, more than 276 million children and youth were out of school for extended periods since March 2020 due to school closures in response to COVID-19. A key challenge has been how to measure the impact of responses to continuity of learning both to ensure more effective responses in the event of further disruptions, but also to help the education community conceptualize more creative and effective approaches to learning, through blended and flexible approaches. This study reflects on the findings from a UNICEF survey targeting parents and adolescents across 6 states in India, and identifies lessons learned for addressing learning inequities during future school closures. We focus on measuring three key variables – access to technology, their utilization, and perceived learning for different profiles of children. As students began learning from home, technology access rates in households were initially used to determine the estimated maximum reach of different distance learning modalities during school closures. Beyond access, we find significant variations in adolescents' use of technology for learning purposes and their perceptions of learning, linked to the type of remote learning modality, gender, location and type of school. We discuss the implications for government strategies and policies to ensure better utilization of technologies which are available in households and to address equity gaps in learning opportunities.

95. Cardona S. Intubation rate of patients with hypoxia due to COVID-19 treated with awake proning: A meta-analysis / S. Cardona, J. Downing, R. Alfalasi [et al.] // The American Journal of Emergency Medicine. –

Background

Awake prone positioning (PP), or proning, is used to avoid intubations in hypoxic patients with COVID-19, but because of the disease's novelty and constant evolution of treatment strategies, the efficacy of awake PP is unclear. We conducted a meta-analysis of the literature to assess the intubation rate among patients with COVID-19 requiring oxygen or noninvasive ventilatory support who underwent awake PP.

Methods

We searched PubMed, Embase, and Scopus databases through August 15, 2020 to identify relevant randomized control trials, observational studies, and case series. We performed random-effects meta-analyses for the primary outcome of intubation rate. We used moderator analysis and meta-regressions to assess sources of heterogeneity. We used the standard and modified Newcastle-Ottawa Scales (NOS) to assess studies' quality.

Results

Our search identified 1043 articles. We included 16 studies from the original search and 2 in-press as of October 2020 in our analysis. All were observational studies. Our analysis included 364 patients; mean age was 56.8 (SD 7.12) years, and 68% were men. The intubation rate was 28% (95% CI 20%–38%, I² = 63%). The mortality rate among patients who underwent awake PP was 14% (95% CI 7.4%–24.4%). Potential sources of heterogeneity were study design and setting (practice and geographic).

Conclusions

Our study demonstrated an intubation rate of 28% among hypoxic patients with COVID-19 who underwent awake PP. Awake PP in COVID-19 is feasible and practical, and more rigorous research is needed to confirm this promising intervention.

96. Caroselli C. Diagnostic Imaging in Newborns, Children and Adolescents Infected with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2): Is There a Realistic Alternative to Lung High-Resolution Computed Tomography (HRCT) and Chest X-Rays? A Systematic Review of the Literature / C. Caroselli, M. Blaivas, S. Falzetti // *Ultrasound in Medicine & Biology*. – 2021. – Vol. 47, № 11. – P. 3034–3040. – URL: <https://www.sciencedirect.com/science/article/pii/S0301562921003124>

Chest computed tomography has been frequently used to evaluate patients with potential coronavirus disease 2019 (COVID-19) infection. However, this may be particularly risky for pediatric patients owing to high doses of ionizing

radiation. We sought to evaluate COVID-19 imaging options in pediatric patients based on the published literature. We performed an exhaustive literature review focusing on COVID-19 imaging in pediatric patients. We used the search terms “COVID-19,” “SARS-CoV2,” “coronavirus,” “2019-nCoV,” “Wuhan virus,” “lung ultrasound (LUS),” “sonography,” “lung HRCT,” “children,” “childhood” and “newborn” to query the online databases PubMed, Medical Subject Headings (MeSH), Embase, LitCovid, the World Health Organization COVID-19 database and Medline Bireme. Articles meeting the inclusion criteria were included in the analysis and review. We identified only seven studies using lung ultrasound (LUS) to diagnose severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in newborns and children. The studies evaluated small numbers of patients, and only 6% had severe or critical illness associated with COVID-19. LUS showed the presence of B-lines in 50% of patients, sub-pleural consolidation in 43.18%, pleural irregularities in 34.09%, coalescent B-lines and white lung in 25%, pleural effusion in 6.82% and thickening of the pleural line in 4.55%. We found 117 studies describing the use of chest X-ray or chest computed tomography in pediatric patients with COVID-19. The proportion of those who were severely or critically ill was similar to that in the LUS study population. Our review indicates that use of LUS should be encouraged in pediatric patients, who are at highest risk of complications from medical ionizing radiation. Increased use of LUS may be of particularly high impact in under-resourced areas, where access to chest computed tomography may be limited.

97. Casadevall A. The Assessment of Convalescent Plasma Efficacy against COVID-19 / A. Casadevall, B. J. Grossman, J. P. Henderson [et al.] // *Med.* – 2020. – Vol. 1, № 1. – P. 66–77. – URL: <https://www.sciencedirect.com/science/article/pii/S2666634020300258>

Summary

Antibody-based therapy for infectious diseases predates modern antibiotics and, in the absence of other therapeutic options, was deployed early in the SARS-CoV-2 pandemic through COVID-19 convalescent plasma (CCP) administration. Although most studies have demonstrated signals of efficacy for CCP, definitive assessment has proved difficult under pandemic conditions, with rapid changes in disease incidence and the knowledge base complicating the design and implementation of randomized controlled trials. Nevertheless, evidence from a variety of studies demonstrates that CCP is as safe as ordinary plasma and strongly suggests that it can reduce mortality if given early and with sufficient antibody content.

98. Casado-Aranda L.-A. Analysis of the scientific production of the effect of COVID-19 on the environment: A bibliometric study / L.-A. Casado-Aranda, J. Sánchez-Fernández, M. I. Viedma-del-Jesús // *Environmental Research.* – 2020. – Vol. 193. – P. 110416. – URL: <https://www.sciencedirect.com/science/article/pii/S001393512031313X>

The fight against COVID-19 since January 2020 has become the top priority of more than 200 countries. In order to offer solutions to eradicate this global pandemic, the scientific community has published hundreds of articles covering a wide range of areas of knowledge. With the aim of synthesizing these publications, academics are resorting to bibliometric analyses from the perspectives of the disciplines such as biology, medicine, socioeconomics and tourism. Yet no bibliometric analysis has explored the diffuse and little-known growth of COVID-19 scientific publications in the field of environmental studies. The current study is the first of this type to fill this research gap. It has resorted to SciMAT software to evaluate the main topics, authors and journals of publications on the subject of COVID-19 combined with environmental studies spanning the period between 1 December 2019 and 6 September 2020. The search yielded a collection of 440 articles published in scientific journals indexed on by Web of Science and Scopus databases. These publications can be broken down into six main themes: (i) a sharp reduction in air pollution and an improvement of the level of water pollution; (ii) the relationship of wind speed (positive), ultraviolet radiation (positive) and humidity (negative) with the rate of infections; (iii) the effect of the pandemic on the food supply chain and waste habits; (iv) wastewater monitoring offers a great potential as an early warning sign of COVID-19 transmission; (v) artificial intelligence and smart devices can be of great use in monitoring citizen mobilization; and (vi) the lessons gleaned from the pandemic that help define actions to mitigate climate change. The results of the current study therefore offer an agenda for future research and constitute a starting point for academics in the field of environmental studies to evaluate the effects of COVID-19.

99. Castanon A. Cervical screening during the COVID-19 pandemic: optimising recovery strategies / A. Castanon, M. Rebolj, E. A. Burger [et al.] // *The Lancet Public Health*. – 2021. – Vol. 6, № 7. – P. e522–e527. – URL: <https://www.sciencedirect.com/science/article/pii/S2468266721000785>

Summary

Disruptions to cancer screening services have been experienced in most settings as a consequence of the COVID-19 pandemic. Ideally, programmes would resolve backlogs by temporarily expanding capacity; however, in practice, this is often not possible. We aim to inform the deliberations of decision makers in high-income settings regarding their cervical cancer screening policy response. We caution against performance measures that rely solely on restoring testing volumes to pre-pandemic levels because they will be less effective at mitigating excess cancer diagnoses than will targeted measures. These measures might exacerbate pre-existing inequalities in accessing cervical screening by disregarding the risk profile of the individuals attending. Modelling of cervical screening outcomes before and during the pandemic supports risk-based strategies as the most effective way for screening services to recover. The degree to which screening is organised

will determine the feasibility of deploying some risk-based strategies, but implementation of age-based risk stratification should be universally feasible.

100. Casas-Rojo J. M. Clinical characteristics of patients hospitalized with COVID-19 in Spain: results from the SEMI-COVID-19 Registry / J. M. Casas-Rojo, J. M. Antón-Santos, J. Millán-Núñez-Cortés [et al.] // Revista Clínica Española. – 2020. – Vol. 220, № 8. – P. 480–494. – URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7480740/>

Background

Spain has been one of the countries most affected by the COVID-19 pandemic.

Objective

To create a registry of patients with COVID-19 hospitalized in Spain in order to improve our knowledge of the clinical, diagnostic, therapeutic, and prognostic aspects of this disease.

Design

A multicenter retrospective cohort study that includes consecutive patients hospitalized with confirmed COVID-19 throughout Spain. Epidemiological and clinical data, additional tests at admission and at seven days, treatments administered, and progress at 30 days of hospitalization were collected from electronic medical records.

101. Caycho-Rodríguez T. COVID-19 contagion concern scale (PRE-COVID-19): Validation in Cuban patients with type 2 diabetes / T. Caycho-Rodríguez, L. W. Vilca, I. E. Corrales-Reyes [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 5. – P. 102245. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121002654>

Aims

It is important to have valid and reliable measures to determine the psychological impact of COVID-19 in patients with diabetes; however, few instruments have been developed and validated for this population. Therefore, the aim of this study was to validate the Scale of Worry for Contagion of COVID-19 (PRE-COVID-19) in a sample of patients with diabetes mellitus (DM).

Materials and methods

A total of 219 patients (66.2% female, mean age 58.5 SD = 18.2) participated, selected through non-probabilistic sampling. The PRE-COVID-19 and the Generalized Anxiety Disorder Scale-2 were applied. Reliability analysis was performed for internal consistency, structural equation modeling and item response theory modeling.

Results

The results show that a unidimensional 5-item model presents satisfactory goodness-of-fit indices and excellent reliability values. Likewise, convergent validity between the PRE-COVID-19 and a measure of anxiety is evident. All items present adequate discrimination parameters, allowing for discerning between those patients with critical concern about COVID-19 contagion from those with severe concern.

Conclusion

It is concluded that the PRE-COVID-19 is an instrument with adequate psychometric properties to measure concern about COVID-19 infection and the emotional impact in patients with DM.

102. Ceesay E. K. Potential impact of COVID-19 outbreak on education, staff development and training in Africa / E. K. Ceesay // Research in Globalization. – 2021. – Vol. 3. – P. 100049. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000149>

The COVID-19 pandemic begins in China in 2019 and because of the connections of China with the rest of the World in trade and businesses, the virus started to spread quickly around the World. This rapidly spread causes serious negative effects on education, small, medium, and large businesses, economic, health, food security, employment, traveling, environment, energy, market, even causes countries to take loans and their debt rises. The specific knowledge about COVID-19 also affects education, which is a source of human capital formation. The data obtained from an online survey, covered from June 2020 to October 2020. The methods used are descriptive statistics, correlation, and multiple regression analysis. As the results generated, we confirmed that peoples' perception about COVID-19 pandemic increases with mandatory testing in schools. In addition, the results also revealed that the work from the home measure is an insignificant negative impact on perception. 10% increases in work from the home measure, decreases people's perception by 0.0305%. The results also confirmed that the reopening of schools had significant negative impact on mandatory testing in schools. 10% increases in the reopening of school, decrease the mandatory testing in schools by 0.071%. In this regard, the main aim of this research is to understand the role of the COVID-19 pandemic on education, staff development, and training in Africa.

103. Chachkhiani D. Neurological complications of COVID19 during March 2020 at LCMC health university medical center: Dataset / D. Chachkhiani, M. Y. Soliman, D. Barua [et al.] // Data in Brief. – 2021. – Vol. 35. – P. 106944. – URL: <https://www.sciencedirect.com/science/article/pii/S2352340921002286>

We reviewed the electronic medical records (EMR) of patients hospitalized during the peak of the pandemic, March 1st through March 31st, to document the type and frequency of neurological problems seen in patients with COVID-19 at presentation to the emergency room. Secondary aims were to determine: 1) the frequency of neurological complaints during the hospital stay; 2) whether the presence of any neurological complaint at presentation or any of the individual types of neurological complaints at admission predicted three separate outcomes: death, length of hospital stay, or the need for intubation; and 3) if the presence of any neurological complaint or any of the individual types of neurological complaints developed during hospital stay predicted the previous three outcomes.

Setting

The Louisiana Health Sciences Center – New Orleans Institutional Review Board and the University Medical Center Clinical Research Review Committee approved the study protocol.

Data acquisition

We reviewed the electronic medical records (EMR) of patients hospitalized during March (March 1st through March 31st) 2020 at the University Medical Center New Orleans (UMCNO), who tested positive for SARS-CoV-2 during the same hospitalization. The EMR team generated a list of 257 patients admitted for COVID-19. We excluded seven patients because of a negative COVID-19 test result or incomplete medical record documentation. Three neurology residents (DC, MS, DB) reviewed the EMR in detail to capture the relevant medical history, clinical course, and laboratory test results and abstracted data into an electronic data collection spreadsheet.

We recorded the presentation or development of the following neurological complaints: headache, syncope, altered mental status, seizure, status epilepticus, and ischemic or hemorrhagic stroke.

Statistical analysis

We used “R” (statistics software) and Microsoft Excel to generate summary tables. To analyze hospital length of stay or death, we fitted a competing risks proportional hazards model for time to discharge or death using the `crr()` function in R version 4.0.0. The competing risks model allowed the analysis of hospital stay, taking into account that the censoring of cases due to death was not random. To predict the likelihood of intubation, we used the `glm()` function in R to fit a logistic regression model. For each model, we determined baseline demographic variables predictive of the outcomes and generated adjusted models. For variables with less than five cases per cell, we reported the p-values for Fisher's Exact Test.

The analyses and results are published in:

Chachkhiani, David et al. “Neurological complications in a predominantly African American population of COVID-19 predict worse outcomes during hospitalization.” *Clinical Neurology and Neurosurgery* (in press).

These data will be useful for researchers trying to build larger datasets regarding COVID19 neurological complications for metanalysis or to answer other questions requiring larger sample sizes.

104. Chandrasekaran N. D. Clinical characteristics and outcomes of COVID-19 patients with prediabetes / N. D. Chandrasekaran, M. R. V. R. Rao, T. Sathish // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 4. – P. 102192. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121002125>

Background and aims

We aimed to examine the clinical characteristics and outcomes of coronavirus disease 2019 (COVID-19) patients with prediabetes.

Methods

This was a retrospective cohort study of 102 COVID-19 patients admitted to a tertiary care hospital in India between May and October 2020.

Results

Most patients had a poor clinical profile on admission. They had high rates of invasive mechanical ventilation (48%), intensive care unit admission (48%), complications (72.6%), and mortality (32.4%).

Conclusion

People with prediabetes are at high risk for poor outcomes from COVID-19.

105. Chang Y.-F. Comparison of learning effectiveness between physical classroom and online learning for dental education during the COVID-19 pandemic / J. Y.-F. Chang, L.-H. Wang, T.-C. Lin [et al.] // Journal of Dental Sciences. – 2021. – Vol. 16, № 4. – P. 1281–1289. – URL: <https://www.sciencedirect.com/science/article/pii/S1991790221001653>

Background/purpose

Online learning has been used to continue dental education activities during the coronavirus disease 2019 (COVID-19). This study aimed to compare the learning effectiveness between physical classroom and online class learning for dental education during the COVID-19 pandemic by the questionnaire survey.

Materials and methods

A questionnaire-based online survey was used to evaluate the learning effectiveness on the dental students who took the compulsory course entitled “oral

pathology and diagnosis” in School of Dentistry, National Taiwan University in 2021. Student's t-test and Mann–Whitney U test were used to analyze the difference in learning effectiveness between physical classroom and online class learning for dental education during the COVID-19 pandemic.

Results

In this study, dental students tended to have a viewpoint that the learning effectiveness of online class learning was better than that of physical classroom learning. On the contrary, they tended to have a viewpoint that the convenience and fairness of physical classroom examination was better than that of online examination (all P-values < 0.001).

Conclusion

We conclude that our dental students are ready to take online courses. In terms of blended learning courses, the combination of physical classroom and online courses is the future trend of dental education. At this moment, dental schools must prepare their abilities for the implementation of online courses to respond to the COVID-19 pandemic and the next crisis, as well as for the needs of future dental education.

106. Chari A. Clinical features associated with COVID-19 outcome in multiple myeloma: first results from the International Myeloma Society data set / A. Chari, M. K. Samur, J. Martinez-Lopez [et al.] // Blood. – 2020. – Vol. 136, № 26. – P. 3033–3040. – URL: <https://www.sciencedirect.com/science/article/pii/S0006497120839044>

The primary cause of morbidity and mortality in patients with multiple myeloma (MM) is an infection. Therefore, there is great concern about susceptibility to the outcome of COVID-19–infected patients with MM. This retrospective study describes the baseline characteristics and outcome data of COVID-19 infection in 650 patients with plasma cell disorders, collected by the International Myeloma Society to understand the initial challenges faced by myeloma patients during the COVID-19 pandemic. Analyses were performed for hospitalized MM patients. Among hospitalized patients, the median age was 69 years, and nearly all patients (96%) had MM. Approximately 36% were recently diagnosed (2019-2020), and 54% of patients were receiving first-line therapy. Thirty-three percent of patients have died, with significant geographic variability, ranging from 27% to 57% of hospitalized patients. Univariate analysis identified age, International Staging System stage 3 (ISS3), high-risk disease, renal disease, suboptimal myeloma control (active or progressive disease), and 1 or more comorbidities as risk factors for higher rates of death. Neither history of transplant, including within a year of COVID-19 diagnosis, nor other anti-MM treatments were associated with outcomes. Multivariate analysis found that only age, high-risk MM, renal disease, and suboptimal MM control remained independent predictors of adverse outcome with COVID-19 infection. The management of MM

in the era of COVID-19 requires careful consideration of patient- and disease-related factors to decrease the risk of acquiring COVID-19 infection, while not compromising disease control through appropriate MM treatment. This study provides initial data to develop recommendations for the management of MM patients with COVID-19 infection.

107. Chen F. Customized bus passenger boarding and deboarding planning optimization model with the least number of contacts between passengers during COVID-19 / F. Chen, H. Peng, W. Ding [et al.] // Physica A: Statistical Mechanics and its Applications. – 2021. – Vol. 582. – P. 126244. – URL: <https://www.sciencedirect.com/science/article/pii/S0378437121005173>

The COVID-19 epidemic has had a major impact on people's normal travel. Optimizing the control of the number of passengers boarding and deboarding the customized bus (CB) at CB stops can reduce the contact between passengers in the course of travel, which is meaningful for COVID-19 epidemic prevention and control. In this paper, a dynamic programming model based on nonlinear integer programming (NIP) is established to study the problem of boarding and alighting planning at various CB stops under the influence of COVID-19. Using Gurobi 9.1.1 solver, the optimal plan for passengers boarding and deboarding CB buses could be obtained. Besides, the mathematical model established in this paper can obtain the minimum value of the total number of contacts between passengers during travel under different CB numbers. It is found that the model solution results eventually form a Pareto frontier. When the number of CB buses increases, the total number of contacts between passengers will decrease. This study has positive significance for ensuring the normal travel of passengers during the COVID-19 epidemic, and provides useful references for the studies about the planning of the customized bus.

108. Chen L.-K. COVID-19 vaccination and frailty in older adults / L.-K. Chen // Archives of Gerontology and Geriatrics. – 2021. – Vol. 96. – P. 104487. – URL: <https://www.sciencedirect.com/science/article/pii/S0167494321001503>

The COVID-19 pandemic strongly impacts the whole world in various dimensions (Wang, 2020), and studies have shown the high mortality risk of older patients with COVID-19 infections (Mostaza, et al., 2020; Niu, et al., 2020). Older age, geriatric syndromes, underlying chronic conditions and multimorbidity have been recognized as major determinants for adverse outcomes of older adults with various clinical conditions, and COVID-19 was no exception (Lim et al., 2020) (). Although the mortality risk of SARS-CoV-2 infections in older people has been reported, older people are not simply an age-defined entity with identical health characteristics (Hajek & König, et al., 2020; Lee, et al., 2020; Liu, et al., 2020). Instead, advancing age substantially increased the variation of health characteristics of older people in their late life (Duim & Lima Passos, 2020; Jeon, 2020). Studies have shown that functional impairment or disability was more

important than multimorbidity in predicting their quality of life and mortality (Pivetta, et al., 2020; Li, et al., 2021), which may be applied to COVID-19 pandemic as well. Dumitrascu, et al., conducted a meta-analysis of 118,373 older COVID-19 patients and identified the importance of frailty in predicting mortality and delirium (Dumitrascu, et al., 2021), but not older age alone. Moreover, vulnerable populations like home-bound older persons were at greater mortality risk during the COVID-19 pandemic, but COVID-19 was not the sole cause (Nilsson, et al., 2021). The prevalence of geriatric syndromes and their impacts on disease severity and mortality of older patients with COVID-19 infections were similar across studies (Niu, et al., 2020; Covino, et al., 2021; Karlsson, et al., 2021). In hospital settings, frailty (defined by the Clinical Frailty Scale or frailty index) has been validated to predict adverse clinical outcomes in different perspectives, i.e., interval and rapid disease progression during hospital admissions (Lim, et al., 2021). Like the impacts of frailty on most clinical conditions, the diagnosis, treatment, and outcomes of COVID-19 was also strongly influenced by frailty, disability, and dementia that needs special attentions.

109. Chen S. The economic burden of COVID-19 in the United States: Estimates and projections under an infection-based herd immunity approach / S. Chen, K. Prettnner, M. Kuhn, D. E. Bloom [et al.] // The Journal of the Economics of Ageing. – 2020. – Vol. 20. – P. 100328. – URL: <https://www.sciencedirect.com/science/article/pii/S2212828X21000219>

Objectives

To assess the economic burden of COVID-19 that would arise absent behavioral or policy responses under the herd immunity approach in the United States and compare it to the total burden that also accounts for estimates of the value of lives lost.

Methods

We use the trajectories of age-specific human and physical capital in the production process to calculate output changes based on a human capital–augmented production function. We also calculate the total burden that results when including the value of lives lost as calculated from mortality rates of COVID-19 and estimates for the value of a statistical life in the United States based on studies assessing individual’s willingness to pay to avoid risks.

Results

Our results indicate that the GDP loss associated with unmitigated COVID-19 would amount to a cumulative US\$1.4 trillion by 2030 assuming that 60 percent of the population is infected over three years. This is equivalent to around 7.7 percent of GDP in 2019 (in constant 2010 US\$) or an average tax on yearly output of 0.6 percent. After applying the value of a statistical life to account for the value of lives lost, our analyses show that the total burden can mount to between US\$17

and 94 trillion over the next decade, which is equivalent to an annual tax burden between 8 and 43 percent.

Conclusion

Our results show that the United States would incur a sizeable burden if it adopted a non-interventionist herd immunity approach.

Funding

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110. Cheng C. Mental health issues and health disparities amid COVID-19 outbreak in China: Comparison of residents inside and outside the epicenter / C. Cheng, H. Wang, C.-I. Chau // *Psychiatry Research*. – 2021. – Vol. 303. – P. 114070. – URL: <https://www.sciencedirect.com/science/article/pii/S016517812100367X>

The Coronavirus Disease-2019 (COVID-19) has exerted an impact on not only individuals who have contracted the virus but also the general public. This study compared the mental health condition of residents in the epicenter province of Hubei with that of other Chinese residents during the initial stage of the COVID-19 outbreak, and to examine emerging issues revolving around health disparities in disease prevention. A survey was administered in February 2020 to 433 Chinese adults spanning 28 regions across China. Participants residing in Hubei reported lower levels of affective and cognitive well-being than those in other regions. Perceived behavioral control and healthy lifestyle maintenance were associated with both dimensions of well-being and sleep quality for all participants. Income level was positively associated with facemask use and healthy lifestyle maintenance. These results indicate that Hubei residents reported poorer mental health than those of other regions, but perceived behavioral control and healthy lifestyle maintenance correlate with better mental health across regions. The likelihood of undertaking preventive measures for COVID-19 tends to be greater among residents with higher income, reflecting the need to address the oft-neglected concerns of health disparities in preventing this highly contagious novel disease.

111. Cheng S.-C. First case of Coronavirus Disease 2019 (COVID-19) pneumonia in Taiwan / S.-C. Cheng, Y.-C. Chang, Y.-L. F. Chiang [et al.] // *Journal of the Formosan Medical Association*. – 2020. – Vol. 119, № 3. – P. 747–

<https://www.sciencedirect.com/science/article/pii/S0929664620300449>

An outbreak of respiratory illness proved to be infected by a 2019 novel coronavirus, officially named Coronavirus Disease 2019 (COVID-19), was notified first in Wuhan, China, and has spread rapidly in China and to other parts of the world. Herein, we reported the first confirmed case of novel coronavirus pneumonia (NCP) imported from China in Taiwan. This case report revealed a natural course of NCP with self-recovery, which may be a good example in comparison with medical treatments.

112. Chidume C. G. State Fragility and Covid-19 pandemic: Implications on the political economy of Nigeria / C. G. Chidume, C. N. Oko-Otu, G. C. Aro // Social Sciences & Humanities Open. – 2021. – Vol. 3, № 1. – P. 100127.

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URL:

<https://www.sciencedirect.com/science/article/pii/S2590291121000231>

The outbreak of the coronavirus (Covid-19) pandemic has seriously impacted negatively on the socio-economic and political activities in the international system. The pandemic has exposed the leadership capacities and health investments cum preparedness of countries across the globe. This paper studies the reactions and responses of nations in containing the deadly virus and observes that while Western nations react rapidly and more proactively, African nations seem to be caught in a web of religious prevarications and State fragility which has impugned on the efforts of States in containing the virus. The paper argues that the Nigerian government's response so far in containing the virus is indicative of State fragility and that the prevailing perception of the virus as eschatological and nihilistic among the citizens, especially the very religious ones, may further obfuscate and mar government's efforts in containing the virus. The paper will show how the government's approach engenders a dire socioeconomic complication which may have more disastrous effects on the political economy of post Covid-19 Nigeria and suggested ways forward.

113. Chiodini P. A phase 2, open label, multicenter, single arm study of tocilizumab on the efficacy and tolerability of tocilizumab in the treatment of patients with COVID-19 pneumonia (TOCOVID-19 trial): Statistical analysis plan / P. Chiodini, L. Arenare, M. C. Piccirillo [et al.] // Contemporary Clinical Trials Communications. – 2020. – Vol. 20. – P. 100665. – URL: <https://www.sciencedirect.com/science/article/pii/S2451865420301496>

Background

Tocilizumab, an IL-6 receptor antagonist, was suggested as a possible treatment of severe or critical COVID-19 pneumonia in a small Chinese study. The TOCOVID-19 trial evaluates efficacy and tolerability of tocilizumab in the treatment of patients with severe or critical COVID-19 pneumonia.

Methods

TOCIVID-19 is an academic multicenter, single-arm, open-label, phase 2 study. All the patients are being offered a single shot of 8 mg/kg of Tocilizumab (up to a maximum of 800 mg), with an eventual second administration at the discretion of the Investigator. A companion prospective cohort, added to corroborate internal validity, includes either patients not eligible for phase 2 or subjects eligible for phase 2 but exceeding the planned sample size. 14- and 30-days lethality rates are the two co-primary endpoints in the intention-to-treat (ITT) population. Secondary objectives are to evaluate mortality and clinical improvement in the modified-ITT population of subjects who received the drug. Details of the methodological and statistical approaches are reported here reflecting the amendments impelled by the continuously increasing knowledge on COVID-19 progression and challenges in data collection.

Conclusion

This paper provides details of planned statistical analyses for TOCIVID19 trial to reduce the risk of reporting bias and increase validity of the study findings.

TOCIVID-19 trial is registered in the EudraCT database with number 2020-001110-38 and in clinicaltrials.gov with ID NCT04317092.

114. Chivte P. MALDI-ToF protein profiling as a potential rapid diagnostic platform for COVID-19 / P. Chivte, Z. L. Casse, V. D. R. Seethi [et al.] // Journal of Mass Spectrometry and Advances in the Clinical Lab. – 2021. – Vol. 21. – P. 31–41. – URL: <https://www.sciencedirect.com/science/article/pii/S2667145X2100016X>

More than a year after the COVID-19 pandemic was declared, the need still exists for accurate, rapid, inexpensive and non-invasive diagnostic methods that yield high specificity and sensitivity towards the current and newly emerging SARS-CoV-2 strains. Compared to the nasopharyngeal swabs, several studies have established saliva as a more amenable specimen type for early detection of SARS-CoV-2. Considering the limitations and high demand for COVID-19 testing, we employed MALDI-ToF mass spectrometry in the analysis of 60 gargle samples from human donors and compared the resultant spectra against COVID-19 status. Several standards, including isolated human serum immunoglobulins, and controls, such as pre-COVID-19 saliva and heat inactivated SARS-CoV-2 virus, were simultaneously analyzed to provide a relative view of the saliva and viral proteome as they would appear in this workflow. Five potential biomarker peaks were established that demonstrated high concordance with COVID-19 positive individuals. Overall, the agreement of these results with RT-qPCR testing on nasopharyngeal swabs was $\geq 90\%$ for the studied cohort, which consisted of young and largely asymptomatic student athletes. From a clinical standpoint, the results

from this pilot study suggest that MALDI-ToF could be used to develop a relatively rapid and inexpensive COVID-19 assay.

115. Cho M.-J. The emergence of virtual education during the COVID-19 pandemic: The past, present, and future of the plastic surgery education / M.-J. Cho, J. P. Hong // Journal of Plastic, Reconstructive & Aesthetic Surgery. – 2021. – Vol. 74, № 6. – P. 1413–1421. – URL: <https://www.sciencedirect.com/science/article/pii/S1748681521000334>

Summary

Background

Since the global outbreak of coronavirus disease-2019 (COVID-19), plastic surgeons were forced to transition from traditional didactics to virtual lectures to practice “social distancing.” As this method of education continues to be widely used, understanding the current trend of its usage is critical. In this study, we performed a survey study of virtual lecture attendees and presenters to determine current usage and general consensus on virtual lectures in plastic surgery education.

Methods

An electronic survey was sent to attendees and presenters of virtual lectures using Google Forms. Demographic data, webinar usage patterns, and views on virtual lectures were collected.

Results

A total of 417 surveys were received. Prior to the COVID-19 era, 39.1percent of attendees did not use virtual lectures and 45.6percent of presenters did not give webinars at all. Both groups reported that the lack of opportunities and need were the most common cause of no use of lectures or webinars. After the outbreak, 35.4percent of attendees now use virtual lectures daily and 51.4percent of presenters give lectures weekly. Over 90percent of the study population reported a positive experience with the virtual lectures due to increased interaction, convenience, outreach, and usability. Finally, over 75percent stated that virtual lectures might replace classroom lectures in the future.

Conclusion

Our study shows that a majority of plastic surgeons have begun to use and give virtual lectures daily after the COVID-19 outbreak. Virtual education is a powerful and versatile tool that has great potentials, and it may continue to serve as a part of surgical training in the future.

116. Choi J.-J. University students’ perception to online class delivery methods during the COVID-19 pandemic: A focus on hospitality education in Korea and Malaysia / J.-J. Choi, C. A. Robb, M. Mifli [et al.] // Journal of

The general process of learning in educational institutions around the globe has changed since the advent of the COVID-19 virus. Educational sectors in all nations are forced to adapt and rearrange their compositions and systems as the virus spreads. The current study considers the characteristics and issues related to universities moving towards online and blended learning during this period of universal isolation. Through focus group interviews conducted in South Korea and Malaysia, the study provides recommendation for the improvement of online classes and blended learning. The use of student focus groups gives the research an alternative perspective with which to assess the satisfaction level, success, and quality of online learning programs during the COVID-19 pandemic. Results from the focus groups show that for the success of online learning to become a reality, blended education should be considered to bolster learning. Further, results show that communication between lecturers and students remains a fundamental factor for success, regardless of the class category incorporated. Consequently, the results of the study provide further insight into matters experienced by students during the pandemic, and how educators may heed the opinions of students when improving future related blended learning programs.

117. Chow C. Enhancing frontline workforce volunteerism through exploration of motivations and impact during the COVID-19 pandemic / C. Chow, S. K. Goh, C. S. G. Tan [et al.] // International Journal of Disaster Risk Reduction. – 2021. – Vol. 66. – P. 102605. – URL: <https://www.sciencedirect.com/science/article/pii/S2212420921005665>

Objectives

During a pandemic, healthcare workers are requested to volunteer for potentially high-risk frontline duties outside of usual hospital and primary care clinic settings in order to better serve vulnerable communities. Examination of volunteer motivations and impact of such experiences can drive more effective pandemic response efforts with regards to volunteer recruitment and retention. This study aims to explore the motivational factors underlying healthcare worker volunteerism in COVID-19 pandemic response operations in the community, and to describe the impact of such operations on volunteers, in order to highlight important volunteer recruitment strategies and ensure volunteer sustainability.

Methods

A qualitative phenomenological approach is taken in this study through the use of semi-structured individual interviews of healthcare staff, to provide in-depth exploration of personal experiences. Staff were purposefully sampled to ensure diversity of personal and professional backgrounds.

Results

A total of 35 staff, consisting of 17 males and 18 females from medical, nursing, allied health, and administrative backgrounds, who participated in COVID-19 community-based operations in migrant worker dormitories and swab isolation facilities were interviewed. The main motivational factors were volunteer functions of values, understanding and enhancement. Participants were positively impacted on personal and professional levels, including self-growth, societal awareness, as well as skills development in leadership and team management.

Conclusions

Healthcare organizations should consider volunteer functions in matching individual motivations to volunteer opportunities. Additionally, personal narratives and role-modelling by senior staff can serve as useful adjunct strategies to volunteer recruitment, while providing pre-pandemic preparedness, reassurance of safety, support, and recognition.

118. Chu H. Light at the end of the tunnel: Influence of vaccine availability and vaccination intention on people's consideration of the COVID-19 vaccine / H. Chu, S. Liu // Social Science & Medicine. – 2021. – Vol. 286. – P. 114315. – URL: <https://www.sciencedirect.com/science/article/pii/S027795362100647X>

Rationale

Countries worldwide rely on the COVID-19 vaccine to contain the spread of the pandemic. However, because of the inequality in distribution, people in many demographic groups and regions still do not have access to a safe and effective COVID-19 vaccine.

Objective

To aid vaccine promotion campaigns that target populations with different access to the COVID-19 vaccine, this study examined how vaccine availability and vaccination intention influence people's consideration of the COVID-19 vaccine.

Method

We conducted a two-wave longitudinal survey and choice-based conjoint experiment to examine the influence of vaccine availability and vaccination intention on perceived barriers of vaccination (e.g., safety and cost concern) and preference in different vaccine features (e.g., FDA approval status and number of doses administered).

Result

We found that low availability and intention increased attention to global behavioral barriers such as safety concern and high-level vaccine attributes such as efficacy. In contrast, high availability articulates practical considerations such as cost and logistics associated with vaccination.

Conclusion

Based on such findings, we conclude that health communicators need to strategically customize their messages based on audience access to the COVID-19 vaccine and their intention to get vaccinated. Highlighting the safety and effectiveness of the vaccine may be more effective in low-accessibility and low-intention groups, while emphasis on practical considerations such as vaccine cost and logistics may be more effective in high-accessibility and high-intention groups.

119. Cihan P. Forecasting fully vaccinated people against COVID-19 and examining future vaccination rate for herd immunity in the US, Asia, Europe, Africa, South America, and the World / P. Cihan // Applied Soft Computing. – 2021. – Vol. 111. – P. 107708. – URL: <https://www.sciencedirect.com/science/article/pii/S1568494621006293>

Coronavirus disease 2019 (COVID-2019) has spread rapidly all over the world and it is known that the most effective way to eliminate the disease is vaccination. Although the traditional vaccine development process is quite long, more than ten COVID-19 vaccines have been approved for use in about a year. The COVID-19 vaccines that have been administered are highly effective enough, but achieving herd immunity is required to end the pandemic. The motivation of this study is to contribute to review the countries' vaccine policies and adjusting the manufacturing plans of the vaccine companies. In this study, the total number of people fully vaccinated against COVID-19 was forecasted in the US, Asia, Europe, Africa, South America, and the World with the Autoregressive Integrated Moving Average (ARIMA) model, which is a new approach in vaccination studies. Additionally, for herd immunity, the percentage of fully vaccinated people in these regions at the beginning of 2021 summer was determined. ARIMA results show that in the US, Asia, Europe, Africa, South America, and the World will reach 139 million, 109 million, 127 million, 8 million, 38 million, and 441 million people will be fully vaccinated on 1 June 2021, respectively. According to these results, 41.8% of the US, 2.3% of Asia, 17% of Europe, 0.6% of Africa, 8.8% of South America, and 5.6% of the World population will be fully vaccinated people against the COVID-19. Results show that countries are far from the herd immunity threshold level desired to reach for safely slow or stop the COVID-19 epidemic.

120. Colebunders R. A call for strengthened evidence on targeted, non-pharmaceutical interventions against COVID-19 for the protection of vulnerable individuals in sub-Saharan Africa / R. Colebunders, J. N. S. Fodjo, G. Vanham [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 482–484. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306871>

Following the easing of lockdown measures in many sub-Saharan African countries, coronavirus disease 2019 (COVID-19) cases have been on the rise. As

the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of COVID-19, may be difficult to stop in these settings, we propose that the existing COVID-19 prevention strategies aimed at reducing overall transmission are complemented with more targeted strategies to protect people at risk of severe COVID-19 disease. We suggest investigating the feasibility, acceptability, and efficacy of distributing COVID-19 prevention kits to households with persons at increased risk of severe COVID-19 disease.

121. Connelly J. A. Impact of COVID-19 on Pediatric Immunocompromised Patients / J. A. Connelly, H. Chong, A. J. Esbenshade [et al.] // *Pediatric Clinics of North America*. – 2021. – Vol. 68, № 5. – P. 1029–1054. – URL: <https://www.sciencedirect.com/science/article/pii/S0031395521000845>

Introduction

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has caused critical coronavirus disease 2019 (COVID-19) most often in the elderly and individuals with comorbid medical conditions. Although growing evidence supports the importance of an intact innate immune response at the onset of viral infection, mortality caused by dysregulated immune responses, particularly in adults, has shown a spotlight on the delicate balance of a robust, but coordinated and controlled, immune activity against infection.¹ The pathologic role of the immune system has also been emphasized by the new multisystem inflammatory syndrome in children (MIS-C), which currently is believed to be a result of an aberrant adaptive immune response to SARS-CoV-2 infection.² The necessity of this immune equilibrium has manifested in the clinical care of severe COVID-19 and MIS-C with administration of immune suppressants to offset inappropriate immune activation.

This complex network of infection, immune response, and inflammation with SARS-CoV-2 has created concerns, questions, and challenges for immunocompromised children beyond fear of death from contracting SARS-CoV-2. This review examines how adaptations by health care systems to reduce SARS-CoV-2 transmission and treat the surge of COVID-19 patients impacted immunocompromised pediatric patients. While expansion of some services, such as telemedicine, provided a new safe venue to provide care for some patients, contraction of other services or parental anxiety to present to medical care units resulted in impaired access for other patients. We will also examine how the perceived danger of severe infection early in the pandemic triggered modifications of immune suppression, with negative ramifications in some patients, and the impact of prolonged quarantine-intensified psychosocial concerns in children and adolescents.

122. Cooke A. Exploring the STEP-uP to practice: A survey of UK Lead Midwives for Education views of the Student midwife Extended Practice Placement during the first wave of the COVID-19 pandemic /

A. Cooke, A. Hancock, H. White [et al.] // Midwifery. – 2021. – Vol. 101. – P. 103048. – URL: <https://www.sciencedirect.com/science/article/pii/S0266613821001273>

Objective

to assess the effect of implementation of the extended placement option available to midwifery students during the first wave of the COVID-19 pandemic.

Design

Online survey open from 2nd June 2020 to 15th July 2020.

Setting

United Kingdom.

Participants

Lead Midwives for Education (LMEs).

Findings

A total of 38 of 55 LMEs responded (response rate 69%). The majority of Approved Education Institutions (AEIs) offered an extended placement to students, but with some variation in the choices offered, unrelated to geographical location or size of student cohort. AEIs appeared to provide the majority of decisional support for students. Many practice learning environments became unavailable, particularly community, gynaecology/medical wards and neonatal units. LMEs experienced both internal and external pressures to instigate rapid change.

Key conclusions

The impact of COVID-19 on midwifery education is significant and will need continual scrutiny to minimise future detriment. The pressures of providing midwifery education throughout the early phase of COVID-19 were substantial, but it is important that we learn from the immediate changes made, value and pursue the changes that have been beneficial, and learn from those that were not.

Implications for Practice/Research

Student learning experiences have undergone significant change during the pandemic. It is essential to assess what effect the extended placement has had on student readiness for practice, their confidence, resilience, mental health, and attrition and retention. Educators transitioned to remote working, and rapidly assimilated new skills for online education; exploration of the impact of this is recommended.

123. Coopmansa I. COVID-19 impacts on Flemish food supply chains and lessons for agri-food system resilience / I. Coopmansa, J. Bijttebier, F. Marchand [et al.] // Journal of Hepatology. – 2021. – Vol. 190. – P. 103136. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0308521X21000895>

Context

Resilience represents the ability of systems to anticipate, withstand, or adapt to challenges. Times of great stress and disturbance offer opportunity to identify and confirm key contributors to agri-food system resilience. The COVID-19 pandemic and its related consequences constituted major shock, challenging the resilience of many agri-food systems worldwide.

Objective

This paper aimed to report the immediate effects of the COVID-19 crisis on various key actors from Flemish food supply chains. By analysing and assessing the observed impacts of and reactions to this crisis from a resilience perspective, it also aimed to gain empirical evidence on resilience-enhancing characteristics of agri-food systems to sudden shocks.

Methods

A first, quantitative step of our mixed method approach measured 718 farmers' experienced impacts and applied strategies following the crisis through an online survey. A second, qualitative step captured impacts and responses from other key actors downstream the food supply chain through 22 in-depth interviews and 18 on-line questionnaires. Data gathering and interpretation followed a conceptual framework for analysing resilience of agri-food systems to external challenges, that we developed based on the literature. The framework states that resilience actions stem from three types of resilience capacities: anticipatory, coping and responsive capacities. These are determined by both resources allocated by system actors, as well as by resilience attributes from the system.

124. Corman V. M. Comparison of seven commercial SARS-CoV-2 rapid point-of-care antigen tests: a single-centre laboratory evaluation study / V. M. Corman, V. C. Haage, T. Bleicker [et al.] // *The Lancet Microbe*. – 2021. – Vol. 2, № 7. – P. e311–e319. – URL: <https://www.sciencedirect.com/science/article/pii/S2666524721000562>

Summary

Background

Antigen point-of-care tests (AgPOCTs) can accelerate SARS-CoV-2 testing. As some AgPOCTs have become available, interest is growing in their utility and performance. Here we aimed to compare the analytical sensitivity and specificity of seven commercially available AgPOCT devices.

Methods

In a single-centre, laboratory evaluation study, we compared AgPOCT products from seven suppliers: the Abbott Panbio COVID-19 Ag Rapid Test, the RapiGEN BIOCREDIT COVID-19 Ag, the Healgen Coronavirus Ag Rapid Test Cassette (Swab), the Coris BioConcept COVID-19 Ag Respi-Strip, the R-

Biopharm RIDA QUICK SARS-CoV-2 Antigen, the nal von minden NADAL COVID-19 Ag Test, and the Roche-SD Biosensor SARS-CoV Rapid Antigen Test. Tests were evaluated on recombinant SARS-CoV-2 nucleoprotein, cultured endemic and emerging coronaviruses, stored respiratory samples with known SARS-CoV-2 viral loads, stored samples from patients with respiratory pathogens other than SARS-CoV-2, and self-sampled swabs from healthy volunteers. We estimated analytical sensitivity in terms of approximate viral concentrations (quantified by real-time RT-PCR) that yielded positive AgPOCT results, and specificity in terms of propensity to generate false-positive results.

Findings

In 138 clinical samples with quantified SARS-CoV-2 viral load, the 95% limit of detection (concentration at which 95% of test results were positive) in six of seven AgPOCT products ranged between 2.07×10^6 and 2.86×10^7 copies per swab, with an outlier (RapiGEN) at 1.57×10^{10} copies per swab. The assays showed no cross-reactivity towards cell culture or tissue culture supernatants containing any of the four endemic human coronaviruses (HCoV-229E, HCoV-NL63, HCoV-OC43, or HCoV-HKU1) or MERS-CoV, with the exception of the Healgen assay in one repeat test on HCoV-HKU1 supernatant. SARS-CoV was cross-detected by all assays. Cumulative specificities among stored clinical samples with non-SARS-CoV-2 infections ($n=100$) and self-samples from healthy volunteers ($n=35$; cumulative sample $n=135$) ranged between 98.5% (95% CI 94.2–99.7) and 100.0% (97.2–100.0) in five products, with two outliers at 94.8% (89.2–97.7; R-Biopharm) and 88.9% (82.1–93.4; Healgen). False-positive results did not appear to be associated with any specific respiratory pathogen.

Interpretation

The sensitivity range of most AgPOCTs overlaps with SARS-CoV-2 viral loads typically observed in the first week of symptoms, which marks the infectious period in most patients. The AgPOCTs with limit of detections that approximate virus concentrations at which patients are infectious might enable shortcuts in decision making in various areas of health care and public health.

Funding

EU's Horizon 2020 research and innovation programme, German Ministry of Research, German Federal Ministry for Economic Affairs and Energy, German Ministry of Health, and Bill & Melinda Gates Foundation.

125. Corcoran K. E. Christian nationalism and COVID-19 vaccine hesitancy and uptake / K. E. Corcoran, C. P. Scheitle, B. D. DiGregorio // Vaccine. – 2021. – Vol. 39, № 45. – P. 6614–6621. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X21012895>

Understanding COVID-19 vaccine hesitancy and uptake is vital for informing public health interventions. Prior U.S. research has found that religious

conservatism is positively associated with anti-vaccine attitudes. One of the strongest predictors of anti-vaccine attitudes in the U.S. is Christian nationalism—a U.S. cultural ideology that wants civic life to be permeated by their particular form of nationalist Christianity. However, there are no studies examining the relationship between Christian nationalism and COVID-19 vaccine hesitancy and uptake. Using a new nationally representative sample of U.S. adults, we find that Christian nationalism is one of the strongest predictors of COVID-19 vaccine hesitancy and is negatively associated with having received or planning to receive a COVID-19 vaccine. Since Christian nationalists make up approximately 20 percent of the population, these findings could have important implications for achieving herd immunity.

126. Coroiu A. Parent-for-child mask behavior during the COVID-19 pandemic in Canada and the United States: An investigation of attitudes, norms, and perceived control using the theory of planned behavior / A. Coroiu, C. Moran, B. L. Lindsay [et al.] // Preventive Medicine Reports. – 2021. – Vol. 24. – P. 101533. – URL: <https://www.sciencedirect.com/science/article/pii/S2211335521002230>

Face masks continue to be a necessity until a large proportion of the population, including children, receive immunizations for COVID-19. The aim of this study was to investigate the relationship between parental attitudes and beliefs about masks and parent-for-child mask behavior using the Theory of Planned Behavior. We administered a survey in August 2020 to parents of school-aged children residing in the United States and Canada. Measures included sociodemographic variables for the parent and child, attitudes, norms, perceived control over children's mask use, intentions and enforcement of mask wearing among children (also titled "parent-for-child mask behavior"). Data were analyzed using structural equation modelling. We collected data from 866 parents and 43.5% had children with pre-existing conditions (e.g., allergies, anxiety, impulsivity, skin sensitivity, asthma) that made extended mask wearing difficult, as per parent's report. Among the full sample, negative attitudes ($\beta = -0.20$, $p = .006$), norms ($\beta = 0.41$, $p = .002$), and perceived control ($\beta = 0.33$, $p = .006$) predicted intentions. Norms ($\beta = 0.50$, $p = .004$) and intentions ($\beta = 0.28$, $p = .003$) also predicted parent-for-child mask use, while attitudes and perceived control did not. Intentions mediated the associations between attitudes, norms, perceived control, respectively, and mask behavior. Subgroup analyses revealed intentions as the key predictor of parent-for-child mask use among children with pre-conditions and norms as the key predictor among children without pre-conditions (i.e. healthy). Future public health messaging should target parental intentions, attitudes, norms, and perceived control about children's masks wearing.

127. Cortegiani A. Rationale and evidence on the use of tocilizumab in COVID-19: A systematic review. Authors' reply / A. Cortegiani, M. Ippolito,

Background

Tocilizumab is an IL-6 receptor-blocking agent proposed for the treatment of severe COVID-19. The aim of this systematic review was to describe the rationale for the use of tocilizumab for the treatment of COVID-19 and to summarize the available evidence regarding its efficacy and safety.

Methods

MEDLINE, PubMed, EMBASE, pre-print repositories (bioRxiv and medRxiv) and two trial Registries were searched for studies on the use of tocilizumab in COVID-19 or SARS-CoV-2 infection, viral pneumonia, and/or sepsis until 20th June 2020.

Results

We identified 3 indirect pre-clinical studies and 28 clinical studies including 5776 patients with COVID-19 (13 with a comparison group, 15 single-arm). To date, no randomized trials have been published. We retrieved no studies at low risk of bias. Forty-five ongoing studies were retrieved from trial registries.

Conclusions

There is insufficient evidence regarding the clinical efficacy and safety of tocilizumab in patients with COVID-19. Its use should be considered experimental, requiring ethical approval and clinical trial oversight.

128. Cortegiani A. Rationale and evidence on the use of tocilizumab in COVID-19: A systematic review. Authors' reply / A. Cortegiani, M. Ippolito, S. Einav // Pulmonology. – 2021. – Vol. 27, № 1. – P. 87–88. – URL: <https://www.sciencedirect.com/science/article/pii/S253104372030218X>

Dear Editor,

We read with interest the Letter from Siang Kow et al.¹ commenting on our systematic review² and their discussion of the preliminary evidence from recent randomized controlled trials (RCTs) on the efficacy and safety of tocilizumab for COVID-19. We concur with the authors that it may indeed be time to divert some of our attention from IL-6 to other mediators of inflammation in COVID-19 patients. In fact, previous pharmacological attempts to modulate the inflammatory response in patients with ARDS and sepsis have repeatedly proven unsuccessful. It is therefore reasonable to also question whether suppressing the pathophysiological inflammatory response, or blocking a single mediator for that matter, will be beneficial for patients with COVID-19.

The authors commented on the absence of significant difference in mortality between patients who received tocilizumab (Actemra/RoActemra) or placebo in

the industry funded COVACTA (NCT04320615 - <https://www.roche.com/dam/jcr:6d8de90d-2e31-43c8-b4e1-0a24a2675015/en/29072020-mr-covacta.pdf>) and EMPACTA (NCT04372186 - <https://www.roche.com/media/releases/med-cor-2020-09-18.htm>) trials.

The results of these trials confirm that findings from nonrandomized trials should be interpreted with caution and that such caution is warranted particularly during public health emergencies when large numbers of patients may subsequently receive redundant treatments. As discussed by the authors in the context of tocilizumab and exemplified also by the hydroxychloroquine landslide,³ experimental drugs are not always harmless, particularly when indiscriminately used. Patient safety should always be prioritized, which is why experimental drugs must be administered within the framework of registered RCTs that are accompanied by appropriate monitoring and regulation.

Research methodology may have also contributed to the negative findings of the above-mentioned RCTs. One example of a potential determinant of outcome in relation to treatment is the timing of administration in respect to the clinical phase of the disease.⁴ Another is the treatment dose. Case mix may also have diluted the results; there may be sub-populations of COVID-19 patients who do actually benefit from receiving tocilizumab. Hopefully the full reports of the COVACTA and EMPACTA trials will shed some light on these questions and more. These analyses combined with additional data from the interventional tocilizumab arm of the RECOVERY trial (www.recoverytrial.net) may yet change our perspective on this drug. To summarize, although oft repeated, the following rhetoric is simply the truth: more (high quality) research is urgently needed.

Authors' contribution

AC, MI, SE conceived the content, drafted the manuscript and approved the final version for publication.

129. Cottini M. Obesity is a Major Risk Factor for Hospitalization in Community-Managed COVID-19 Pneumonia / M. Cottini, C. Lombardi, A. Berti [et al.] // Mayo Clinic Proceedings. – 2021. – Vol. 96, № 4. – P. 921–931. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0025619621000823>

Objective

We aimed to investigate whether the stratification of outpatients with coronavirus disease 2019 (COVID-19) pneumonia by body mass index (BMI) can help predict hospitalization and other severe outcomes.

Patients and Methods

We prospectively collected consecutive cases of community-managed COVID-19 pneumonia from March 1 to April 20, 2020, in the province of Bergamo and evaluated the association of overweight ($25 \text{ kg/m}^2 \leq \text{BMI} < 30 \text{ kg/m}^2$) and obesity ($\geq 30 \text{ kg/m}^2$) with time to hospitalization (primary end point),

low-flow domiciliary oxygen need, noninvasive mechanical ventilation, intubation, and death due to COVID-19 (secondary end points) in this cohort. We analyzed the primary end point using multivariable Cox models

130. Coudeville L. Exploring uncertainty and risk in the accelerated response to a COVID-19 vaccine: Perspective from the pharmaceutical industry / L. Coudeville, G. B. Gomez, O. Jollivet [et al.] // *Vaccine*. – 2021. – Vol. 38, № 48. – P. 7588–7595. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X20313281>

1. Introduction

A series of pneumonia cases of unknown origin were reported to the World Health Organization (WHO) at the end of 2019. Since then Corona Virus Disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has become a pandemic with over 33 million cases and 1,000,000 deaths reported worldwide within the span of nine months despite unprecedented control measures [2]. Mitigation measures and fiscal policies that include social distancing, border closures, shelter-in-place, widespread testing, active contact tracing, and macro-economic stimulus packages have been implemented to various degrees in most countries. These restrictions have seriously impacted economies globally [3] and it is uncertain how countries will react to a persisting transmission risk. Access to diagnostics, treatments, and vaccines produced and accessible at scale will be critical to control the disease, save lives, and restore economic growth.

131. Courtet P. Suicide in the COVID-19 pandemic: What we learnt and great expectations / P. Courtet, E. Olié // *European Neuropsychopharmacology*. – 2021. – Vol. 50. – P. 118–120. – URL: <https://www.sciencedirect.com/science/article/pii/S0924977X21002546>

Since the emergence of the COVID-19 pandemic and the national lockdowns, the scientific community has feared an increase in suicides, mainly due to the psychological impact of such a sudden and important stress and of the social and neurobiological consequences of social distancing (Courtet et al., 2020; Zalsman, 2020). Population-based surveys rapidly reported high levels of depression, anxiety, insomnia, and suicidal ideation (Xiong et al., 2020). They also highlighted a higher risk for psychiatric patients because they already experience loneliness and because of possible breakdowns of the care systems. However, admissions for suicide attempts decreased in many countries at the beginning of the pandemic, especially during national lockdowns, compared with the preceding months and the previous year (2019) (Olie et al., 2021). According to national and local data from 21 countries, suicide death rates decreased in 12 countries and did not significantly increase in the others from April to July 2020 (Pirkis et al., 2021). This observation raises the question of whether the available data are reliable

because they seem in contradiction with the higher psychological distress. It may be too early to have robust data or to measure the consequences of the mental health deterioration in terms of suicidal risk. Moreover, the use of self-report questionnaires to assess psychological conditions in online surveys may not fully reflect the psychopathology.

132. Coutiño A. Global loss of production capacity caused by the COVID-19 pandemic / A. Coutiño, M. Zandi // Journal of Policy Modeling. – 2021. – Vol. 43, № 2. – P. 493–502. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0161893821000430>

The global economy faces a loss of production capacity among the most severe in at least the past half-century as a result of the recession caused by the COVID-19 pandemic. It will take several years of persistent investment efforts to restore the pre-pandemic level of capacity and put global output back to potential. By using a production function based on the incremental capital-output ratio, we estimate the loss of production capacity for the global economy and for the two main world locomotives, the U.S. and China. To do this, we estimate the production capacity implied in our current recession baseline and the capacity that would have existed in the absence of the pandemic (precrisis scenario). The difference between the two estimates is defined as the loss of capacity generated by the pandemic. The results also allow us to extract some policy implications in terms of mitigation measures and investment requirements.

Keywords

Economic growth Production function Production capacity Capital-output ratio Harrod-Domar model Koyck model

133. Covino M. Frailty Assessment in the Emergency Department for Risk Stratification of COVID-19 Patients Aged ≥ 80 Years / M. Covino, A. Russo, S. Salini [et al.] // Journal of the American Medical Directors Association. – 2021. – Vol. 22, № 9. – P. 1845–1852.e1 – URL: <https://www.sciencedirect.com/science/article/pii/S1525861021006435>

Objectives

To evaluate, in a cohort of adults aged ≥ 80 years, the overlapping effect of clinical severity, comorbidities, cognitive impairment, and frailty, for the in-hospital death risk stratification of COVID-19 older patients since emergency department (ED) admission.

Design

Single-center prospective observational cohort study.

Setting and Participants

The study was conducted in the ED of a teaching hospital that is a referral center for COVID-19 in central Italy. We enrolled all patients with aged ≥ 80 years old consecutively admitted to the ED between April 2020 and March 2021.

Methods

Clinical variables assessed in the ED were evaluated for the association with all-cause in-hospital death. Evaluated parameters were severity of disease, frailty, comorbidities, cognitive impairment, delirium, and dependency in daily life activities. Cox regression analysis was used to identify independent risk factors for poor outcomes.

Results

A total of 729 patients aged ≥ 80 years were enrolled [median age 85 years (interquartile range 82-89); 346 were males (47.3%)]. According to the Clinical Frailty Scale, 61 (8.4%) were classified as fit, 417 (57.2%) as vulnerable, and 251 (34.4%) as frail. Severe disease [hazard ratio (HR) 1.87, 95% confidence interval (CI) 1.31-2.59], ≥ 3 comorbidities (HR 1.54, 95% CI 1.11-2.13), male sex (HR 1.46, 95% CI 1.14-1.87), and frailty (HR 6.93, 95% CI 1.69-28.27) for vulnerable and an overall HR of 12.55 (95% CI 2.96-53.21) for frail were independent risk factors for in-hospital death.

Conclusions and Implications

The ED approach to older patients with COVID-19 should take into account the functional and clinical characteristics of patients being admitted. A sole evaluation based on the clinical severity and the presence of comorbidities does not reflect the complexity of this population. A comprehensive evaluation based on clinical severity, multimorbidity, and frailty could effectively predict the clinical risk of in-hospital death for patients with COVID-19 aged ≥ 80 years at the time of ED presentation.

134. Cox A. Library support for student mental health and well-being in the UK: Before and during the COVID-19 pandemic / A. Cox, L. Brewster // The Journal of Academic Librarianship. – 2020. – Vol. 46, № 6. – P. 102256. – URL: <https://www.sciencedirect.com/science/article/pii/S0099133320301476>

Libraries increasingly seek to support the mental health and well-being of students. This study reports on the results of a survey examining the range of such support activities offered by UK academic libraries prior to and during the COVID-19 pandemic. Prior to the pandemic libraries' emphasis was on new library specific services such as a fiction collection, a type of initiative taken to proactively align with institutional policy. During the pandemic focus shifted somewhat to addressing the anxiety related to finding e-resources. Drawing on the survey data a holistic model of library support for student mental health and well-being is developed, capturing its eight different aspects: inherent library value, library services impact, well-being as a library service, detection, hosting,

signposting, library as a good partner and library staff well-being. This represents a framework through which to examine how an academic library can support student mental health and well-being, and complements the “whole university” approach being increasingly adopted in the UK.

135. Cover R. Identity in the disrupted time of COVID-19: Performativity, crisis, mobility and ethics / R. Cover // Social Sciences & Humanities Open. – 2021. – Vol. 4, № 1. – P. 100175. – URL: <https://www.sciencedirect.com/science/article/pii/S2590291121000711>

The COVID-19 pandemic has resulted in a global cultural crisis, experienced through various losses of everydayness, including particularly restrictions on mobility and the sudden emergence of new fears and anxieties over infection. This paper theorises some of the ways in which that crisis can be understood in cultural and discursive terms, as a rupture in normativity, a disturbance in social relationality and as a state of exception. Drawing on Judith Butler's theories of performativity, the paper investigates how such a cultural rupture can be understood to affect performative subjectivity, identity and selfhood, whereby a breach in normative everydayness prompts the re-constitution of subjectivity itself. The paper explores how the reconfiguration of identity is experienced as corporeal and as a site of anxiety and lost dignity. The final section of the paper draws some initial conclusions about the potency of cultural and identity transformation for new ethics of non-violence, arguing that the obligation to resist norms of mobility and contact is an ethical obligation of necessary cohabitation.

136. Crescenzi R. Mind the Covid-19 crisis: An evidence-based implementation of Next Generation EU / R. Crescenzi, M. Giua, G. V. Sonzogno // Journal of Policy Modeling. – 2021. – Vol. 43, № 2. – P. 278–297. – URL: <https://www.sciencedirect.com/science/article/pii/S016189382100017X>

This paper develops an evidence-based approach to the selection and prioritisation of Next Generation EU (NGEU) projects for timely implementation and impact of the Recovery Plan for Europe. The analysis of a large sample of projects, currently funded by the European Union (EU) with the same priorities and objectives of NGEU, suggests that a timely implementation should be driven – within the EU Commission coordination framework – by national governments liaising directly with their citizens through participatory procedures, involving relevant stakeholders. Simplified implementation procedures with clear spatial targeting and limited involvement of regional authorities are necessary conditions for the avoidance of implementation delays.

137. Cummings J. R. Health-promoting behaviors in the United States during the early stages of the COVID-19 pandemic / J. R. Cummings,

J. A. Wolfson, A. N. Gearhardt // *Appetite*. – 2022. – Vol. 168. – P. 105659. – URL: <https://www.sciencedirect.com/science/article/pii/S0195666321005663>

The potential negative effects of the COVID-19 pandemic on health-compromising behaviors including overeating, processed food intake, and alcohol use have been well documented. However, it is possible the COVID-19 pandemic has had positive effects on some health-promoting behaviors like cooking and fruit and vegetable intake. The current study was a preregistered secondary data analysis using data from a U.S. national, crowdsourced study (n = 868) on eating behaviors during the early stages of the COVID-19 pandemic. The objectives of the current study were to compare levels of cooking, fruit and vegetable intake, and physical activity among U.S. adults during the early stages of the COVID-19 pandemic to pre-pandemic levels in reference groups of U.S. adults, and test whether subjective stress from the pandemic was associated with health-promoting behaviors by obesity status. During the early stages of the COVID-19 pandemic, participants cooked more often and ate 0.23 more cups of fruits and vegetables per day, but 28.8% fewer participants met federal physical activity guidelines. Greater COVID-19 stress was minimally to moderately associated with greater cooking, fruit and vegetable intake, and physical activity. The positive association between COVID-19 stress and fruit and vegetable intake was stronger for individuals with obesity. The COVID-19 pandemic might have encouraged U.S. adults, especially those at risk for complications, to engage in some health-promoting behaviors while creating barriers for other behaviors.

138. Currie G. Evidence of a post-COVID change in travel behaviour – Self-reported expectations of commuting in Melbourne / G. Currie, T. Jain, L. Aston // *Transportation Research Part A: Policy and Practice*. – 2021. – Vol. 153. – P. 218–234. – URL: <https://www.sciencedirect.com/science/article/pii/S0965856421002391>

This paper addresses the question, “Will post-pandemic travel behaviour, when the virus has gone, be different to pre-pandemic travel?”. It adopts an online survey where respondents were asked to report changes in travel during the various stages of the pandemic and expectations of future travel after the virus has gone. The paper focusses on commuting including total commuting, work from home (WFH), employment, travel mode volume and share and timing of morning commute trips using reported behaviour during pandemic shutdowns; and expectations of commuting when the virus has gone.

The paper provides evidence that travel behaviour post-pandemic might be different to pre-pandemic travel. It suggests that after the pandemic, public transport ridership, which declined steeply during the pandemic, will return but not to pre-pandemic levels. A post-pandemic reduction effect of around 20% in transit commuting is expected. This effect is supported using secondary evidence from a number of international cities. Results imply a mode shift from public transport use to car driving; this will be particularly large for CBD/downtown areas and is likely

to result in peak period traffic congestion after the virus has gone. Work from home increased substantially during the pandemic; this will reduce after the pandemic as enforced WFH is replaced by voluntary WFH. Nevertheless, a sustained future ongoing increase in WFH above pre-pandemic levels is suggested, acting to reduce peak commuting by 6% and commuting to Melbourne CBD by 20%. However, reductions in commuting due to WFH do not offset mode shift from public transport to car driving resulting in a net increase in car use after the pandemic. Infection fear is a new top concern of public transport users since the pandemic. This fear has transitioned from ‘fresh infection fear’; the initial concerns when the pandemic started to ‘residual infection fear’; a long-term effect when the virus has gone. Implications of the findings for research and practice are discussed.

139. Daehler T. B. Emerging markets sovereign CDS spreads during COVID-19: Economics versus epidemiology news / T. B. Daehler, J. Aizenman, Y. Jinjark / Economic Modelling. – 2021. – Vol. 100. – P. 105504. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0264999321000936>

Can bad news about COVID-19 induce negative expectations on sovereign credit risks? We investigate the factors driving credit default swap (CDS) spreads of emerging market sovereigns around the outbreak of COVID-19. Using 2014–2019 data, we estimate a two-factor model of global and regional risks and then extrapolate the model-implied spreads for the period July 2019–June 2020. Intriguingly, the model initially predicts the realized spreads well but loses predictive accuracy during the COVID-19 pandemic. Fiscal space and oil-revenue dependence primarily drive the differences between the realized and predicted sovereign spreads. Our augmented-factor model indicates that the cumulative COVID-19 mortality rate growth is positively associated with the CDS spreads. The evidence suggests that the epidemiological deterioration can lower confidence in the sovereign credit markets due to the prospects of prolonged lockdowns and a slower GDP growth recovery. Our results also hold for a single regression of daily spread changes during 2014–2020.

140. Das M. Habitat vulnerability in slum areas of India – What we learnt from COVID-19? / M. Das, A. Das, B. Giri [et al.] // International Journal of Disaster Risk Reduction. – 2021. – Vol. 65. – P. 102553. – URL: <https://www.sciencedirect.com/science/article/pii/S2212420921005148>

UN-Habitat identified the present COVID-19 pandemic as ‘city-centric’. In India, more than 50% of the total cases were documented in megacities and million-plus cities. The slums of cities are the most vulnerable due to its unhygienic environment and high population density that requires an urgent implementation of public healthcare measures. This study aims to examine habitat vulnerability in slum areas to COVID-19 in India using principal component analysis and Fuzzy AHP based technique to develop slum vulnerability index to COVID-19 (SVI_{COVID-19}). Four slum vulnerability groups (i.e. principal components) were retained with eigen-values greater than 1 based on Kaiser

criterion - poor slum household status; lack of social distance maintenance; high concentrations of slum population and towns and mobility of the households. This study also mapped composite SVI_{COVID-19} on the basis of PCA and Fuzzy AHP method at the state level for a better understanding of spatial variations. The result shows that slums located in the eastern and central parts of India (particularly Uttar Pradesh, Bihar, Jharkhand, Odisha, West Bengal) were more vulnerable to COVID-19 transmission due to lack of availability as well as accessibility to the basic services and amenities to slum dwellers. Thus, the findings of the study may not only help to understand the habitat vulnerability in slum areas to COVID-19 but it will also teach a lesson to implement effective policies for enhancing the quality of slum households (HHs) and to reduce the health risk from any infectious disease in future.

141. Das S. A comprehensive review of various categories of face masks resistant to Covid-19 / S. Das, S. Sarkar, A. Das [et al.] // Clinical Epidemiology and Global Health. – 2022. – Vol. 12. – P. 100835. – URL: <https://www.sciencedirect.com/science/article/pii/S2213398421001433>

The science about the usage of face masks by the common public to avert COVID-19 transmission is proceeding swiftly. A primary route of transmission of COVID-19 is probably through small respiratory droplets, and it is transmissible from asymptomatic and pre-symptomatic individuals. According to the World Health Organization, wearing a mask in public can help reduce the transmission of the COVID-19 virus. Different categories and types of masks and their usage are reviewed in this work. In a nutshell, this review work elucidates the aspects of utilizing the various face masks along with all possibilities to fight against the ongoing pandemic of COVID-19.

142. David J. Why did all the toilet paper disappear? Distinguishing between panic buying and hoarding during COVID-19 / J. David, S. Visvalingam, M. M. Norberg // Psychiatry Research. – 2021. – Vol. 303. – P. 114062. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121003590>

The COVID-19 pandemic led to panic buying in many countries across the globe, preventing vulnerable groups from accessing important necessities. Some reports inaccurately referred to the panic buying as hoarding. Although hoarding is a separate issue characterised by extreme saving behaviour, the two problems may be influenced by similar factors. Participants from Australia and the United States (final N = 359) completed online self-report measures of panic buying, hoarding, shopping patterns, perceived scarcity, COVID-19 illness anxiety, selfishness, and intolerance of uncertainty. Our findings showed that panic buying was related to hoarding symptoms (r 's = .23 - .36), and yet, both were uniquely associated with different psychological factors. Whilst panic buying was most strongly related to greater perceived scarcity (r 's = .38 - .60), hoarding was most related to a general

intolerance of uncertainty (r 's = .24 - .57). Based on our findings, future strategies to prevent panic buying should focus on reducing perceived scarcity cues in the community, as this seems to be the primary driver of panic buying. Another preventative strategy to reduce excessive acquiring and saving may be to implement educational programs to increase people's ability to tolerate distress and uncertainty.

143. Davido B. The first wave of COVID-19 in hospital staff members of a tertiary care hospital in the greater Paris area: A surveillance and risk factors study / B. Davido, S. Gautier, I. Riom [et al.] // *International Journal of Infectious Diseases*. – 2021. – Vol. 105. – P. 172–179. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971221001417>

Introduction

Understanding how hospital staff members (HSMs), including healthcare workers, acquired severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during the first wave can guide the control measures in the current second wave in Europe.

Methods

From March 5 to May 10, 2020, the Raymond-Poincaré Hospital held a weekday consultation for HSMs for PCR testing. HSMs were requested to complete a questionnaire on their potential exposure to SARS-CoV-2.

Results

Of 200 HSMs screened, 70 tested positive for SARS-CoV-2. Ninety-nine HSMs completed the questionnaire of whom 28 tested positive for SARS-CoV-2. In the multivariable analysis, age of ≥ 44 years (aOR = 5.2, 95% CI [1.4–22.5]) and not systematically using a facemask when caring for a patient (aOR = 13.9, 95% CI [1.8–293.0]) were significantly associated with SARS-CoV-2 infection. Working in a COVID-19-dedicated ward (aOR = 0.7, 95% CI [0.2–3.2]) was not significantly associated with infection. Community-related exposure in and outside the hospital, hospital meetings without facemasks (aOR = 21.3, 95% CI [4.5–143.9]) and private gatherings (aOR = 10, 95% CI [1.3–91.0]) were significantly associated with infection.

Conclusions

Our results support the effectiveness of barrier precautions and highlight in-hospital infections not related to patient care and infections related to exposure in the community. Protecting HSMs against COVID-19 is crucial in fighting the second wave of the epidemic.

144. Davila F. COVID-19 and food systems in Pacific Island Countries, Papua New Guinea, and Timor-Leste: Opportunities for actions towards the

sustainable development goals / F. Davila, R. M. Bourke, A. McWilliam [et al.] // Journal of Hepatology. – 2021. – Vol. 191. – P. 103137. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21000901>

Context

The COVID-19 pandemic has impacted global food systems. This has led to different strategies by communities, governments, and businesses involved in food systems to mitigate and adapt to the unfolding pandemic. Small Island Developing States are particularly exposed to the conflation of risks from COVID-19 disease, economic downturns, underlying climate vulnerabilities and biosecurity risks.

Objective

Our study aimed to identify the food systems vulnerabilities, impacts, and opportunities for supporting resilience and sustainable development in selected Pacific Island countries, Papua New Guinea, and Timor-Leste. The study focused on the impacts from the first six months of the pandemic (February–July 2020), with remote data collection and analysis done between May and July 2020.

Methods

We conducted 67 interviews, and triangulated information with desktop and news sources emerging at the time. We present results on the effect on smallholder livelihoods, supply chains, governance, communities and employment. Overall, the major impacts of COVID-19 have been on economies, posing risks to future food security and further hampering progress towards key Sustainable Development Goals.

Results and conclusions

We found that unemployment and economic contraction have been the most severe effects to date, with long-term consequences for food value chains and smallholder farmers. Disruptions to tourism, labour migration, and remittances have led to varying socio-economic impacts throughout the region. Vulnerable groups, notably women, urban poor, and youth, have been disproportionately affected by unemployment. Timor-Leste has had some social protection measures, whereas in Pacific Countries these have been varied. The lockdowns and State of Emergency initially influenced the distribution and marketing of food, but local food economies are starting to stabilise. The continued functioning of international food supply chains reduced the risk of food insecurity in high import dependent nations, notably import dependent countries like Tuvalu and Kiribati.

145. Dell'Oglio P. Applicability of COVID-19 Pandemic Recommendations for Urology Practice: Data from Three Major Italian Hot Spots (BreBeMi) / P. Dell'Oglio, G. E. Cacciamani, F. Mutin [et al.] // European Urology Open Science. – 2021. – Vol. 26. – P. 1–9. – URL: <https://www.sciencedirect.com/science/article/pii/S2666168321000197>

Background

Lombardy has been the first and one of the most affected European regions during the first and second waves of the novel coronavirus (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]).

Objective

To evaluate the impact of coronavirus disease 2019 (COVID-19) on all urologic activities over a 17-wk period in the three largest public hospitals in Lombardy located in the worst hit area in Italy, and to assess the applicability of the authorities' recommendations provided for reorganising urology practice.

Design, setting, and participants

A retrospective analysis of all urologic activities performed at three major public hospitals in Lombardy (Brescia, Bergamo, and Milan), from January 1 to April 28, 2020, was performed.

Outcome measurements and statistical analysis

Join-point regression was used to identify significant changes in trends for all urologic activities. Average weekly percentage changes (AWPCs) were estimated to summarise linear trends. Uro-oncologic surgeries performed during the pandemic were tabulated and stratified according to the first preliminary recommendations by Stensland et al (Stensland KD, Morgan TM, Moinzadeh A, et al. Considerations in the triage of urologic surgeries during the COVID-19 pandemic. *Eur Urol* 2020;77:663–6) and according to the level of priority recommended by European Association of Urology guidelines.

Results and limitations

The trend for 2020 urologic activities decreased constantly from weeks 8–9 up to weeks 11–13 (AWPC range –41%, –29.9%; $p < 0.001$). One-third of uro-oncologic surgeries performed were treatments that could have been postponed, according to the preliminary urologic recommendations. High applicability to recommendations was observed for non–muscle-invasive bladder cancer (NMIBC) patients with intermediate/emergency level of priority, penile and testicular cancer patients, and upper tract urothelial cell carcinoma (UTUC) and renal cell carcinoma (RCC) patients with intermediate level of priority. Low applicability was observed for NMIBC patients with low/high level of priority, UTUC patients with high level of priority, prostate cancer patients with intermediate/high level of priority, and RCC patients with low level of priority.

Conclusions

During COVID-19, we found a reduction in all urologic activities. High-priority surgeries and timing of treatment recommended by the authorities require adaptation according to hospital resources and local incidence.

Patient summary

We assessed the urologic surgeries that were privileged during the first wave of coronavirus disease 2019 (COVID-19) in the three largest public hospitals in Lombardy, worst hit by the pandemic, to evaluate whether high-priority surgeries and timing of treatment recommended by the authorities are applicable. Pandemic recommendations provided by experts should be tailored according to hospital capacity and different levels of the pandemic.

146. Demichev V. A time-resolved proteomic and prognostic map of COVID-19 / V. Demichev, P. Tober-Lau, O. Lemke [et al.] // Cell Systems. – 2021. – Vol. 12, № 8. – P. 780–794.e7. – URL: <https://www.sciencedirect.com/science/article/pii/S2405471221001605>

Summary

COVID-19 is highly variable in its clinical presentation, ranging from asymptomatic infection to severe organ damage and death. We characterized the time-dependent progression of the disease in 139 COVID-19 inpatients by measuring 86 accredited diagnostic parameters, such as blood cell counts and enzyme activities, as well as untargeted plasma proteomes at 687 sampling points. We report an initial spike in a systemic inflammatory response, which is gradually alleviated and followed by a protein signature indicative of tissue repair, metabolic reconstitution, and immunomodulation. We identify prognostic marker signatures for devising risk-adapted treatment strategies and use machine learning to classify therapeutic needs. We show that the machine learning models based on the proteome are transferable to an independent cohort. Our study presents a map linking routinely used clinical diagnostic parameters to plasma proteomes and their dynamics in an infectious disease.

147. Dean D. J. Cross-cultural comparisons of psychosocial distress in the USA, South Korea, France, and Hong Kong during the initial phase of COVID-19 / D. J. Dean, I. F. Tso, A. Giersch // Psychiatry Research. – 2021. – Vol. 295. – P. 113593. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0165178120332546>

The COVID-19 crisis has resulted in disruption of everyday life worldwide but the impact and response to the pandemic have not been uniform. Many countries rapidly deployed physical-distancing mandates to curb the spread of the virus; others did not. Social distancing strategies are necessary to reduce the transmission of the virus but there may be unintended consequences. We examined psychological distress in four societies with distinct public health strategies (South Korea, Hong Kong, France and the United States) to identify common and region-specific factors that may contribute to mental health outcome during the pandemic. From March to July of 2020, a survey of demographics, general health, mental health, loneliness and social networks was conducted. Overall, younger age, greater concern for COVID, and more severe loneliness predicted worse psychological outcome but the magnitudes of these effects varied across the four

regions. Objective measures of social isolation did not affect mental health. There were also notable differences in psychological outcome; Hong Kong, with very strict social distancing protocols plus ongoing political unrest, suffered the most drastic deterioration of mental health. To prepare for an impending mental health crisis, concerted efforts to reduce loneliness should be integrated into a comprehensive public health strategy.

148. Demir O. M. Impact and Determinants of High-Sensitivity Cardiac Troponin-T Concentration in Patients With COVID-19 Admitted to Critical Care / O. M. Demir, M. Rya, C. Cirillo [et al.] // The American Journal of Cardiology. – 2021. – Vol. 147. – P. 129–136. <https://www.sciencedirect.com/science/article/abs/pii/S000291492100148X>

Cardiac Troponin (hs-TnT) elevation has been reported in unselected patients hospitalized with COVID-19 however the mechanism and relationship with mortality remain unclear. Consecutive patients admitted to a high-volume intensive care unit (ICU) in London with severe COVID-19 pneumonitis were included if hs-TnT concentration at admission was known. Kaplan-Meier survival analysis performed, with cohorts classified a priori by multiples of the upper limit of normal (ULN). 277 patients were admitted during a 7-week period in 2020; 176 were included (90% received invasive ventilation). hs-TnT at admission was 16.5 (9.0 to 49.3) ng/L, 56% had concentrations >ULN. 56 patients (31.8%) died during the index admission. Admission hs-TnT level was lower in survivors (12.0 (8.0-27.8) vs 28.5 (14.0 to 81.0) ng/L, $p=0.001$). Univariate predictors of mortality were age, APACHE-II Score and admission hs-TnT (HR 1.73, $p=0.007$). By multivariate regression, only age (HR 1.33, CI: 1.16 to 1.51, $p < 0.01$) and admission hs-TnT (HR 1.94, CI: 1.22 to 3.10, $p=0.006$) remained predictive. Survival was significantly lower when admission hs-TnT was >ULN (log-rank p -value<0.001). Peak hs-TnT was higher in those who died but was not predictive of death after adjustment for other factors. In conclusion, in critically ill patients with COVID-19 pneumonitis, the hs-TnT level at admission is a powerful independent predictor of the likelihood of surviving to discharge from ICU. In most cases, hs-TnT elevation does not represent major myocardial injury but acts as a sensitive integrated biomarker of global stress. Whether stratification based on admission Troponin level could be used to guide prognostication and management warrants further evaluation.

149. Diktas H. What were the changes during the COVID-19 pandemic era concerning occupational risks among health care workers? / H. Diktas, A. Oncul, C. A. Tahtasakal [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 10. – P. 1334–1339. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121001623>

Background

Accidental exposure to percutaneous needle stick and sharp injuries (NSSIs) and blood and other body fluids is the unintended contact with risky medical instruments or patient secretions during a medical intervention. During the COVID-19 pandemic, the significance of occupational injuries in healthcare professionals was revealed once again. To assess the occupational injuries, we compared rates, distribution and type of exposure to blood and body fluids and NSSIs of health care workers for 2019 (pre-pandemic era) and 2020 (pandemic era) years, respectively.

Material and methods

Our study included data collected by the ‘Hospital Infection Control Committee’ for the years 2019–2020. Data collected using the active surveillance method were analyzed retrospectively.

Results

During 2019 (pre-pandemic period) and 2020 (pandemic period), 112 (27.65%) and 82 (21.4%) NSSIs reported, respectively. Of the exposed HCWs in 2019 (pre-pandemic period), 16.8% (14) were doctor, 53.6% (60) were nurse and 47.4% (14) were intern doctors. In the 2020 (pandemic period), NSSIs were observed most frequently in nurses and cleaning staff, 50.24% and 33.64%, respectively. Concerning the total percentage of exposure to blood and other body fluids, a slight increase was revealed from 1.48% to 2.62% in 2019 and 2020, respectively. A significant decrease in exposure rate was reported among the doctors between the pre-pandemic and pandemic era; 3.6% and 1.19% at 2019 and 2020, respectively. A significant increase in exposure rate was reported among the nurses between pre-pandemic and pandemic era; 0.8% and 6.89%, respectively.

Conclusion

In conclusion, the exposure to NSSIs during the pandemic period decreased; however, there was no severe difference at pre-pandemic and pandemic periods concerning exposure to blood and body fluids. Well-designed training and awareness programs can be effective in preventing exposure to NSSIs and blood and other body fluids and exposure to respiratory acquired viruses.

150. Ding Z. Association of liver abnormalities with in-hospital mortality in patients with COVID-19 / Z. Ding, G. Li, L. Chen [et al.] // Journal of Hepatology. – 2021. – Vol. 74, № 6. – P. 1295–1302. – URL: <https://www.sciencedirect.com/science/article/pii/S016882782033885X>

Background & Aims

The evolution and clinical significance of abnormal liver chemistries and the impact of hepatitis B infection on outcome in patients with COVID-19 is not well characterized. This study aimed to explore these issues.

Methods

This large retrospective cohort study included 2,073 patients with coronavirus disease 2019 (COVID-19) and definite outcomes in Wuhan, China. Longitudinal liver function tests were conducted, with associated factors and risk of death determined by multivariate regression analyses. A prognostic nomogram was formulated to predict the survival of patients with COVID-19. The characteristics of liver abnormalities and outcomes of patients with COVID-19, with and without hepatitis B, were compared after 1:3 propensity score matching.

Results

Of the 2,073 patients, 1,282 (61.8%) had abnormal liver chemistries during hospitalization, and 297 (14.3%) had a liver injury. The mean levels of aspartate aminotransferase (AST) and direct bilirubin (D-Bil) increased early after symptom onset in deceased patients and showed disparity compared to levels in discharged patients throughout the clinical course of the disease. Abnormal AST (adjusted hazard ratio [HR] 1.39; 95% CI 1.04–1.86, $p = 0.027$) and D-Bil (adjusted HR 1.66; 95% CI 1.22–2.26; $p = 0.001$) levels at admission were independent risk factors for mortality due to COVID-19. A nomogram was established based on the results of multivariate analysis and showed sufficient discriminatory power and good consistency between the prediction and the observation. HBV infection in patients did not increase the risk of poor COVID-19-associated outcomes.

Conclusions

Abnormal AST and D-Bil levels at admission were independent predictors of COVID-19-related mortality. Therefore, monitoring liver chemistries, especially AST and D-Bil levels, is necessary in hospitalized patients with COVID-19.

Lay summary

Liver test abnormalities (in particular elevations in the levels of aspartate aminotransferase [AST] and direct bilirubin [D-Bil]) were observed after symptom onset in patients who went on to die of coronavirus disease 2019 (COVID-19). Abnormal levels of AST and D-Bil at admission were independent predictors of COVID-19-related mortality. HBV infection in patients did not increase the risk of poor COVID-19-associated outcomes.

151. Dolhnikoff M. Using EM data to understand COVID-19 pathophysiology / M. Dolhnikoff, A. N. Duarte-Neto, P. H. N. Saldiva [et al.] // *The Lancet*. – 2021. – Vol. 397, № 10270. – P. 196–197. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621000349>

The pathophysiology of multisystem inflammatory syndrome in children is not completely understood, but it is a field in COVID-19 under extensive investigation. Evidence of the effects of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on extrapulmonary tissues is essential for understanding the disease's course and treatment.

We read with concern Carsten Dittmayer and colleagues' Correspondence,¹ in which they questioned the evidence of a viral particle shown in our recent Case Report² of a child with COVID-19-related multisystem inflammatory syndrome.

The ultrastructural evidence of SARS-CoV-2 in cardiac tissue was undisputed (a cardiomyocyte was shown in figure 3A, an endothelial cell was shown in figure 3C, and a neutrophil in figure 3D).² This finding was further corroborated by the detection of SARS-CoV-2 RNA by RT-PCR, and by immunohistochemistry.

152. Donohoe E. The impact of COVID-19 on Oral and Maxillofacial Surgery patient presentations to the emergency department: A West of Ireland experience / E. Donohoe, R. Courtney, E. McManus [et al.] // Advances in Oral and Maxillofacial Surgery. – 2021. – Vol. 2. – P. 100061. – URL: <https://www.sciencedirect.com/science/article/pii/S2667147621000480>

Following the outbreak of COVID-19 and subsequent restrictions in the Republic of Ireland, the number of Emergency Department attendances have reduced nationally. Concurrently, it would be expected that there would be a reduction in the number of patients attending the emergency department with specific oral and maxillofacial concerns. A retrospective analysis of Oral and Maxillofacial patients attending the Emergency Department in University Hospital Galway during the first three-month period of COVID-19 lockdown in 2020 was compared to patients presenting to the Emergency Department during the equivalent period in the preceding year. The analysis confirmed a 46% reduction in attendances during the COVID-19 lockdown period. There was also a significant decrease in the number of young patients attending due to maxillofacial trauma. Contributing factors to this reduction may include working from home, reducing face-to-face social activities and the closure of social settings. It must be noted that there was a two-fold increase in the number of patients attending with dental pain during the lockdown period in comparison to the preceding year. Similarly, there was a proportional increase in the number of those attending due to infection and requiring subsequent admission during the COVID-19 lockdown period. Patient anxiety related to contracting the virus may have contributed to patients presenting with infection during the COVID-19 lockdown period.

153. Dorward J. The impact of the COVID-19 lockdown on HIV care in 65 South African primary care clinics: an interrupted time series analysis / J. Dorward, T. Khubone, K. Gate [et al.] // The Lancet HIV. – 2021. – Vol. 8, № 3. – P. e158–e165. – URL: <https://www.sciencedirect.com/science/article/pii/S2352301820303593>

The effect of the COVID-19 pandemic on HIV outcomes in low-income and middle-income countries is poorly described. We aimed to measure the impact of the 2020 national COVID-19 lockdown on HIV testing and treatment in KwaZulu-Natal, South Africa, where 1.7 million people are living with HIV.

Methods

In this interrupted time series analysis, we analysed anonymised programmatic data from 65 primary care clinics in KwaZulu-Natal province, South Africa. We included data from people testing for HIV, initiating antiretroviral therapy (ART), and collecting ART at participating clinics during the study period, with no age restrictions. We used descriptive statistics to summarise demographic and clinical data, and present crude summaries of the main outcomes of numbers of HIV tests per month, ART initiations per week, and ART collection visits per week, before and after the national lockdown that began on March 27, 2020. We used Poisson segmented regression models to estimate the immediate impact of the lockdown on these outcomes, as well as post-lockdown trends.

Findings

Between Jan 1, 2018, and July 31, 2020, we recorded 1 315 439 HIV tests. Between Jan 1, 2018, and June 15, 2020, we recorded 71 142 ART initiations and 2 319 992 ART collection visits. We recorded a median of 41 926 HIV tests per month before lockdown (January, 2018, to March, 2020; IQR 37 838–51 069) and a median of 38 911 HIV tests per month after lockdown (April, 2020, to July, 2020; IQR 32 699–42 756). In the Poisson regression model, taking into account long-term trends, lockdown was associated with an estimated 47.6% decrease in HIV testing in April, 2020 (incidence rate ratio [IRR] 0.524, 95% CI 0.446–0.615). ART initiations decreased from a median of 571 per week before lockdown (IQR 498–678), to 375 per week after lockdown (331–399), with an estimated 46.2% decrease in the Poisson regression model in the first week of lockdown (March 30, 2020, to April 5, 2020; IRR 0.538, 0.459–0.630). There was no marked change in the number of ART collection visits (median 18 519 visits per week before lockdown [IQR 17 074–19 922] vs 17 863 visits per week after lockdown [17 509–18 995]; estimated effect in the first week of lockdown IRR 0.932, 95% CI 0.794–1.093). As restrictions eased, HIV testing and ART initiations gradually improved towards pre-lockdown levels (slope change 1.183/month, 95% CI 1.113–1.256 for HIV testing; 1.156/month, 1.085–1.230 for ART initiations).

Interpretation

ART provision was generally maintained during the 2020 COVID-19 lockdown, but HIV testing and ART initiations were heavily impacted. Strategies to increase testing and treatment initiation should be implemented.

154. Dorze M. COVID-19 and ethics: We learn as we go. But where are we going? / M. Dorze, S. Kandelman, V. Gateau [et al.] // *Anaesthesia Critical Care*

& Pain Medicine. – 2021. – Vol. 40, №2. – P. 100856. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S235255682100059X>

For several months now, the novel SARS-CoV-2 pandemic has plunged us into an ongoing, day-to-day crisis, challenging and disrupting our lives, especially as anaesthesiologists and intensivists.

Last spring, we were stunned by the sudden and massive arrival of COVID-19 patients. We feared shortages of both human and material resources, and worried about our own risk of contamination. We focused our efforts on the reorganisation necessary for the care of “COVID-19” patients. At the time, de facto priority was given to these patients, to the detriment of other pathologies that had nonetheless not gone away. Facing a tense situation that could quickly devolve into one of saturation, strategies for allocating scarce critical care resources had to be conceived in a hurry [1], [2]. Some of us were reticent about these strategies, born under the restraints of action and emergency. How can we (or do we) approach the idea that one patient could be privileged over another?

155. Drenkard K. University COVID -19 Surveillance Testing Center: Challenges and Opportunities for Schools of Nursing / K. Drenkard, B. Sakallaris, P. Deyo [et al.] // Journal of Professional Nursing. – 2021. – Vol. 37, № 5. – P. 948–953. – URL: <https://www.sciencedirect.com/science/article/pii/S8755722321001058>

As the impact of the COVID-19 pandemic became clear, it was evident that higher education schools and Universities, including schools of nursing were facing enormous challenges to create a safe environment for educational instruction to continue. Clinical education in particular was affected as clinical sites were increasingly unable to accommodate student clinical rotations due to crushing volumes and overwhelming care needs of COVID patients. This article outlines the innovative efforts of one university that set up a robust surveillance testing program that required and provided weekly COVID-19 testing of all students, faculty and staff that were on-campus. The testing center is nurse led and nurse managed, providing a clinical experience for over 50 nursing students each semester, allowing them to accrue community clinical hours so that they can progress through their nursing program. Clinical quality and patient experience outcomes are shared, and lessons learned described.

156. Dwyer C. J. Comparative analysis of antibodies to SARS-CoV-2 between asymptomatic and convalescent patients / C. J. Dwyer, C. A. Cloud, C. Wang [et al.] // iScience. – 2021. – Vol. 24, № 6. – P. 102489. – URL: <https://www.sciencedirect.com/science/article/pii/S2589004221004570>

Summary

The SARS-CoV-2 viral pandemic has induced a global health crisis, which requires more in-depth investigation into immunological responses to develop

effective treatments and vaccines. To understand protective immunity against COVID-19, we screened over 60,000 asymptomatic individuals in the Southeastern United States for IgG antibody positivity against the viral Spike protein, and approximately 3% were positive. Of these 3%, individuals with the highest anti-S or anti-RBD IgG level showed a strong correlation with inhibition of ACE2 binding and cross-reactivity against non-SARS-CoV-2 coronavirus S-proteins. We also analyzed samples from 94 SARS-CoV-2 patients and compared them with those of asymptomatic individuals. SARS-CoV-2 symptomatic patients had decreased antibody responses, ACE2 binding inhibition, and antibody cross-reactivity. Our study shows that healthy individuals can mount robust immune responses against SARS-CoV-2 without symptoms. Furthermore, IgG antibody responses against S and RBD may correlate with high inhibition of ACE2 binding in individuals tested for SARS-CoV-2 infection or post vaccination.

157. Dzúrová D. How health capabilities and government restrictions affect the COVID-19 pandemic: Cross-country differences in Europe / D. Dzúrová, V. Květoň // Applied Geography. – 2021. – Vol. 135. – P. 102551. – URL: <https://www.sciencedirect.com/science/article/pii/S0143622821001673>

The COVID-19 pandemic in the first months of 2020 posed an unprecedented threat to the health of the world's population. In this longitudinal design study, we elaborated the typology of 27 European countries based on the complete beginnings of the ongoing COVID-19 pandemic based on health indicators and contextual variables. Two-step analysis using factor scores to run a cluster analysis identifying 5 consistent groups of countries. We then analyze the relationship between the GHS predictive index, the restrictions and health care expenditures within countries categorized into 5 clusters. An analysis of the early stages of a pandemic confirmed that in countries where anti-pandemic measures were rapidly and consistently in place, the spread of the virus was suppressed more rapidly and the first wave of pandemics in these countries was incomparably more benign than in countries with later responses and milder restrictive measures.

158. Eguchi A. Suicide by gender and 10-year age groups during the COVID-19 pandemic vs previous five years in Japan: An analysis of national vital statistics / A. Eguchi, S. Nomura, S. Gilmour [et al.] // Psychiatry Research. – 2021. – Vol. 305. – P. 114173. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121004698>

Using daily vital statistics data from the Japanese Ministry of Health, Labour and Welfare, we provide the first weekly and age-group-specific estimates of the additional suicide burden during the COVID-19 pandemic in Japan by gender, from January through November 2020. Our results indicate that compared with the previous five years, suicide cases in 2020 in Japan have increased from late July to November for women in all age groups and for men in the 20–29 and 80+ years

age group. Targeted interventions based on age and gender might be more effective in reducing suicide during the COVID-19 pandemic in Japan.

159. Elmunzer B. J. Association Between Preadmission Acid Suppressive Medication Exposure and Severity of Illness in Patients Hospitalized With COVID-19 / B. J. Elmunzer, B. J. Wolf, J. M. Scheiman [et al.] // *Gastroenterology*. – 2021. – Vol. 160, № 4. – P. 1417–1422. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0016508520353956>

Recent studies have suggested that proton pump inhibitor (PPI) use may increase the risk of contracting severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and worsen the course COVID-19.^{1,2} This observation is biologically plausible, as gastric acid is a well-established line of defense against microbial pathogens, including SARS-CoV-1.³ In addition, PPI use may worsen outcomes in patients with COVID-19 through alterations of the gut microbiome and intestinal immune apparatus.⁴ Conversely, recent data suggest that histamine 2 receptor antagonists (H2RAs), which are less potent than PPIs in terms of acid suppression, may be beneficial in SARS-CoV-2,^{5,6} through direct antiviral effects.

160. Engelhardt B. Learning in the time of Covid-19: Some preliminary findings / B. Engelhardt, M. Johnson, M. E. Meder // *International Review of Economics Education*. – 2021. – Vol. 37. – P. 100215. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1477388021000074>

In response to the Covid-19 pandemic, universities closed to face-to-face learning, shifting entirely to online instruction midway through the spring 2020 semester. In this paper, we compare student performance in the Covid-19 affected semester to that of the previous three unaffected semesters. We consider both student grades and student performance on standardized post-tests in introductory macroeconomics, microeconomics, and statistics courses. We conclude that there were no significant differences in performance across the semesters. Despite concerns that low-income, first-generation, and minority students could suffer disproportionately, we identify no measurable effect for these population subgroups. Women are found to overperform in the Covid-affected semester when compared to previous terms. Women at our institution could be expected to earn 0.15 of a grade-point less in introductory economics courses than otherwise comparable men in pre-Covid semesters. In the Covid-affected semester, this difference disappeared, with women earning higher grades, on average, than men.

161. Eskander E. Assessment of SARS-CoV-2 testing in children during a low prevalence period (VIGIL study 1) / E. Eskander, C. Jung, C. Levy [et al.] // *Infectious Diseases Now*. – 2021. – Vol. 51, № 6. – P. 552–555. – URL: <https://www.sciencedirect.com/science/article/pii/S2666991921004280>

Objectives

SARS-CoV-2 induces a broad spectrum of clinical manifestations, which overlap with other viral infections very common in children. We aimed to describe the percentage of positive SARS-CoV-2 RT-PCR tests in symptomatic and asymptomatic ambulatory children and to determine the predictive factors for positivity.

Patients and Methods

From June 1 to July 31, 2020, we conducted a cross-sectional prospective, multicenter study (13 hospital emergency units and 59 ambulatory pediatricians) throughout France. Children under 15 years of age with a prescription of nasopharyngeal SARS-CoV-2 RT-PCR test were enrolled.

Results

Among the 1,553 RT-PCR tests, 22 were positive (1.4%; 95%CI [0.9; 2.1]). In both univariate and multivariate analyses, the predictive factors for positivity were age below 2 years (OR: 4.5 [1.6; 12.7]) and history of contact (OR: 12.3 [4.6; 32.8]).

Conclusions

In an epidemic stage with low SARS-CoV-2 circulation, sampling of children with nonspecific symptoms and without known contact could be questioned.

162. España G. Impacts of K-12 school reopening on the COVID-19 epidemic in Indiana, USA / G. España, S. Cavany, R. Oidtman [et al.] // Epidemics. – 2021. – Vol. 37. – P. 100487. – URL: <https://www.sciencedirect.com/science/article/pii/S1755436521000396>

In the United States, schools closed in March 2020 due to COVID-19 and began reopening in August 2020, despite continuing transmission of SARS-CoV-2. In states where in-person instruction resumed at that time, two major unknowns were the capacity at which schools would operate, which depended on the proportion of families opting for remote instruction, and adherence to face-mask requirements in schools, which depended on cooperation from students and enforcement by schools. To determine the impact of these conditions on the statewide burden of COVID-19 in Indiana, we used an agent-based model calibrated to and validated against multiple data types. Using this model, we quantified the burden of COVID-19 on K-12 students, teachers, their families, and the general population under alternative scenarios spanning three levels of school operating capacity (50 %, 75 %, and 100 %) and three levels of face-mask adherence in schools (50 %, 75 %, and 100 %). Under a scenario in which schools operated remotely, we projected 45,579 (95 % CrI: 14,109–132,546) infections and 790 (95 % CrI: 176–1680) deaths statewide between August 24 and December 31. Reopening at 100 % capacity with 50 % face-mask adherence in schools resulted in a proportional increase of 42.9 (95 % CrI: 41.3–44.3) and 9.2 (95 % CrI: 8.9–

9.5) times that number of infections and deaths, respectively. In contrast, our results showed that at 50 % capacity with 100 % face-mask adherence, the number of infections and deaths were 22 % (95 % CrI: 16 %–28 %) and 11 % (95 % CrI: 5 %–18 %) higher than the scenario in which schools operated remotely. Within this range of possibilities, we found that high levels of school operating capacity (80–95 %) and intermediate levels of face-mask adherence (40–70 %) resulted in model behavior most consistent with observed data. Together, these results underscore the importance of precautions taken in schools for the benefit of their communities.

163. Espinosa-Méndez C. COVID-19 effect on herding behaviour in European capital markets / C. Espinosa-Méndez, J. Arias // *Finance Research Letters*. – 2021. – Vol. 38. – P. 101787. – URL: <https://www.sciencedirect.com/science/article/pii/S1544612320316019>

This article investigates whether COVID-19 pandemic had an effect on herding behaviour in Europe. Using a sample from the stock exchanges of France (Paris), Germany (Frankfurt), Italy (Milan), United Kingdom (London) and Spain (Madrid), over the period from January 03, 2000 to June 19, 2020, we found robust evidence that COVID-19 pandemic increased herding behaviour in the capital markets of Europe.

164. Estenssoro E. Clinical characteristics and outcomes of invasively ventilated patients with COVID-19 in Argentina (SATICOVID): a prospective, multicentre cohort study / E. Estenssoro, C. I. Loudet, F. G. Ríos [et al.] // *The Lancet Respiratory Medicine*. – 2021. – Vol. 9, №9. – P. 989–998. – URL: <https://www.sciencedirect.com/science/article/pii/S2213260021002290>

Summary

Background

Although COVID-19 has greatly affected many low-income and middle-income countries, detailed information about patients admitted to the intensive care unit (ICU) is still scarce. Our aim was to examine ventilation characteristics and outcomes in invasively ventilated patients with COVID-19 in Argentina, an upper middle-income country.

Methods

In this prospective, multicentre cohort study (SATICOVID), we enrolled patients aged 18 years or older with RT-PCR-confirmed COVID-19 who were on invasive mechanical ventilation and admitted to one of 63 ICUs in Argentina. Patient demographics and clinical, laboratory, and general management variables were collected on day 1 (ICU admission); physiological respiratory and ventilation variables were collected on days 1, 3, and 7. The primary outcome was all-cause in-hospital mortality. All patients were followed until death in hospital or hospital discharge, whichever occurred first. Secondary outcomes were ICU mortality, identification of independent predictors of mortality, duration of invasive

mechanical ventilation, and patterns of change in physiological respiratory and mechanical ventilation variables. The study is registered with ClinicalTrials.gov, NCT04611269, and is complete.

Findings

Between March 20, 2020, and Oct 31, 2020, we enrolled 1909 invasively ventilated patients with COVID-19, with a median age of 62 years [IQR 52–70]. 1294 (67.8%) were men, hypertension and obesity were the main comorbidities, and 939 (49.2%) patients required vasopressors. Lung-protective ventilation was widely used and median duration of ventilation was 13 days (IQR 7–22). Median tidal volume was 6.1 mL/kg predicted bodyweight (IQR 6.0–7.0) on day 1, and the value increased significantly up to day 7; positive end-expiratory pressure was 10 cm H₂O (8–12) on day 1, with a slight but significant decrease to day 7. Ratio of partial pressure of arterial oxygen (PaO₂) to fractional inspired oxygen (FiO₂) was 160 (IQR 111–218), respiratory system compliance 36 mL/cm H₂O (29–44), driving pressure 12 cm H₂O (10–14), and FiO₂ 0.60 (0.45–0.80) on day 1. Acute respiratory distress syndrome developed in 1672 (87.6%) of patients; 1176 (61.6%) received prone positioning. In-hospital mortality was 57.7% (1101/1909 patients) and ICU mortality was 57.0% (1088/1909 patients); 462 (43.8%) patients died of refractory hypoxaemia, frequently overlapping with septic shock (n=174). Cox regression identified age (hazard ratio 1.02 [95% CI 1.01–1.03]), Charlson score (1.16 [1.11–1.23]), endotracheal intubation outside of the ICU (ie, before ICU admission; 1.37 [1.10–1.71]), vasopressor use on day 1 (1.29 [1.07–1.55]), D-dimer concentration (1.02 [1.01–1.03]), PaO₂/FiO₂ on day 1 (0.998 [0.997–0.999]), arterial pH on day 1 (1.01 [1.00–1.01]), driving pressure on day 1 (1.05 [1.03–1.08]), acute kidney injury (1.66 [1.36–2.03]), and month of admission (1.10 [1.03–1.18]) as independent predictors of mortality.

Interpretation

In patients with COVID-19 who required invasive mechanical ventilation, lung-protective ventilation was widely used but mortality was high. Predictors of mortality in our study broadly agreed with those identified in studies of invasively ventilated patients in high-income countries. The sustained burden of COVID-19 on scarce health-care personnel might have contributed to high mortality over the course of our study in Argentina. These data might help to identify points for improvement in the management of patients in middle-income countries and elsewhere.

165. Eze P. U. Community informatics for sustainable management of pandemics in developing countries: A case study of COVID-19 in Nigeria / P. U. Eze, C. P. Ezenkwu, C. C. Etteh [et al.] // Ethics, Medicine and Public Health. – 2021. – Vol. 16. – P. 100632. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2352552521000098>

Summary

Although a significant number of the human population in developing countries live in urban communities, majority of the population lives in rural areas. Developing countries, especially in their rural areas, suffer from a lack of healthcare facilities, poverty and high rate of illiteracy. Motivated by the huge socio-economic gap between the developed and the developing worlds, there have been several studies into the COVID-19 pandemic management in developing countries. However, none of these research works emphasised the health cultural beliefs of any developing economy as a basis for their recommendations. Specifically, this paper discusses the pandemic situation in Nigeria with emphasis on the prevalent health cultural beliefs of the citizens of the country, especially those living in rural communities. This is important because each local community defines a socio-ecological cluster of people who are more tightly knitted together in terms of language, relationship, culture, religion, social amenities, business, leadership and so on. As such, there is a need to prepare the socio-ecological units to be more resistant to the spread of the virus; a weaker social-ecological unit will entail a higher risk of community transmissions. With respect to the peculiarity of each local community, this paper recommends strategies for controlling and managing the pandemic in Nigeria using community informatics or grass-root computing. We argue that community informatics can empower and support policy makers and governments of developing countries such as Nigeria in combating and effectively managing a pandemic.

166. Fadista J. Shared genetic etiology between idiopathic pulmonary fibrosis and COVID-19 severity / J. Fadista, L. M. Kraven, J. Karjalainen [et al.] // EBioMedicine. – 2021. – Vol. 65. – P. 103277. – URL: <https://www.sciencedirect.com/science/article/pii/S2352396421000700>

Background

Idiopathic pulmonary fibrosis (IPF) is a complex lung disease, characterized by progressive lung scarring. Severe COVID-19 is associated with substantial pneumonitis and has a number of shared major risk factors with IPF. This study aimed to determine the genetic correlation between IPF and severe COVID-19 and assess a potential causal role of genetically increased risk of IPF on COVID-19 severity.

Methods

The genetic correlation between IPF and COVID-19 severity was estimated with linkage disequilibrium (LD) score regression. We performed a Mendelian randomization (MR) study for IPF causality in COVID-19. Genetic variants associated with IPF susceptibility ($P < 5 \times 10^{-8}$) in previous genome-wide association studies (GWAS) were used as instrumental variables (IVs). Effect estimates of those IVs on COVID-19 severity were gathered from the GWAS meta-analysis by the COVID-19 Host Genetics Initiative (4,336 cases & 623,902 controls).

Findings

We detected a positive genetic correlation of IPF with COVID-19 severity ($r_g=0.31$ [95% CI 0.04–0.57], $P = 0.023$). The MR estimates for severe COVID-19 did not reveal any genetic association (OR 1.05, [95% CI 0.92–1.20], $P = 0.43$). However, outlier analysis revealed that the IPF risk allele rs35705950 at MUC5B had a different effect compared with the other variants. When rs35705950 was excluded, MR results provided evidence that genetically increased risk of IPF has a causal effect on COVID-19 severity (OR 1.21, [95% CI 1.06–1.38], $P = 4.24 \times 10^{-3}$). Furthermore, the IPF risk-allele at MUC5B showed an apparent protective effect against COVID-19 hospitalization only in older adults (OR 0.86, [95% CI 0.73–1.00], $P = 2.99 \times 10^{-2}$).

Interpretation

The strongest genetic determinant of IPF, rs35705950 at MUC5B, seems to confer protection against COVID-19, whereas the combined effect of all other IPF risk loci seem to confer risk of COVID-19 severity. The observed effect of rs35705950 could either be due to protective effects of mucin over-production on the airways or a consequence of selection bias due to (1) a patient group that is heavily enriched for the rs35705950 T undertaking strict self-isolation and/or (2) due to survival bias of the rs35705950 non-IPF risk allele carriers. Due to the diverse impact of IPF causal variants on SARS-CoV-2 infection, with a possible selection bias as an explanation, further investigation is needed to address this apparent paradox between variance at MUC5B and other IPF genetic risk factors.

167. Fagbemi F. COVID-19 and sustainable development goals (SDGs): An appraisal of the emanating effects in Nigeria / F. Fagbemi // Research in Globalization. – 2021. – Vol. 3. – P. 100047. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000125>

The paper appraised the emanating effect of COVID-19 on sustainable development goals (SDGs) in Nigeria through the systematic illustration of the prevailing incidents. It was affirmed that the preoccupation with the COVID-19 cases caused many other critical socioeconomic issues (like education, infrastructure development, and employment) to suffer a state of negligence or be overlooked. Like other developing countries, Nigeria could become poorer, given the increased unemployment rate and the anticipated difficulty in servicing debt resulting from the COVID-19 outbreak. Hence, festering challenges including poverty, limited access to health care, low education quality, poor road networks among others, could be further entrenched. These incidents could be detrimental to sustainable development goals (SDGs) 2030 agenda. The current crisis, therefore, poses a threat to Nigeria's development prospects, as it may take more time to recover, especially in the post-COVID-19 era. Thus, it is critical to recognize the significance of securing strong institutional regulatory setup and resources

(including financial and material resources) needed to facilitate sustainable change in the economy.

168. Fang Y. The immediate and subsequent effects of public health interventions for COVID-19 on the leisure and recreation industry / Y. Fang, L. Zhu, Y. Jiang [et al.] // Tourism Management. – 2021. – Vol. 87. – P. 104393. – URL: <https://www.sciencedirect.com/science/article/pii/S0261517721001126>

Public health interventions to combat COVID-19 can be viewed as an exogenous shock to the economy, especially for industries—such as leisure, recreation, and tourism—that rely heavily on human mobility. This study investigates whether and how exactly the economic impact of government public health policies varies over time. Focusing on the leisure and recreation industry, we use data for 131 countries/regions from February to May 2020 and employ generalized difference-in-differences models to investigate the short- and longer-term effects of public health policies. We find that stricter policies lead, on average, to an immediate 9.2–percentage-point drop in leisure and recreation participation. Even so, that industry recovers in about seven weeks after a COVID-19 outbreak in countries/regions that undertake active interventions. After thirteen weeks, leisure and recreation involvement recovers to 70% of pre-pandemic levels in a place that actively intervened but stagnates at about 40% in one that did not.

169. Fei D. Student returnees from China's COVID-19 epicenter: Spatio-temporal movement and impact of tracing / D. Fei, C. Liao, H. Yang // Social Science & Medicine. – 2021. – Vol. 287. – P. 114371. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621007036>

At the initial stage of COVID-19 outbreak, tracing returnees from Wuhan – the epicenter of the disease – is a major strategy in each province of China to contain its spread. However, scholars are yet to assess the impact of tracing on individuals. Drawing upon a large-scale survey with students from four major universities in Wuhan, we investigate individual experiences with tracing activities at government and community levels and the impacts on students' socio-psychological wellbeing. Findings indicate that tracing is likely to increase the risks of privacy infringement, verbal slur, and warning at residence; and students experience moderate-to-high levels of anxiety and fear. Improved public health measures are therefore necessary to balance the twin goals of containing disease and alleviating unintended consequences of tracing.

170. Feuerstein J. D. Triage of General Gastrointestinal Endoscopic Procedures During the COVID-19 Pandemic: Results From a National Delphi Consensus Panel / J. D. Feuerstein, M. Bilal, T. M. Berzin [et al.] // Techniques and Innovations in Gastrointestinal Endoscopy. – 2021. – Vol. 23, № 2. – P. 113–121. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2590030720301501>

BACKGROUND AND AIMS:As the COVID-19 pandemic moves into the postpeak period, the focus has now shifted to resuming endoscopy services to meet the needs of patients who were deferred. By using a modified Delphi process, we sought to develop a structured framework to provide guidance regarding procedure indications and procedure time intervals.**METHODS:**A national panel of 14 expert gastroenterologists from throughout the US used a modified Delphi process, to achieve consensus regarding: (1) common indications for general endoscopy, (2) critical patient-important outcomes for endoscopy, (3) defining time-sensitive intervals, (4) assigning time-sensitive intervals to procedure indications. Two anonymous rounds of voting were allowed before attempts at consensus were abandoned.

171. Fezzi C. Tracking GDP in real-time using electricity market data: Insights from the first wave of COVID-19 across Europe / C. Fezzi, V. Fanghella // European Economic Review. – 2021. – Vol. 139. – P. 103907. – URL: <https://www.sciencedirect.com/science/article/pii/S0014292121002178>

This paper develops a methodology for tracking in real-time the impact of shocks (such as natural disasters, financial crises or pandemics) on gross domestic product (GDP) by analyzing high-frequency electricity market data. As an illustration, we estimate the GDP loss caused by COVID-19 in twelve European countries during the first wave of the pandemic. Our results are almost indistinguishable from the official statistics during the first two quarters of 2020 (the correlation coefficient is 0.98) and are validated by several robustness tests. We provide estimates that are more chronologically disaggregated and up-to-date than standard macroeconomic indicators and, therefore, can provide timely information for policy evaluation in time of crisis. Our results show that pursuing “herd immunity” did not shelter from the harmful economic impacts of the first wave of the pandemic. They also suggest that coordinating policies internationally is fundamental for minimizing spillover effects from non-pharmaceutical interventions across countries.

172. Figliozzi M. Home-deliveries before-during COVID-19 lockdown: Accessibility, environmental justice, equity, and policy implications / M. Figliozzi, A. Unnikrishnan [et al.] // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 93. – P. 102760. – URL: <https://www.sciencedirect.com/science/article/pii/S136192092100064X>

During the COVID-19 lockdowns, home deliveries have changed from being a desirable luxury or comfortable solution to a health-supporting and essential service for many COVID-19 at-risk populations. However, not all households are equal in terms of access to home deliveries. The onset of COVID-19 has brought to light access inequalities that preceded the pandemic and that the COVID-19 lockdown has exacerbated and made visible. The concept of home-based accessibility (HBA) is introduced, and novel research questions are

addressed: (i) What type of households had zero home deliveries before COVID-19 lockdown? (ii) How the COVID-19 lockdown affected the type of households that receive home deliveries? and (iii) What are the implications of no access to home delivery services in terms of equity and environmental justice? To answer the first two questions, exploratory and confirmatory models with latent variables are estimated utilizing data collected from an online survey representative of the population in the Portland metropolitan region. Policy and environmental equity implications are discussed using the concept of home-based accessibility (HBA). The results indicate that traditionally underserved populations are less likely to benefit from home-based delivery services and that COVID-19 has worsened home delivery inequalities for underserved populations.

173. Figueroa J. D. The impact of the Covid-19 pandemic on breast cancer early detection and screening / J. D. Figueroa, E. Gray, N. Pashayan [et al.] // Preventive Medicine. – 2021. – Vol. 151. – P. 106585 – URL: <https://www.sciencedirect.com/science/article/pii/S0091743521001699>

The COVID-19 pandemic affects mortality and morbidity, with disruptions expected to continue for some time, with access to timely cancer-related services a concern. For breast cancer, early detection and treatment is key to improved survival and longer-term quality of life. Health services generally have been strained and in many settings with population breast mammography screening, efforts to diagnose and treat breast cancers earlier have been paused or have had reduced capacity. The resulting delays to diagnosis and treatment may lead to more intensive treatment requirements and, potentially, increased mortality. Modelled evaluations can support responses to the pandemic by estimating short- and long-term outcomes for various scenarios. Multiple calibrated and validated models exist for breast cancer screening, and some have been applied in 2020 to estimate the impact of breast screening disruptions and compare options for recovery, in a range of international settings. On behalf of the Covid and Cancer Modelling Consortium (CCGMC) Working Group 2 (Breast Cancer), we summarize and provide examples of such in a range of settings internationally, and propose priorities for future modelling exercises. International expert collaborations from the CCGMC Working Group 2 (Breast Cancer) will conduct analyses and modelling studies needed to inform key stakeholders recovery efforts in order to mitigate the impact of the pandemic on early diagnosis and treatment of breast cancer.

174. Fiske A. Ethical insights from the COVID-19 pandemic in Germany: considerations for building resilient healthcare systems in Europe / A. Fiske, S. McLennan, A. Buyx // The Lancet Regional Health - Europe. – 2021. – Vol. 9. – P. 100213. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221001903>

As of 12 August 2021, there have been 60,008,184 cases of COVID-19 (coronavirus disease 2019) reported in Europe, including 1,212,033 deaths [1]. This has put an enormous strain on European healthcare systems, and raised awareness of the ethical implications of a pandemic in which lives and livelihoods have been lost. The pandemic has not created such ethical concerns, but rather brought them to public attention in a new, urgent light. Nonetheless, pandemic responses across Europe have shown that despite a significant body of literature on ethical concerns in pandemics [2], these insights have not been broadly integrated into health system preparedness.

From the very beginning, ethical issues emerged around the role, duties and burdens of healthcare personnel [3], [4], [5]; the complexities of rapid decision-making under dynamic conditions of uncertainty [6], [7], [8]; the appropriate use of health information and digital technologies in combatting the pandemic [9], [10], [11]; the challenge of appropriate public health communication and the various causes and effects of the ‘infodemic’ that accompanied the pandemic [12], [13], [14]; and the multifactorial causes and effects of the pandemic itself [15]. One important lesson from the COVID-19 pandemic is that ethics needs to be an integral feature of resilient healthcare systems.

To underline this lesson and to further the debate around practical approaches for integrating ethics into healthcare systems more sustainably in future, we reflect on four key ethical concerns: 1) the distribution of scarce resources; 2) research ethics; 3) structural inequities; and 4) solidarity and social cohesion. Since early 2020, one of the authors (A.B.) has been the Chair of the German Ethics Council, which advises German government and politics on an ongoing basis and has issued several statements during the pandemic. She has also had various, partly ad hoc, advisory roles for individual ministries, governmental bodies and politicians. Germany is thus our case study; and much of our discussion is based on direct – if limited – involvement in German health policy-making. At the same time, we hope our contribution can be instructive for other countries and regions. The four issues were chosen due to their continuous importance in German policy-making during the pandemic; their perceived relevance for future healthcare system resilience; and our particular expertise and experiences. We aim to provide ethical insights based on our professional experience in one European country, but we cannot provide a comprehensive overview of all relevant ethical aspects of the COVID-19 pandemic.

175. Fitzgerald D. A. What we have learnt about trauma, loss and grief for children in response to COVID-19 / D. A. Fitzgerald, K. Nunn, D. Isaacs // Paediatric Respiratory Reviews. – 2021. – Vol. 39. – P. 16–21. – URL: <https://www.sciencedirect.com/science/article/pii/S1526054221000610>

Summary

The disruption of daily life resulting from COVID-19 and its precautions has taken an enormous emotional toll on children and families. The consequences of disrupted schooling, changed social interactions and altered family dynamics has had some unanticipated positives such as improved on-line educational upskilling and personal resilience. However, the potential longer term implications for educational outcomes, economic impacts of job loss and prolonged financial insecurity, physical wellbeing and mental health remain unclear. The potential for post-traumatic stress disorders from what is experienced by children with imposed isolation from friends and extended family, domestic violence and death of relatives remains concerning. Confronting images and stories relayed through social media and the popular press will challenge children's views of safety, security, trust and potentially rob them of much of the innocence of youth. In an overwhelming global response to the "adult" problems of the COVID-19 pandemic, this article reflects on the consequences of trauma, loss and grief through the perspective of children and how they may alter their view of the world.

176. Florea C. Sleep during COVID-19 lockdown: A cross-cultural study investigating job system relevance / C. Florea, P. Topalidis, T. Hauser [et al.] // Biochemical Pharmacology. – 2021. – Vol. 191. – P. 114463. – URL: <https://www.sciencedirect.com/science/article/pii/S0006295221000599>

Our study aimed to assess the change in the sleep patterns during the Coronavirus lockdown in five regions (Austria/Germany, Ukraine, Greece, Cuba and Brazil), using online surveys, translated in each language. Part of the cohort (age 25–65, well-educated) was collected directly during lockdown, to which retrospective cross-sectional data from and after lockdown (retrospective) questionnaires were added. We investigated sleep times and sleep quality changes from before to during lockdown and found that, during lockdown, participants had (i) worse perceived sleep quality if worried by COVID-19, (ii) a shift of bedtimes to later hours during workdays, and (iii) a sleep loss on free days (resulting from more overall sleep during workdays in non-system relevant jobs), leading to (iv) a marked reduction of social jetlag across all cultures.

For further analyses we directly compared system relevant and system irrelevant jobs, because it was assumed that the nature of the lockdown's consequences is dependent upon system relevance. System relevant jobs were found to have earlier wake-up times as well as shorter total sleep times on workdays, leading to higher social jetlag for people in system relevant jobs.

Cultural differences revealed a general effect that participants from Greece and Ukraine had later bedtimes (on both work and free days) and wake-up times (on workdays) than Cuba, Brazil and Austria, irrespective of COVID-19 lockdown restrictions.

177. Foroudi P. The gloom of the COVID-19 shock in the hospitality industry: A study of consumer risk perception and adaptive belief in the dark cloud of a pandemic / P. Foroudi, S. A. H. Tabaghdehi, R. Marvi // International Journal of Hospitality Management. – 2021. – Vol. 92. – P. 102717. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431920302693>

As the new coronavirus (COVID-19) spreads globally, the hospitality industry is at the heart of implementing social distancing, a measure demonstrated to be effective in flattening the epidemic curve. Informed by the perceived risk theory, this research examines how the customer's perception of the shock of the coronavirus pandemic impacts on their beliefs, and how their beliefs could influence their anticipated emotions (negative and positive) which could affect their future desire towards visiting restaurants. Structural equation modelling was used to understand the research constructs' associations. This study provides two key suggestions: (i) that the hospitality industry is built on trust from their customers by supporting and resourcing consumers' self-protection behaviour and adoptive belief, and (ii) that the economic influence and the continuous uncertainty and transformation of the restaurant business need the enhancement of localisation strategies, practices and performance.

178. Fretheim A. Relationship between teaching modality and COVID-19, well-being, and teaching satisfaction (campus & corona): A cohort study among students in higher education / A. Fretheim, A. Helleve, B. Løyland [et al.] // Public Health in Practice. – 2021. – Vol. 2. – P. 100187. – URL: <https://www.sciencedirect.com/science/article/pii/S2666535221001129>

Objectives

Higher education institutions all over the world struggled to balance the need for infection control and educational requirements, as they prepared to reopen after the first wave of the COVID-19 pandemic. A particularly difficult choice was whether to offer for in-person or online teaching. Norwegian universities and university colleges opted for a hybrid model when they reopened for the autumn semester, with some students being offered more in-person teaching than others. We seized this opportunity to study the association between different teaching modalities and COVID-19 risk, quality of life (subjective well-being), and teaching satisfaction.

Study design

Prospective, observational cohort study.

Methods

We recruited students in higher education institutions in Norway who we surveyed biweekly from September to December in 2020.

Results

26 754 students from 14 higher education institutions provided data to our analyses. We found that two weeks of in-person teaching was negatively associated with COVID-19 risk compared to online teaching, but the difference was very uncertain (–22% relative difference; 95% CI -77%–33%). Quality of life was positively associated with in-person teaching (3%; 95% CI 2%–4%), as was teaching satisfaction (10%; 95% CI 8%–11%).

Conclusion

The association between COVID-19 infection and teaching modality was highly uncertain. Shifting from in-person to online teaching seems to have a negative impact on the well-being of students in higher education.

179. Fukuda Y. Surveillance in hospitalized children with infectious diseases in Japan: Pre- and post-coronavirus disease 2019 / Y. Fukuda, T. Tsugawa, Y. Nagaoka [et al.] // *Journal of Infection and Chemotherapy*. – 2021. – Vol. 27, № 11. – P. 1639–1647. – URL: <https://www.sciencedirect.com/science/article/pii/S1341321X21002130>

Introduction

The epidemic of coronavirus disease 2019 (COVID-19) rapidly spread worldwide, and the various infection control measures have a significant influence on the spread of many infectious diseases. However, there have been no multicenter studies on how the number of hospitalized children with various infectious diseases changed before and after the outbreak of COVID-19 in Japan.

Methods

We conducted a multicenter, prospective survey for hospitalized pediatric patients in 18 hospitals in Hokkaido Prefecture, Japan, from July 2019 to February 2021. We defined July 2019 to February 2020 as pre-COVID-19, and July 2020 to February 2021 as post-COVID-19. We surveyed various infectious diseases by sex and age.

Results

In total, 5300 patients were hospitalized during the study period. The number of patients decreased from 4266 in the pre-COVID-19 period to 701 (16.4%) post-COVID-19. Patients with influenza and RSV decreased from 308 to 795 pre-COVID-19 to zero and three (0.4%) post-COVID-19. However, patients with adenovirus (respiratory infection) only decreased to 60.9% (46–28) of pre-COVID levels. Patients with rotavirus, norovirus, and adenovirus gastroenteritis decreased markedly post-COVID-19 to 2.6% (38–1), 27.8% (97–27) and 13.5% (37–5). The number of patients with UTIs was similar across the two periods (109 and 90). KD patients decreased to 31.7% (161–51) post-COVID-19.

Conclusions

We suggest that current infection control measures for COVID-19 such as wearing masks, washing hands, and disinfecting hands with alcohol are effective against various infectious diseases. However, these effects vary by disease.

180. Galindo R. COVID-19 in Children: Clinical Manifestations and Pharmacologic Interventions Including Vaccine Trials / R. Galindo, H. Chow, C. Rongkavilit // *Pediatric Clinics of North America*. – 2021. – Vol. 68, № 5. – P. 961–976. – URL: <https://www.sciencedirect.com/science/article/pii/S003139552100081X>

Introduction

There have been reports of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infecting children in all age groups; however, children still comprise a small percentage of the total number of cases of coronavirus disease 2019 (COVID-19). As low as 2% of 80,900 COVID-19 cases during the case surge in China were pediatric cases.¹ Similarly, a systematic review showed that children accounted for 1% to 5% of reported COVID-19 cases.² Interestingly, the proportion of children with COVID-19 seems to be higher in the United States. By the end of 2020, 2,128,587 COVID-19 cases in US children have been reported, and children represented 12% of all reported cases in the United States. The overall rate was 2828 cases per 100,000 US children.³ The difference in prevalence among different geographic locations could be due to multiple factors, including the case definition used, access to testing, varied sensitivity of the tests used, differences in anatomic respiratory sampling sites, variability in sample collection by personnel, levels of case surge within communities, and other as yet unknown host and pathogen factors. Clinical manifestations in children COVID-19 Symptoms in Children Are Milder Compared with Those in Adults

It has been observed since early in the pandemic that children seem to experience milder symptoms when compared with adults. Correspondingly, in a large case series of 2135 pediatric patients with COVID-19 in China, 55% of cases were asymptomatic or had only mild symptoms.⁴ Only 6% of pediatric cases were classified as severe and critical cases. This number is fewer compared with the number of severe and critical cases in the adult population, which was found to be about 18.5%. In a report from the US Centers for Disease Control and Prevention (CDC), 73% of pediatric COVID-19 cases had symptoms of fever, cough, or shortness of breath compared with 93% of adults aged 18 to 64 years during the same reporting period, and only 6% of all pediatric cases required hospitalization.⁵ Thus, the majority of pediatric COVID-19 cases are either asymptomatic or mild in disease severity.

181. Galleguillos L. Key points to keep in mind related to COVID-19 vaccines in people with multiple sclerosis / L. Galleguillos, R. Alonso // *Multiple Sclerosis and Related Disorders*. – 2021. – Vol. 54. – P. 103142. – URL: <https://www.sciencedirect.com/science/article/pii/S2211034821004090>

Vaccinations are often the most effective tool against certain diseases known to mankind, and their interaction with multiple sclerosis (MS) has been discussed for decades. With rapidly accumulating numbers of cases and deaths due to COVID-19, there is a global effort to respond to this pandemic in terms of scale and speed. Different platforms are currently being used around the world for the development of best COVID-19 vaccine. While some COVID-19 vaccines have already been approved by different regulatory agencies, there is scarce data in large cohorts regarding the efficacy and security of COVID-19 vaccines in people with MS. In this short review we aimed the most important information to keep in mind regarding this topic.

182. Gankin Y. Investigating the first stage of the COVID-19 pandemic in Ukraine using epidemiological and genomic data / Y. Gankin, A. Nemira, V. Koniukhovskii [et al.] // Infection, Genetics and Evolution. – 2021. – Vol. 95. – P. 105087. – URL: <https://www.sciencedirect.com/science/article/pii/S1567134821003853>

The novel coronavirus SARS-CoV-2 was first detected in China in December 2019 and has rapidly spread around the globe. The World Health Organization declared COVID-19 a pandemic in March 2020 just three months after the introduction of the virus. Individual nations have implemented and enforced a variety of social distancing interventions to slow the virus spread, that had different degrees of success. Understanding the role of non-pharmaceutical interventions (NPIs) on COVID-19 transmission in different settings is highly important. While most such studies have focused on China, neighboring Asian countries, Western Europe, and North America, there is a scarcity of studies for Eastern Europe. The aim of this epidemiological study is to fill this gap by analyzing the characteristics of the first months of the epidemic in Ukraine using agent-based modelling and phylodynamics. Specifically, first we studied the dynamics of COVID-19 incidence and mortality and explored the impact of epidemic NPIs. Our stochastic model suggests, that even a small delay of weeks could have increased the number of cases by up to 50%, with the potential to overwhelm hospital systems. Second, the genomic data analysis suggests that there have been multiple introductions of SARS-CoV-2 into Ukraine during the early stages of the epidemic. Our findings support the conclusion that the implemented travel restrictions may have had limited impact on the epidemic spread. Third, the basic reproduction number for the epidemic that has been estimated independently from case counts data and from genomic data suggest sustained intra-country transmissions.

183. Gao J. Possible intrauterine SARS-CoV-2 infection: Positive nucleic acid testing results and consecutive positive SARS-CoV-2-specific antibody levels within 50 days after birth / J. Gao, X. Hu, X. Sun [et al.] //

International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 272–275. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306081>

Whether severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) affects the fetus in utero is important to the well-being of the mother and neonate. We report the case of a full-term neonate born to a mother who developed symptoms of coronavirus disease 2019 (COVID-19) at 32 weeks of gestation. The placental pathology showed slight local inflammation. Serial quantitative antibody measurements in the neonate showed elevated levels of IgM on the day of birth and a gradual decline to negative levels within 28 days of life; the levels of IgG declined gradually, but IgG was still positive on day 50 of life. The sequential dynamic changes in antibody levels in the neonate were consistent with those in his mother. One-step reverse transcriptase droplet digital PCR testing for SARS-CoV-2 nucleic acid in throat and anal swabs showed positive results (750 and 892 copies/ml) on day 7 of life and negative results on day 14 of life. The neonate had no symptoms of COVID-19. This report enables us to re-evaluate the significance of IgM detection in intrauterine SARS-CoV-2 infection and presents a favorable prognosis for the neonate with long-term exposure to maternal COVID-19, despite a high possibility of intrauterine infection.

184. Garcia K. Topic detection and sentiment analysis in Twitter content related to COVID-19 from Brazil and the USA / K Garcia, L. Berton // Applied Soft Computing. – 2021. – Vol. 101. – P. 107057. – URL: <https://www.sciencedirect.com/science/article/pii/S1568494620309959>

Twitter is a social media platform with more than 500 million users worldwide. It has become a tool for spreading the news, discussing ideas and comments on world events. Twitter is also an important source of health-related information, given the amount of news, opinions and information that is shared by both citizens and official sources. It is a challenge identifying interesting and useful content from large text-streams in different languages, few works have explored languages other than English. In this paper, we use topic identification and sentiment analysis to explore a large number of tweets in both countries with a high number of spreading and deaths by COVID-19, Brazil, and the USA. We employ 3,332,565 tweets in English and 3,155,277 tweets in Portuguese to compare and discuss the effectiveness of topic identification and sentiment analysis in both languages. We ranked ten topics and analyzed the content discussed on Twitter for four months providing an assessment of the discourse evolution over time. The topics we identified were representative of the news outlets during April and August in both countries. We contribute to the study of the Portuguese language, to the analysis of sentiment trends over a long period and their relation to announced news, and the comparison of the human behavior in two different geographical locations affected by this pandemic. It is important to understand public reactions, information dissemination and consensus building in all major forms, including social media in different countries.

185. Garcia M. A. Cerebrospinal fluid in COVID-19 neurological complications: Neuroaxonal damage, anti-SARS-Cov2 antibodies but no evidence of cytokine storm / M. A. Garcia, P. V. Barreras, A. Lewis [et al.] // Journal of the Neurological Sciences. – 2021. – Vol. 427. – P. 117517. – URL: <https://www.sciencedirect.com/science/article/pii/S0022510X21002112>

Objective

To study in cerebrospinal fluid (CSF) of COVID-19 subjects if a “cytokine storm” or neuroinflammation are implicated in pathogenesis of neurological complications.

Methods

Cross-sectional study of CSF neuroinflammatory profiles from 18 COVID-19 subjects with neurological complications categorized by diagnosis (stroke, encephalopathy, headache) and illness severity. COVID-19 CSF was compared with CSF from healthy, infectious and neuroinflammatory disorders and stroke controls (n = 82). Cytokines (IL-6, TNF α , IFN γ , IL-10, IL-12p70, IL-17A), inflammation and coagulation markers (high-sensitivity-C Reactive Protein [hsCRP], ferritin, fibrinogen, D-dimer, Factor VIII) and neurofilament light chain (NF-L), were quantified. SARS-CoV2 RNA and SARS-CoV2 IgG and IgA antibodies in CSF were tested with RT-PCR and ELISA.

Results

CSF from COVID-19 subjects showed absence of pleocytosis or specific increases in pro-inflammatory markers (IL-6, ferritin, or D-dimer). Although pro-inflammatory cytokines (IL-6, TNF α , IL-12p70) and IL-10 were increased in CSF of stroke COVID-19 subjects, a similar increase was observed in non-COVID-19 stroke subjects. Anti-SARS-CoV2 antibodies in CSF of COVID-19 subjects (77%) were observed despite no evidence of SARS-CoV2 viral RNA. CSF-NF-L was elevated in subjects with stroke and critical COVID-19 as compared to controls and other COVID-19 severity categories. CSF-hsCRP was present in all subjects with critical stages of COVID-19 (7/18) but only in 1/82 controls.

Conclusion

The paucity of neuroinflammatory changes in CSF of COVID-19 subjects and lack of SARS-CoV2 RNA do not support the presumed neurovirulence of SARS-CoV2 or neuroinflammation in pathogenesis of neurological complications in COVID-19. The role of CSF SARS-CoV2 IgG antibodies and mechanisms of neuronal damage are still undetermined.

186. García-Milon A. Assessing the moderating effect of COVID-19 on intention to use smartphones on the tourist shopping journey / A. García-Milon, C. Olarte-Pascual, E. Juaneda-Ayensa // Tourism Management. – 2021. – Vol. 87. – P. 104361. – URL: <https://www.sciencedirect.com/science/article/pii/S0261517721000807>

This work proposes the first model to examine the moderating effect of the COVID-19 syndemic on the acceptance and use of smartphones during the tourist shopping journey. The model was tested with 1800 tourists, 900 non-COVID-19 (i.e. prior to COVID-19) and 900 during the COVID-19 period. The results showed that: 1) the model has better fit for the COVID-19 period as its explanatory capacity for that stage is greater ($R^2 = 0.773$) than for the non-COVID-19 period ($R^2 = 0.691$); 2) tourists have increased their intention to use smartphones, especially to make payments for purchases; and 3) there are statistically significant differences in the impact of four of the six model variables (performance expectancy, effort expectancy, social influence, and arousal). This research advances knowledge of the impact of COVID-19 on the technological behaviour of tourists, has important practical implications, and raises new research questions about the future of tourism.

187. Garcia-Vidal C. Trends in mortality of hospitalised COVID-19 patients: A single centre observational cohort study from Spain / C. Garcia-Vidal, A. Cózar-Llistó, M. Al-Jumah [et al.] // The Lancet Regional Health - Europe. – 2021. – Vol. 3. – P. 100041. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000181>

Background

We aimed to describe changes in characteristics and treatment strategies of hospitalised patients with COVID-19 and detail the mortality trend over time.

Methods

Observational cohort study of all consecutive patients admitted ≥ 48 h to Hospital Clinic of Barcelona for COVID-19 (1 March–30 September 2020).

Findings

A total of 1645 consecutive patients with COVID-19 were assessed over a 7-month period. Overall mortality (≤ 30 days) was 9.7% (159 patients), 7.7% in patients hospitalised in regular wards and 16.7% in patients requiring ICU admission. Overall mortality decreased from 11.6% in the first month to 1.4% in the last month, reflecting a progressive, significant downward trend (p for trend < 0.001). Patients' age changed over time, peaking in June. Most changes in the use of antivirals and anti-inflammatory treatments were documented. Age (OR 1.1, CI 1.1–1.12), chronic heart disease, (OR 1.7, CI 1.1–2.9), D-dimer > 700 ng/mL (OR 2.3, CI 1.3–4.1), ferritin > 489 ng/mL (OR 1.9; CI 1.5–3.2), C-RP > 7 mg/dL (OR 2.6; CI 1.5–4.6), and shorter duration from symptom onset to hospital admission (OR 1.11; CI 1.04–1.17) were factors associated with 30-day mortality at hospital admission. Conversely, hospital admission in the last months (OR 0.80; CI 0.65–0.98) was significantly associated with lower mortality.

Interpretation

In-hospital mortality has decreased in patients with COVID-19 over the last, few months, even though main patient characteristics remain similar. Several changes made when managing patients may explain this decreasing trend. Our study provides current data on mortality of patients hospitalised with COVID-19 that might be useful in establishing quality of standard of care.

Funding

EIT Health, European Union's Horizon 2020 Research and Innovation Programme), EDRD. PPA [CM18/00132], NGP [FI19/00133], and CGV [FIS PI18/01061], have received grants from Ministerio de Sanidad y Consumo, ISCIII.

188. Garjani A. COVID-19 is associated with new symptoms of multiple sclerosis that are prevented by disease modifying therapies / A. Garjani, R. M. Middleton, R. Hunter [et al.] // *Multiple Sclerosis and Related Disorders*. – 2021. – Vol. 52. – P. 102939. – URL: <https://www.sciencedirect.com/science/article/pii/S2211034821002066>

Background

Infections can trigger exacerbations of multiple sclerosis (MS). The effects of the coronavirus disease 2019 (COVID-19) on MS are not known. The aim of this study was to understand the impact of COVID-19 on new and pre-existing symptoms of MS.

Methods

The COVID-19 and MS study is an ongoing community-based, prospective cohort study conducted as part of the United Kingdom MS Register. People with MS and COVID-19 were invited by email to complete a questionnaire about their MS symptoms during the infection. An MS exacerbation was defined as developing new MS symptoms and/or worsening of pre-existing MS symptoms.

Results

Fifty-seven percent (230/404) of participants had an MS exacerbation during their infection; 82 developed new MS symptoms, 207 experienced worsened pre-existing MS symptoms, and 59 reported both. Disease modifying therapies (DMTs) reduced the likelihood of developing new MS symptoms during the infection (OR 0.556, 95%CI 0.316–0.978). Participants with a higher pre-COVID-19 webEDSS (web-based Expanded Disability Status Scale) score (OR 1.251, 95%CI 1.060–1.478) and longer MS duration (OR 1.042, 95%CI 1.009–1.076) were more likely to experience worsening of their pre-existing MS symptoms during the infection.

Conclusion

COVID-19 infection was associated with exacerbation of MS. DMTs reduced the chance of developing new MS symptoms during the infection.

189. Gétaz L. Suicide attempts and Covid-19 in prison: Empirical findings from 2016 to 2020 in a Swiss prison / L. Gétaz, H. Wolff, D. Golay [et al.] // Psychiatry Research. – 2021. – Vol. 303. – P. 114107. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121004042>

Disadvantaged populations have an increased risk of suicide and suicide attempts because of the Covid-19 pandemic. To date, few studies focused on people living in detention, who have a high burden of mental health problems and are exposed to severe control measures. Our study investigated whether there was an increase in suicide attempts in prison. Data were collected in the largest Swiss pre-trial prison (Champ-Dollon) for the pre-pandemic and the pandemic periods. We identified a statistically significant 57%-increase of suicide attempts. Mitigation measures, access to mental health care, and access to vaccination are needed to protect this vulnerable population.

190. Geva A. Data-driven clustering identifies features distinguishing multisystem inflammatory syndrome from acute COVID-19 in children and adolescents / A. Geva, M. M. Patel, A. G. Randolph [et al.] // EClinicalMedicine. – 2021. – Vol. 40. – P. 101112. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021003928>

Background

Multisystem inflammatory syndrome in children (MIS-C) consensus criteria were designed for maximal sensitivity and therefore capture patients with acute COVID-19 pneumonia.

Methods

We performed unsupervised clustering on data from 1,526 patients (684 labeled MIS-C by clinicians) <21 years old hospitalized with COVID-19-related illness admitted between 15 March 2020 and 31 December 2020. We compared prevalence of assigned MIS-C labels and clinical features among clusters, followed by recursive feature elimination to identify characteristics of potentially misclassified MIS-C-labeled patients.

Findings

Of 94 clinical features tested, 46 were retained for clustering. Cluster 1 patients (N = 498; 92% labeled MIS-C) were mostly previously healthy (71%), with mean age 7.2 ± 0.4 years, predominant cardiovascular (77%) and/or mucocutaneous (82%) involvement, high inflammatory biomarkers, and mostly SARS-CoV-2 PCR negative (60%). Cluster 2 patients (N = 445; 27% labeled MIS-C) frequently had pre-existing conditions (79%, with 39% respiratory), were similarly 7.4 ± 2.1 years old, and commonly had chest radiograph infiltrates (79%) and positive PCR testing (90%). Cluster 3 patients (N = 583; 19% labeled MIS-C) were younger (2.8 ± 2.0 y), PCR positive (86%), with less inflammation.

Radiographic findings of pulmonary infiltrates and positive SARS-CoV-2 PCR accurately distinguished cluster 2 MIS-C labeled patients from cluster 1 patients.

Interpretation

Using a data driven, unsupervised approach, we identified features that cluster patients into a group with high likelihood of having MIS-C. Other features identified a cluster of patients more likely to have acute severe COVID-19 pulmonary disease, and patients in this cluster labeled by clinicians as MIS-C may be misclassified. These data driven phenotypes may help refine the diagnosis of MIS-C.

191. Ghosal R. Impact of the COVID-19 induced lockdown measures on PM2.5 concentration in USA / R. Ghosal, E. Saha // Atmospheric Environment. – 2021. – Vol. 254. – P. 118388. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1352231021002077>

In 2020, most countries around the world have observed varying degrees of public lockdown measures to mitigate the transmission of SARS-CoV-2. As an unintended consequence of reduced transportation and industrial activities, air quality has dramatically improved in many major cities around the world. In this paper, we analyze the environmental impact of the lockdown measures on concentration levels in 48 core-based statistical areas (CBSA) of the United States, during the pre and post-lockdown period of January to June 2020. We model the effect of lockdown on the concentration in different CBSAs while adjusting for various meteorological factors like temperature, wind-speed, precipitation and snow. Linear mixed effects models and functional regression methods with random intercepts are employed to capture the heterogeneity of the effect across different regions. Our analysis shows there is a statistically significant reduction in levels of across most of the regions during the lock-down period, although interestingly, this effect is not uniform across all the CBSAs under consideration.

192. Ghosh A. Glycemic parameters in patients with new-onset diabetes during COVID-19 pandemic are more severe than in patients with new-onset diabetes before the pandemic: NOD COVID India Study / A. Ghosh, R. M. Anjana, S. J. Rani [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, №1. – P. 215–220. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1871402120305282>

Background and aims

It is not known if new onset diabetes during Coronavirus-19 disease (COVID-19; NOD COVID) is phenotypically or biochemically different than new onset diabetes before COVID-19 (NOD).

Methods

All adults diagnosed with new onset diabetes from during the time of COVID-19 were compared with new onset diabetes prior to COVID-19 from two tertiary care hospitals in Chennai and Delhi. RTPCR test for SARS-CoV-2 virus was done as appropriate, and COVID-19 antibody test was done in all other NOD COVID patients.

Result

A total of 555 patients with new onset diabetes were included in the study (282 NOD and 273 NOD COVID patients). Patients with NOD COVID had higher fasting and post prandial blood glucose and glycated hemoglobin levels vs. NOD patients. Both the groups had high average body mass index; ~28 kg/m². Interestingly, fasting C-peptide levels were significantly higher in the NOD COVID group vs. NOD group. There was no difference in C-peptide levels or glycemic parameters between the COVID-19 antibody positive and negative NOD COVID cases.

193. Giesen N. 2021 update of the AGIHO guideline on evidence-based management of COVID-19 in patients with cancer regarding diagnostics, viral shedding, vaccination and therapy / N. Giesen, R. Sprute, M. Rüttrich [et al.] // European Journal of Cancer. – 2021. – Vol. 147. – P. 154–160. – URL: <https://www.sciencedirect.com/science/article/pii/S095980492100054X>

The worldwide spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the associated infectious coronavirus disease (COVID-19) has posed a unique challenge to medical staff, patients and their families. Patients with cancer, particularly those with haematologic malignancies, have been identified to be at high risk to develop severe COVID-19.

Since publication of our previous guideline on evidence-based management of COVID-19 in patients with cancer, research efforts have continued and new relevant data has come to light, maybe most importantly in the field of vaccination studies. Therefore, an update of our guideline on several clinically important topics is warranted. Here, we provide a concise update of evidence-based recommendations for rapid diagnostics, viral shedding, vaccination and therapy of COVID-19 in patients with cancer. This guideline update was prepared by the Infectious Diseases Working Party (AGIHO) of the German Society for Haematology and Medical Oncology by critically reviewing the currently available data on these topics applying evidence-based medicine criteria.

194. Gmiterek G. Polish university libraries social networking services during the COVID-19 pandemic spring term lockdown / G. Gmiterek // The Journal of Academic Librarianship. – 2021. – Vol. 47, № 3. – P. 102331. – URL: <https://www.sciencedirect.com/science/article/pii/S0099133321000227>

During the spring 2020 COVID-19 lockdown, University libraries made available digital content of varying types. This article assesses the scope and breadth of content published by 18 Polish university libraries, how libraries compared in their approach to using social media, and the level of engagement and collaboration with patrons during a time when the physical library was closed. Data collection consisted of gathering social networking site information as used by Polish university libraries with the Fanpage Karma tool. The Fanpage Karma tool allowed the researcher to analyse and compare the fan pages of individual university library social networking sites. The tool simplifies the process to calculate key variables such as the number of user reactions to the library content; the number of posts, comments, likes, and dislikes; the average daily number of posts made; the most popular text, images, videos, links; and the kind of hashtags used by librarians. Findings indicate Polish university libraries most frequently used Facebook during the lockdown followed by Instagram and Twitter. To a much smaller extent, libraries also used YouTube. Not all Polish university libraries made equal use of social media during the lockdown despite the availability of content and ease of use.

195. Gonzalez-Fajardo J. A. Mortality of COVID-19 patients with vascular thrombotic complications / J. A. Gonzalez-Fajardo, M. Ansuategui, C. Romero [et al.] // *Medicina Clínica*. – 2021. – Vol. 156, № 3. – P. 112–117. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2387020620306598>

Purpose

To analyze the survival of patients hospitalized with COVID-19 and who presented some vascular thrombotic complication.

Material and Methods

All consecutive patients with COVID-19 who were treated during the months of March and April 2020 at our institution were included. All patients were symptomatic and the thrombotic event objectively confirmed. Patients with deep vein thrombosis (DVT), pulmonary embolism (PE), ischemic stroke, and peripheral arterial thrombosis (PAT) were included. Survival curves for all groups were analyzed using Kaplan-Meier with Log Rank test, and Cox regression.

196. Gorris M. E. A time-varying vulnerability index for COVID-19 in New Mexico, USA using generalized propensity scores / M. E. Gorris, C. D. Shelley, S. Y. D. Valle // *Health Policy OPEN*. – 2021. – Vol. 2. – P. 100052. – URL: <https://www.sciencedirect.com/science/article/pii/S259022962100023X>

The coronavirus disease (COVID-19) pandemic has highlighted systemic inequities in the United States and resulted in a larger burden of negative social outcomes for marginalized communities. New Mexico, a state in the southwestern US, has a unique population with a large racial minority population and a high rate of poverty that may make communities more vulnerable to negative social

outcomes from COVID-19. To identify which communities may be at the highest relative risk, we created a county-level vulnerability index. After the first COVID-19 case was reported in New Mexico on March 11, 2020, we fit a generalized propensity score model that incorporates sociodemographic factors to predict county-level viral exposure and thus, the generic risk to negative social outcomes such as unemployment or mental health impacts. We used four static sociodemographic covariates important for the state of New Mexico—population, poverty, household size, and minority population—and weekly cumulative case counts to iteratively run our model each week and normalize the exposure score to create a time-varying vulnerability index. We found the relative vulnerability between counties varied in the first eight weeks from the initial COVID-19 case before stabilizing. This framework for creating a location-specific vulnerability index in response to an ongoing disaster may be used as a quick, deployable metric to inform health policy decisions such as allocating state resources to the county level.

197. Grassin-Delyle S. Metabolomics of exhaled breath in critically ill COVID-19 patients: A pilot study / S. Grassin-Delyle, C. Roquencourt, D. Annane [et al.] // EBioMedicine. – 2021. – Vol. 63. – P. 103154. – URL: <https://www.sciencedirect.com/science/article/pii/S2352396420305302>

Background

Early diagnosis of coronavirus disease 2019 (COVID-19) is of the utmost importance but remains challenging. The objective of the current study was to characterize exhaled breath from mechanically ventilated adults with COVID-19.

Methods

In this prospective observational study, we used real-time, online, proton transfer reaction time-of-flight mass spectrometry to perform a metabolomic analysis of expired air from adults undergoing invasive mechanical ventilation in the intensive care unit due to severe COVID-19 or non-COVID-19 acute respiratory distress syndrome (ARDS).

Findings

Between March 25th and June 25th, 2020, we included 40 patients with ARDS, of whom 28 had proven COVID-19. In a multivariate analysis, we identified a characteristic breathprint for COVID-19. We could differentiate between COVID-19 and non-COVID-19 ARDS with accuracy of 93% (sensitivity: 90%, specificity: 94%, area under the receiver operating characteristic curve: 0.94–0.98, after cross-validation). The four most prominent volatile compounds in COVID-19 patients were methylpent-2-enal, 2,4-octadiene 1-chloroheptane, and nonanal.

Interpretation

The real-time, non-invasive detection of methylpent-2-enal, 2,4-octadiene 1-chloroheptane, and nonanal in exhaled breath may identify ARDS patients with COVID-19.

Funding

The study was funded by Agence Nationale de la Recherche (SoftwAiR, ANR-18-CE45-0017 and RHU4 RECORDS, Programme d'Investissements d'Avenir, ANR-18-RHUS-0004), Région Île de France (SESAME 2016), and Fondation Foch.

198. Graham M. W. framework for assessing the effects of shock events on livestock and environment in sub-Saharan Africa: The COVID-19 pandemic in Northern Kenya / M. W. Graham, P. Chelanga, N. D. Jensen [et al.] // Agricultural Systems. – 2021. – Vol. 192. – P. 103203. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21001566>

CONTEXT

Livestock are the primary source of greenhouse gas (GHG) emissions from agriculture in most African countries, but there is a paucity of baseline data and monitoring of GHG emissions from livestock in Africa, particularly for extreme or shock events. The COVID-19 pandemic represents a novel shock to livestock systems and may result in indirect effects on livestock emissions and other Sustainable Development Goals (SDGs). Due to the pandemic in 2020, extensive pastoralist livestock systems in Northern Kenya were subjected to restrictions on movement, increased costs of transportation, and closure of livestock markets.

OBJECTIVE

The objective of this study was to assess the indirect effects of the COVID-19 pandemic on GHG emissions from livestock systems in Northern Kenya using proxy data and a three-part framework based on changes in 1) herd size, 2) feed availability, and 3) livestock movement.

METHODS

We evaluated changes in GHG emissions from livestock systems in Northern Kenya due to the COVID-19 pandemic based on proxy data from crowd-sourced market data, household panel surveys, and remote sensing data on Normalized Difference Vegetation Index (NDVI). Proxy data were obtained before the pandemic in 2019 and after the pandemic in 2020 to compare between years and evaluate the indirect effects of the pandemic and associated restrictions on livestock GHG emissions using the three-part framework.

RESULTS AND CONCLUSIONS

Overall GHG emissions from livestock in Northern Kenya have decreased due to the pandemic and this was largely driven by reductions in herd size. This reduction in GHG emissions occurred despite an increase in GHG emissions from

livestock associated with higher feed availability. Decreased livestock movement due to the pandemic contributed to reductions in GHG emissions from livestock, but such reductions were likely to be small due to limited need for livestock to travel longer distances under the prevailing conditions of high feed availability.

199. Groenewegen J. Does COVID-19 state aid reach the right firms? COVID-19 state aid, turnover expectations, uncertainty and management practices / J. Groenewegen, S. Hardeman, E. Stam // *Journal of Business Venturing Insights*. – 2021. – Vol. 16. – P. e00262. – URL: <https://www.sciencedirect.com/science/article/pii/S2352673421000408>

A much debated issue in the discussion about COVID-19 state aid to firms is the extent to which these measures keep non-viable firms afloat. What are the characteristics of firms that receive aid and are they viable in the long term? Based on a survey of 1,151 firms in the Netherlands, mainly SMEs, we find that on average, government support goes to better-managed firms and to those with low turnover expectations and high turnover uncertainty. This suggests that COVID-19 state aid tends to go to firms that are most in need of it now and are more likely to be viable in the long term, as indicated by the quality of their management practices.

200. Grünebaum A. Inclusion of pregnant individuals among priority populations for coronavirus disease 2019 vaccination for all 50 states in the United States / A. Grünebaum, L. B. McCullough, A. Litvak [et al.] // *American Journal of Obstetrics and Gynecology*. – 2021. – Vol. 224, № 5. – P. 536–539. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0002937821000818>

The American College of Obstetricians and Gynecologists¹ recommends that coronavirus disease 2019 (COVID-19) vaccines should not be withheld from pregnant individuals who meet the criteria for vaccination based on the Advisory Committee on Immunization Practices (ACIP)–recommended priority groups, which include pregnancy in priority phase 1C to receive the vaccine (“... persons aged 16–64 years with high-risk medical conditions..”).² Final prioritization for COVID-19 vaccinations is based on individual states’ guidelines. The objective of this study was to review whether pregnant persons were uniformly included in individual states’ priority COVID-19 vaccination phase 1 allocations.

Study Design

We accessed COVID-19 vaccination prioritization on the official state websites for each of the 50 states in the United States and for the District of Columbia (DC) to confirm whether pregnant individuals are presently included among the phase 1 priority groups. Because we used publicly available data and without patient information, no institutional review board approval was needed.

201. Guérin P. Firms’ environmental performance and the COVID-19 crisis / P. Guérin, F. Suntheim // *Economics Letters*. – 2021. – Vol. 205. –

The shutdown in economic activity due to the coronavirus disease (COVID-19) crisis has resulted in a short-term decline in global carbon emissions, but the long-term impact of the pandemic on the transition to a low-carbon economy is uncertain. Looking at previous episodes of financial and economic stress to draw implications for the current crisis, we find that tighter financial constraints and adverse economic conditions are generally detrimental to firms' environmental performance, reducing green investments. The COVID-19 crisis could thus potentially slow down the transition to a low-carbon economy. These findings underline the importance of climate policies and green recovery packages to boost green investment and support the energy transition.

202. Gui X. The impact of COVID-19 on higher education building energy use and implications for future education building energy studies / X. Gui, Z. Gou, F. Zhang [et al.] // Energy and Buildings. – 2021. – Vol. 251. – P. 111346. – URL: <https://www.sciencedirect.com/science/article/pii/S0378778821006307>

Although COVID-19 has significantly changed the higher educational sector, there are few studies revealing how this pandemic has changed the energy use of higher education buildings. This study was conducted not only to disclose the energy use change under COVID-19 but also to identify the corresponding facilities management strategies for future learning and teaching delivery modes under virtual campuses. This study collected the energy use data of 122 buildings across five campuses in Griffith University, located in Southeast Queensland, Australia, during the COVID-19 academic year (February 17, 2020, to February 21, 2021) and during a typical normal academic year (February 18, 2019, to February 16, 2020) by PI Vision Platform, and compared the data using the t-test and multiple linear regression. The results indicated that learning and administration activities became off campus during the pandemic, while research activities remained on campus. During the COVID-19 academic year, an amount of 9,646,933 kWh energy or around 24.88 kWh/m² of energy use intensity was saved, which accounted for 16% of the total energy use per academic year. Specifically, the shutting down of air conditioning in academic buildings, administration buildings, retail buildings and teaching buildings during COVID-19 saved 4,566 kWh (1.13 kWh/m²), 966 kWh (0.8 kWh/m²), 1,472 kWh (1.4 kWh/m²) and 860 kWh (1.3 kWh/m²) of electricity use per week, respectively, which accounted for 51.5%, 44.3%, 48.3% and 57.1% of total energy use per week during this period, respectively. Based on this analysis and the changing educational environment, this study also speculated on the energy implications of future teaching and learning practices, which provided guidance to the facilities management under virtual campuses.

203. Guillaume J. D. COVID-19-Related Food Insecurity Among Households with Dietary Restrictions: A National Survey / J. D. Guillaume, J. S. Jagai, J. A. Makelarski [et al.] // The Journal of Allergy and Clinical Immunology: In Practice. – 2021. – Vol. 9, № 9. – P. 3323–3330.e3. – URL: <https://www.sciencedirect.com/science/article/pii/S2213219821006802>

Background

Food insecurity dramatically increased because of the COVID-19 pandemic; however, little is known about pandemic-related food insecurity in households with dietary restrictions.

Objective

To examine pre-pandemic rates of and pandemic-related change in food insecurity among households with and without dietary restrictions.

Methods

A cross-sectional, panel-based survey of 3200 U.S. women was conducted in April 2020. Pre-pandemic food insecurity and early pandemic-related change in food insecurity were assessed using the adapted Hunger Vital Sign. Weighted, multivariate logistic regression was used to model the odds of pre-pandemic food insecurity and the odds of incident or worsening pandemic-related food insecurity among households with and without dietary restrictions. In models predicting pandemic-related outcomes, interaction effects between race/ethnicity and dietary restrictions were examined.

Results

Before the COVID-19 pandemic, households with self-reported food allergy (adjusted odds ratio [aOR]: 1.5, 95% confidence interval [CI]: 1.2-1.9), celiac disease (aOR: 2.3, 95% CI: 1.4-3.5), or both (aOR: 2.1, 95% CI: 1.2-3.6) were significantly more likely to be food insecure than households without restrictions. Households with dietary restrictions were also significantly more likely to experience incident or worsening food insecurity during the early pandemic (food allergy: aOR: 1.6, 95% CI: 1.3-2.1) (celiac disease: aOR: 2.3, 95% CI: 1.5-3.5) (both: aOR: 2.0, 95% CI: 1.2-3.4). Race/ethnicity was not a significant moderator of the relationship between dietary restrictions and pandemic-related food insecurity.

Conclusion

Households with dietary restrictions were more likely to experience both pre-pandemic and pandemic-related incident or worsening food insecurity than households without restrictions. Clinical care for patients with dietary restrictions requires attention to food insecurity.

204. Guillon M. Factors associated with COVID-19 vaccination intentions and attitudes in France / M. Guillon, P. Kergall // Public Health. – 2021. – Vol. 198. – P. 200–207. – URL: <https://www.sciencedirect.com/science/article/pii/S003335062100305X>

Objectives

The objective of the study is to investigate the factors associated with COVID-19 vaccination intentions and attitudes in France.

Study design

An online cross-sectional study was conducted among a representative sample of the French population between November 20th and 23rd 2020 (N = 1146).

Methods

Factors associated with the intention to get vaccinated and with COVID-19 vaccine attitudes were estimated using ordered logistic and multinomial logistic regressions, respectively. Independent variables of interest include COVID-19 and vaccine perceptions, trust, endorsement of COVID-19 conspiracy theories and time/risk preferences.

Results

Only 30.5% of our respondents would agree to get vaccinated against COVID-19 during the first semester of 2021 while 31.1% declare being unsure of their vaccination intentions. COVID-19 risk perceptions are associated with vaccination intentions and attitudes. Individual and collective benefits of the vaccine and the concerns over its safety are strongly associated with COVID-19 vaccination intentions and attitudes. Vaccine acceptors are more willing to take risks in the health domain compared with vaccine hesitant respondents which indicates that the COVID-19 vaccine is perceived as a greater health risk than the COVID-19 itself by some respondents. We also find a positive association between future preference and the willingness to get vaccinated.

Conclusion

Awareness campaigns should be conducted to enhance vaccination uptake among vaccine hesitant individuals. These campaigns could highlight the positive benefit-risk balance of the COVID-19 vaccines or the short-term benefits of vaccination and should reinsure the public on the safety of the COVID-19 vaccines.

205. Guo X. Identification of the high-risk residence communities and possible risk factors of COVID-19 in Wuhan, China / X. Guo, X. Zhou, F. Tian [et al.] // Journal of Safety Science and Resilience. – 2021. – Vol. 2, № 2. – P. 31–39. – URL: <https://www.sciencedirect.com/science/article/pii/S2666449621000037>

The coronavirus disease 2019 (COVID-19) has become a public health emergency of international concern. It is important to identify high-risk residence communities and the risk factors for decision making on targeted prevention and control measures. In this paper, the number of confirmed and suspected cases of COVID-19 in the residence communities in Wuhan, China was collected together with the characteristic variables of the residence communities and the distances between the residence communities and nearby crowded places. The correlation analysis was conducted between the number of confirmed cases and the characteristic/distance variables. Concerning the characteristic variables, there are significant positive correlations between the number of COVID-19 confirmed cases and the construction area, covered area, total number of houses, total number of buildings, volume ratio, property charge, and number of second-hand houses in the residence communities in Wuhan, while minor or no correlation is observed for the average price of houses, construction year, greening ratio, or number of sold houses. Concerning the distance variables, there are significant negative correlations between the number of confirmed cases and the distances from the residence communities to the nearest universities, business clusters, and railway stations, while minor or no correlation is observed for the Huanan Seafood Wholesale Market, kindergartens, primary schools, middle schools, shopping malls, cinemas, subway stations, bus stops, inter-city bus stations, airport, general hospitals, or appointed hospitals for COVID-19 pandemic. Therefore, the residence communities which are newly-built, where the volume ratio or property charge is high or the construction area, covered area, or total number of houses, buildings, second-hand houses, or sold houses is large, or which are close to universities, business clusters, subway stations, or railway stations are the high-risk ones where strict measures should be taken. This study provides the authorities with a valuable reference for precise disease prevention and control on the residence community level in similar cities in the world.

206. Gupta R. Increased Complement Receptor-3 levels in monocytes and granulocytes distinguish COVID-19 patients with pneumonia from those with mild symptoms / R. Gupta, V. A. Gant, B. Williams [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 381–385. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306329>

Background

The reasons why some patients with COVID-19 develop pneumonia and others do not are unclear. To better understand this, we used multiparameter flow cytometry to profile circulating leukocytes from non-immunocompromised adult patients with PCR-proven COVID-19 and specifically compared those with mild symptoms with those who had developed pneumonia.

Methods

Using clinically validated antibody panels we studied leukocytes from 29 patients with PCR-proven COVID-19. Ten were hypoxic requiring ventilatory

support, eleven were febrile but otherwise well, and eight were convalescing having previously required ventilatory support. Additionally, we analysed patients who did not have COVID-19 but received ventilatory support for other reasons. We examined routine Full Blood Count (FBC) specimens that were surplus to routine diagnostic requirements; normal ranges were established in a historic group of healthy volunteers.

Findings

We observed striking and unexpected differences in cells of the innate immune system. Levels of CD11b and CD18, which together comprise Complement Receptor 3 (CR3), were increased in granulocytes and monocytes from hypoxic COVID-19 patients, but not in those with COVID-19 who remained well, or in those without COVID-19 but ventilated for other reasons. Granulocyte and monocyte numbers were unchanged, however Natural Killer (NK) cell numbers were two-fold higher than normal in COVID-19 patients who remained well.

207. Habtewold T. M. Impacts of COVID-19 on food security, employment and education: An empirical assessment during the early phase of the pandemic / T. M. Habtewold // Clinical Nutrition Open Science. – 2021. – Vol. 38. – P. 59–72. – URL: <https://www.sciencedirect.com/science/article/pii/S2667268521000280>

Summary

Background & aims

Recent evidences reveal that COVID-19 will have nontrivial results on the global economies. A balanced intervention is expected from policymakers to exploit the favorable effects of strong controlling actions on the health sector versus the possible economic and social impacts of those actions. The main objective of this study is to empirically quantify the household-level impacts of COVID-19 on food security, employment and education in Ethiopia.

Methods

The study employed propensity score matching and endogenous switching regression methods relying on data collected by the World Bank using high-frequency phone call between April 22 and May 13, 2020 in Ethiopia.

Results

The results of the study showed that COVID-19 reduced food security while at the same time adversely affected employment and schooling. The results also showed that the impact was significantly higher in reducing household's food security more than the other considered indicators. Furthermore, the results indicated that impacts vary disproportionately by different household groups, and each restriction is not equally important in affecting welfare.

Conclusion

The pandemic has affected welfares significantly, though the impact disproportionally varies among the different outcomes. It is not, however, clear how these impacts may change over time. As the pandemic is in its early stage, the condition calls for more researches to be conducted with wider datasets that can fully capture the potential and long-term impacts of the pandemic. It is also clear that these findings point the need of immediate and medium-term policy responses to the spread of the pandemic. The results suggest that ongoing and future government responses should focus on structural changes in social security by developing responsive packages to fight poverty possibly caused by the pandemics and building strong financial institutions to support the recovery of businesses in the medium term, and ensuring the resilience of food supply chains. Finally, this study also sheds light on the effects that COVID-19 has on general welfare in the short-run and points some potential areas that need extra supports.

208. Haddad S. Encephalopathy and seizure activity in a COVID-19 well controlled HIV patient / S. Haddad, R. Tayyar, L. Risch [et al.] // IDCases. – 2020. – Vol. 21. – P. e00814. – URL: <https://www.sciencedirect.com/science/article/pii/S2214250920301220>

A 41-year-old male with a history of well controlled HIV presented with confusion and was found to have COVID-19. Lumbar puncture was negative. He had worsening encephalopathy with tonic-clonic seizure requiring intubation. He was treated with hydroxychloroquine and azithromycin with improvement in mental status back to baseline after 6 days.

209. Haleema A. Applications of Artificial Intelligence (AI) for cardiology during COVID-19 pandemic / A. Haleema, M. Javaida, R. P. Singh [et al.] // Sustainable Operations and Computers. – 2021. – Vol. 2. – P. 71–78. – URL: <https://www.sciencedirect.com/science/article/pii/S2666412721000155>

Background and aims

Artificial Intelligence (AI) shows extensive capabilities to impact different healthcare areas during the COVID-19 pandemic positively. This paper tries to assess the capabilities of AI in the field of cardiology during the COVID-19 pandemic. This technology is useful to provide advanced technology-based treatment in cardiology as it can help analyse and measure the functioning of the human heart.

Methods

We have studied a good number of research papers on Artificial Intelligence on cardiology during the COVID-19 pandemic to identify its significant benefits, applications, and future scope. AI uses artificial neuronal networks (ANN) to

predict. In cardiology, it is used to predict the survival of a COVID-19 patient from heart failure.

Results

AI involves complex algorithms for predicting somewhat successful diagnosis and treatments. This technology uses different techniques, such as cognitive computing, deep learning, and machine learning. It is incorporated to make a decision and resolve complex challenges. It can focus on a large number of diseases, their causes, interactions, and prevention during the COVID-19 pandemic. This paper introduces AI-based care and studies its need in the field of cardiology. Finally, eleven major applications of AI in cardiology during the COVID-19 pandemic are identified and discussed.

Conclusions

Cardiovascular diseases are one of the major causes of death in human beings, and it is increasing for the last few years. Cardiology patients' treatment is expensive, so this technology is introduced to provide a new pathway and visualise cardiac anomalies. AI is used to identify novel drug therapies and improve the efficiency of a physician. It is precise to predict the outcome of the COVID-19 patient from cardiac-based algorithms. Artificial Intelligence is becoming a popular feature of various engineering and healthcare sectors, is thought for providing a sustainable treatment platform. During the COVID-19 pandemic, this technology digitally controls some processes of treatments.

210. Han C. Do news media and citizens have the same agenda on COVID-19? an empirical comparison of twitter posts / C. Han, M. Yang, A. Piterou // Technological Forecasting and Social Change. – 2021. – Vol. 169. – P. 120849. – URL: <https://www.sciencedirect.com/science/article/pii/S004016252100281X>

This study analyses the agenda setting on social media in the COVID-19 pandemic by exploiting one of the disruptive technologies, big data analytics. Our purpose is to examine whether the agenda of news organisations matches the public agenda on social media in crisis situations, and to explore the feasibility and efficacy of applying big data analytics on social media data. To this end, we used an unsupervised machine learning approach, structural topic modelling and analysed 129,965 tweets posted by UK news media and citizens during April 2, and 8, 2020. Our study reveals a wide diversity of topics in the tweets generated by both groups and finds only a small number of topics are similar, indicating different agendas set in the pandemic. Moreover, we show that citizen tweets focused more on expressing feelings and sharing personal activities while news media tweets talked more about facts and analysis on COVID-19. In addition, our results find that citizens responded more significantly to breaking news. The findings of the study contribute to the agenda setting literature and offer valuable practical implications.

211. Han Q. Associations of risk perception of COVID-19 with emotion and mental health during the pandemic / Q. Han, B. Zheng, M. Agostini [et al.] // Journal of Affective Disorders. – 2021. – Vol. 284. – P. 247–255. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0165032721000665>

Background

Although there are increasing concerns on mental health consequences of the COVID-19 pandemic, no large-scale population-based studies have examined the associations of risk perception of COVID-19 with emotion and subsequent mental health.

Methods

This study analysed cross-sectional and longitudinal data from the PsyCorona Survey that included 54,845 participants from 112 countries, of which 23,278 participants are representative samples of 24 countries in terms of gender and age. Specification curve analysis (SCA) was used to examine associations of risk perception of COVID-19 with emotion and self-rated mental health. This robust method considers all reasonable model specifications to avoid subjective analytical decisions while accounting for multiple testing.

Results

All 162 multilevel linear regressions in the SCA indicated that higher risk perception of COVID-19 was significantly associated with less positive or more negative emotions (median standardised β = -0.171, median SE = 0.004, $P < 0.001$). Specifically, regressions involving economic risk perception and negative emotions revealed stronger associations. Moreover, risk perception at baseline survey was inversely associated with subsequent mental health (standardised β = -0.214, SE = 0.029, $P < 0.001$). We further used SCA to explore whether this inverse association was mediated by emotional distress. Among the 54 multilevel linear regressions of mental health on risk perception and emotion, 42 models showed a strong mediation effect, where no significant direct effect of risk perception was found after controlling for emotion ($P > 0.05$).

212. Hanafi Y. The new identity of Indonesian Islamic boarding schools in the “new normal”: the education leadership response to COVID-19 / Y. Hanafi, A. Taufiq, M. Saefi [et al.] // Heliyon. – 2021. – Vol. 7, № 3. – P. e06549. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021006526>

The purpose of this study was to investigate the leadership practices of Indonesian Islamic boarding school (pesantren) leaders, school principals, and teachers in responding to the health crisis caused by the COVID-19 pandemic, to ensure the continuation of boarding school education in the “new normal” period. Generated using a moderated focus group discussion with principals and teachers, the findings suggest that principals' and teachers' leadership practices are

acceptable in the policy, social support, and financial dimensions but still lack structural and teaching aspects about conducting blended learning. Based on this study's findings, pesantren leaders (kyai) and school principals should pay attention to training programs for implementing blended learning for teachers. The government is encouraged to assist in providing technical facilities pesantren can implement blended learning more effectively.

213. Haque M. M. A. Acceptance of COVID-19 vaccine and its determinants: evidence from a large sample study in Bangladesh / M. M. A. Haque, M. L. Rahman, M. Hossain [et al.] // Heliyon. – 2021. – Vol. 7, № 6. – P. e07376. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021014791>

Aim

Our study aimed to understand the acceptance level of the COVID-19 vaccine and its determinants among the adult Bangladeshi population.

Methodology

This cross-sectional study was conducted in all eight divisions of Bangladesh. Data from 7,357 adult respondents were collected between January 17 and February 2, 2021, using a self-administered semi-structured questionnaire. Statistical software STATA (Version 16.1) was used for all analyses.

Results

The majority of study participants were from the Dhaka division (34.24%). The most common age group was ≤ 30 years (46.18%). Almost two-thirds of respondents were male (65.50%) and married (67.76%). A large portion (79.85%) of people who had positive vaccine intentions believed that vaccination should be made mandatory for everyone. The majority of the respondents thought that the vaccine would work against COVID-19 infection (67%). In the binary logistic regression analysis, participants who had the education level of graduation or above (AOR = 1.80), age ≥ 50 years (AOR = 1.97), students (AOR = 2.98), monthly income $\geq 41,000$ BDT (AOR = 2.22), being resident of rural area (AOR = 2.24), respondents from Khulna division (AOR = 6.43) were more likely to receive a COVID-19 vaccine. Those who had family members diagnosed with COVID-19 (AOR = 1.24), presence of chronic disease (AOR = 0.72), and those who were vaccinated in the last few years (AOR = 1.32) were also more likely to accept the COVID-19 vaccine.

Conclusion

Most of the respondents were willing to be vaccinated based on the belief that the vaccine will work against COVID-19. As rumors are generating daily, there is a need for policy-level initiative and evidence-based mass media promotion to keep inspired the general Bangladeshi people to accept the COVID-19 vaccine whenever it will be available at the individual level.

214. Haratian A. Dataset of COVID-19 outbreak and potential predictive features in the USA / A. Haratian, H. Fazelinia, Z. Maleki [et al.] // Data in Brief. – 2021. – Vol. 38. – P. 107360. – URL: <https://www.sciencedirect.com/science/article/pii/S2352340921006429>

This dataset provides information related to the outbreak of COVID-19 disease in the United States, including data from each of 3142 US counties from the beginning of the outbreak (January 2020) until June 2021. This data is collected from many public online databases and includes the daily number of COVID-19 confirmed cases and deaths, as well as 46 features that may be relevant to the pandemic dynamics: demographic, geographic, climatic, traffic, public-health, social-distancing-policy adherence, and political characteristics of each county. We anticipate many researchers will use this dataset to train models that can predict the spread of COVID-19 and to identify the key driving factors.

215. Hariyanto T. I. Delirium is a good predictor for poor outcomes from coronavirus disease 2019 (COVID-19) pneumonia: A systematic review, meta-analysis, and meta-regression / T. I. Hariyanto, C. Putri, J. E. Hananto [et al.] // Journal of Psychiatric Research. – 2021. – Vol. 142. – P. 361–368. – URL: <https://www.sciencedirect.com/science/article/pii/S0022395621005306>

Aim

Delirium is a common presenting symptom among older patients. Patients who presented with delirium may have a higher morbidity and mortality rate due to older age, other comorbidities, and atypical COVID-19 presentation. Currently, the evidence supporting delirium as one of the predictors of poor outcome of COVID-19 is still insufficient. This study aims to explore the potential association between delirium and poor outcomes from COVID-19.

Methods

We systematically searched the PubMed and Google Scholar databases using specific keywords related to our aims until January 30th, 2021. All articles published on COVID-19 and delirium were retrieved. The quality of the study was assessed using the Newcastle Ottawa Scale (NOS) tool for observational studies and Joanna Briggs Institute (JBI) Critical Appraisal Tools for case-series studies. Statistical analysis was done using Review Manager 5.4 software.

Results

Our meta-analysis of 20 studies showed that delirium symptoms on admission was associated with poor outcomes from COVID-19 [OR 2.36 (95% CI 1.80–3.09), $p < 0.00001$, $I^2 = 76\%$, random-effect models] and its subgroup which consist of severe COVID-19 [OR 3.89 (95% CI 1.72–8.75), $p = 0.001$, $I^2 = 91\%$, random-effect models], and mortality from COVID-19 [OR 1.90 (95% CI 1.55–

2.33), $p < 0.00001$, $I^2 = 36\%$, random-effect models]. Meta-regression showed that the association was influenced by age ($p = 0.005$).

Conclusions

Our study suggests delirium as an important marker to identify patients at higher risk for developing poor COVID-19 outcomes. The physicians should add delirium as one of the common presenting symptoms of COVID-19 in older populations.

216. Harms R. Effectuation and causation configurations for business model innovation: Addressing COVID-19 in the gastronomy industry / R. Harms, C. Alfert, C. F. Cheng // *International Journal of Hospitality Management*. – 2021. – Vol. 95. – P. 102896. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921000396>

The gastronomy sector is among those that are hit particularly hard by a loss of customers and regulatory uncertainty of the COVID-19 crisis. When established ways of doing business become almost impossible, business model innovation (BMI) is a possible reaction to this high uncertainty level. Effectuation and causation are decision-making logics that may lead to BMI and help a firm navigate uncertainty. We investigate configurations of causation and effectuation components associated with a high BMI level during the first wave of COVID-19. We perform fuzzy-set-qualitative comparative analysis (fsQCA) on a sample of 143 gastronomy entrepreneurs in Münster county, Germany. We identify two paths that lead to a high BMI level: “the planning soloist” and “the hedging networker.” We conclude that innovators among the gastronomy entrepreneurs use effectuation and causation components in complex configurations.

217. Hasan S. Crisis perception and consumption pattern during COVID-19: do demographic factors make differences? / S. Hasan, A. Islam, M. Bodrud-Doza // *Heliyon*. – 2021. – Vol. 7, № 5. – P. e07141. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021012445>

Background

Consumption patterns of people around the world have been tremendously affected due to the COVID-19 outbreak since December 2019. Previous studies validated the influence of both internal and external factors on consumer behaviour. However, due to the lack of empirical research, this study explored the influence of external factor such as COVID-19 on consumer purchase behaviour, economic and financial situation. In addition, the study investigated how crisis perception and consumption pattern vary due to demographic variables.

Methods

A convenience sampling technique was used and a total of 340 responses were collected from three countries, e.g., Bangladesh ($n = 129$), India ($n = 122$),

and Pakistan (n = 89) using a structured questionnaire. The respondents rated the items, collected from relevant past studies, on a 5 point Likert scale ranging from highly disagree to highly agree.

Results

Exploratory factor analysis summarized all the measurement items into seven main factors from which two factors were removed due to low reliability. Except for the individual's financial situation, the overall mean values of the remaining factors were above 3.50 indicating a higher level of crisis perception and greater change in consumption patterns. Multivariate analysis of variance indicated that the factor scores were significantly different across countries, gender, education and income groups. In addition, Indian consumers were highly concerned and affected by COVID-19 followed by Pakistani and Bangladeshi consumers. In only one factor (e.g., an individual's financial situation), country and age had a significant interaction effect. Finally, the factors had significant difference among three categories of consumers (e.g., low, medium and high crisis perception). It indicates that consumers with higher crisis perception reported more behavioural changes due to COVID-19.

Conclusions

Therefore, more COVID-19 crisis perception leads to significant changes in consumption pattern and the financial situation of the consumers. This study will enable academicians, marketers and decision-makers to understand different facets of consumer behaviour in three contagious countries namely Bangladesh, India and Pakistan in South Asia.

218. Hassen T. B. Food purchase and eating behavior during the COVID-19 pandemic: A cross-sectional survey of Russian adults / T. B. Hassen, H. E. Bilali, M. S. Allahyari [et al.] // *Appetite*. – 2021. – Vol. 165. – P. 105309. – URL: <https://www.sciencedirect.com/science/article/pii/S0195666321002166>

The Russian government took strong containment measures to prevent the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) with rigid hygiene protocols and restrictions on daily living, such as social distancing and closing businesses and schools. While these measures were crucial to stop the diffusion of SARS-CoV-2, numerous voices highlighted their disorderly psychological, social, and economic impacts on food consumption behavior and lifestyle. Therefore, this paper aims to understand how consumers' food-related habits in Russia have shifted due to the COVID-19 pandemic and potential problems and opportunities this might bring for the Russian food system. The study is based on an online cross-sectional survey using a structured questionnaire administered in Russian through the Survey Monkey platform. A total of 1297 valid answers was collected. The results reveal that diet and food shopping, preparation, and use have been widely affected. Indeed, the survey results

suggested (i) a change in the modality of acquiring food, consumers reduced the number of shopping trips and buying more on each trip to minimize store visits; (ii) a surge of stockpiling of non-perishable food items; (iii) a shift toward healthier diets; (iv) an increase in culinary capabilities; (v) a decrease of food waste. The results are expected to inform current emergency plans as well as long-term food-related strategies in Russia.

219. Hashimoto T. Limited capacity of SARS-CoV-2 variants testing in Japan: A secondary analysis using publicly available data / T. Hashimoto, A. Ozaki, D. Bhandari [et al.] // *Travel Medicine and Infectious Disease*. – 2021. – Vol. 43. – P. 102145. – URL: <https://www.sciencedirect.com/science/article/pii/S1477893921001861>

Dear Editor

As of early 2021, the widespread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has led to the emergence of more virulent genetic variants globally, which is more infectious with a high mortality rate [1,2]. Hence, a rapid elucidation of the details of SARS-CoV-2 genetic variants, their infectious capacity, and regional surveys to assess the incidence are crucial to controlling the spread of the virus. In Japan, a country early affected in the pandemic [3,4], a variant of concern 202012/01 was first identified in the airport quarantine station on December 25, 2020. Concerned about the further spread of SARS-CoV-2, the Japanese government declared a second state of emergency from January 8 to March 21, 2021.

220. Hawk W. J. Ethical considerations in deciding when to reopen schools / W. J. Hawk, F. Spielberg, E. Ressler [et al.] // *International Journal of Educational Development*. – 2021. – Vol. 83. – P. 102398. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000511>

In the midst of a global pandemic, policy makers in the education sector face a complex dilemma regarding the reopening of schools, closed around the world as an initial public health measure. The authors propose the use of an ethical strategy—the Eight Key Questions—to clarify the issues involved in decision-making. While every context is unique, the adoption of this investigative process and ethical litmus test may help clarify the trade-offs in health, education, protection, social services, economic productivity and the best interests of the child.

221. Hayakawa K. How is the Asian economy recovering from COVID-19? Evidence from the emissions of air pollutants / K. Hayakawa, S. Keola // *Journal of Asian Economics*. – 2021. – Vol. 77. – P. 101375. – URL: <https://www.sciencedirect.com/science/article/pii/S1049007821001044>

This study examines how economic and social activities in Asia were affected by the COVID-19 pandemic, using the emissions of various air pollutants as representative measures of those activities. Our review of emissions data suggests that the amount of air pollutants emitted decreased in most subnational regions from 2019 to 2020. We also determined that economic and social activities have restarted in some regions in many countries. Moreover, we conduct regression analyses to identify the types of regions that restarted earlier. Regional characteristics are distinguished by employing a remotely sensed land cover dataset and OpenStreetMap. Results reveal that in the case of the Association of Southeast Asian Nations (ASEAN) forerunners, economic and social activities in cropland, industrial estates, accommodations, restaurants, education, and public services have not yet returned to previous levels.

222. Hayman B. COVID-19 vaccine capacity: Challenges and mitigation – The DCVMN perspective / B. Hayman, R. Suri, S. D. Prasad // Emerging Trends in Drugs, Addictions, and Health. – 2020. – Vol. 39, № 35. – P. 4932–4937. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X21008665>

Vaccine manufacturers from developing countries have a proven track record of developing, producing, and supplying high-quality vaccines globally. However, due to the complexity of vaccine manufacturing, numerous stakeholder organizations support manufacturers across a variety of functions. To optimize the support from stakeholders it is instrumental to first understand which manufacturing processes these manufacturers require support for and what support functions are most beneficial. To this end, the Developing Countries Vaccine Manufacturers Network designed a comprehensive survey to assess the specific needs of the Network's member organizations.

We found that almost all sampled manufacturers are interested in obtaining funding or technology transfers for COVID-19 vaccines. Furthermore, results indicated that manufacturers have a strong appetite for modern technology platforms, particularly RNA technologies. Scale-up, phase III clinical trials, and formulation were also key processes for which manufacturers require support.

223. Henry B. M. Alterations in the lipid profile associate with a dysregulated inflammatory, prothrombotic, anti-fibrinolytic state and development of severe acute kidney injury in coronavirus disease 2019 (COVID-19): A study from Cincinnati, USA / B. M. Henry, I. Szergyuk, M. H. S. Oliveira [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 3. – P. 863–868. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1871402121001235>

Background and aims

Reduction of atherogenic lipoproteins is often the ultimate goal of nutritional interventions, however this is complicated given that hypolipidemia is frequently observed in coronavirus disease 2019 (COVID-19) patients. We aimed to explore the association of hypolipidemia with patient outcomes in terms of immunothrombosis and multiorgan injury, focusing on specialized apolipoproteins apo A1 and apo B.

Methods

Lipid profiles of 50 COVID-19 patients and 30 sick controls presenting to the Emergency Department (ED) were measured in this prospective observational study. The primary outcome was development of severe acute kidney injury (AKI). Need for hospitalization and ICU admission were secondary outcomes. Lipoproteins were analyzed for independent association with serum creatinine (SCr) increase ratio and correlated with a wide panel of biomarkers.

Results

COVID-19 cohort had significantly lower apo A1 ($p = 0.006$), and higher apo B/apo A1 ratio ($p = 0.041$). Patients developing severe AKI had significantly lower LDL-C ($p = 0.021$). Apo B/apo A1 was associated with 2.25-fold decrease in serum SCr increase ratio, while LDL-C with a 1.5% decrease. Hypolipidemia correlated with low plasminogen, ADAMTS13 activity/VWF:Ag, and high inflammatory biomarkers (CRP, IL-6, IL-8, IL-10), plasminogen activator inhibitor-1 (PAI-1), ED creatinine, and SCr increase ratio.

Conclusion

Although favored in dietetics, findings of a low LDL-C in COVID-19 patients should be alarming in light of our observations. Low apo B/apo A1 ratio and LDL-C are predictive of renal deterioration in COVID-19 patients, and low LDL-C in particular may potentially serve to indicate COVID-19 related AKI driven by disrupted fibrinolysis and a secondary thrombotic microangiopathy-like process.

224. Heller H. M. Case 40-2020: A 24-Year-Old Man with Headache and Covid-19 / H. M. Heller, R. G. Gonzalez, B. L. Edlow [et al.] // *New England Journal of Medicine*. – 2020. – Vol. 383, № 26. – P. 2572–2580. – URL <https://www.nejm.org/doi/full/10.1056/NEJMcp2027083>

A 24-year-old man was admitted to the hospital with a 3-week history of headache and a positive test for SARS-CoV-2 RNA. MRI showed multiple small hyperintense foci in the caudate nuclei and putamina. On lumbar puncture, the opening pressure was higher than 55 cm of water; the CSF white-cell count was 108 per microliter. A diagnostic test was performed

225. Herédia-Colaço V. Hosting in turbulent times: Hoteliers' perceptions and strategies to recover from the Covid-19 pandemic /

V. Herédia-Colaço, H. Rodrigues // International Journal of Hospitality Management. – 2021. – Vol. 94. – P. 102835. – URL: <https://www.sciencedirect.com/science/article/pii/S027843192030387X>

This research examines hoteliers' perceptions and strategies in light of the Covid-19 pandemic and their predictions about an uncertain industry that has shifted attention to safety and hygiene concerns to regain guests' trust. A cross-sectional study comprised of four assessments with hoteliers worldwide (Nstudy 1 = 144; Nstudy2 = 100; Nstudy3 = 97; Nstudy4 = 66) was conducted between April and June 2020. Hoteliers' forecasts and operating procedures were assessed in light of crisis management, providing important insights for researchers and the hotel industry. Remarkably, most of the hoteliers predict that the crisis is recoverable and believe that sales revenue will reach 2019 levels in 2021. They have implemented extraordinary recovery measures to make up for the loss of revenue caused by the crisis. From special health and safety protocols to long-term vouchers to promote reservations, strategic efforts to recover from the pandemic are ongoing.

226. Hofman P. Clinical and molecular practice of European thoracic pathology laboratories during the COVID-19 pandemic. The past and the near future / P. Hofman, M. Ilić, E. Chamorey [et al.] // ESMO Open. – 2021. – Vol. 6, № 1. – P. 100024. – URL: <https://www.sciencedirect.com/science/article/pii/S2059702920328891>

Background

This study evaluated the consequences in Europe of the COVID-19 outbreak on pathology laboratories orientated toward the diagnosis of thoracic diseases.

Materials and methods

A survey was sent to 71 pathology laboratories from 21 European countries. The questionnaire requested information concerning the organization of biosafety, the clinical and molecular pathology, the biobanking, the workload, the associated research into COVID-19, and the organization of education and training during the COVID-19 crisis, from 15 March to 31 May 2020, compared with the same period in 2019.

Results

Questionnaires were returned from 53/71 (75%) laboratories from 18 European countries. The biosafety procedures were heterogeneous. The workload in clinical and molecular pathology decreased dramatically by 31% (range, 3%-55%) and 26% (range, 7%-62%), respectively. According to the professional category, between 28% and 41% of the staff members were not present in the laboratories but did teleworking. A total of 70% of the laboratories developed virtual meetings for the training of residents and junior pathologists. During the

period of study, none of the staff members with confirmed COVID-19 became infected as a result of handling samples.

Conclusions

The COVID-19 pandemic has had a strong impact on most of the European pathology laboratories included in this study. Urgent implementation of several changes to the organization of most of these laboratories, notably to better harmonize biosafety procedures, was noted at the onset of the pandemic and maintained in the event of a new wave of infection occurring in Europe.

227. Hoofman J. The Effect of COVID-19 on Education / J. Hoofman, E. Secord // *International Journal of Educational Development*. – 2021. – Vol. 68, № 5. – P. 1071–1079. – URL: <https://www.sciencedirect.com/science/article/pii/S0031395521000869>

Background

The transition to an online education during the coronavirus disease 2019 (COVID-19) pandemic may bring about adverse educational changes and adverse health consequences for children and young adult learners in grade school, middle school, high school, college, and professional schools. The effects may differ by age, maturity, and socioeconomic class. At this time, we have few data on outcomes, but many oversight organizations have tried to establish guidelines, expressed concerns, and extrapolated from previous experiences.

228. Holt E. COVID-19 vaccination in Ukraine / E. Holt // *The Lancet Infectious Diseases*. – 2021. – Vol. 21, № 4. – P. 462. – URL: <https://www.sciencedirect.com/science/article/pii/S1473309921001560>

Widespread vaccine hesitancy in Ukraine threatens the success of the country's COVID-19 vaccination programme. Edward Holt reports.

Ukraine has finally started its COVID-19 vaccination programme—months after other European countries—following what critics claim have been delays due to political infighting and allegations of corruption. But even as it begins, the government has admitted the country is facing a potentially serious obstacle to the programme's success: widespread vaccine hesitancy among both the general population and health-care workers. Speaking at a public event in Kiev at the start of February, President Volodymyr Zelensky said: “Having solved the issue of vaccine supplies, we face a new problem—mistrust of vaccinations and the refusal of a significant part of the population to get the [COVID-19] vaccine.”

229. Hoogeveen M. J. Comparable seasonal pattern for COVID-19 and flu-like illnesses / M. J. Hoogeveen, E. K. Hoogeveen // *One Health*. – 2021. – Vol. 13. – P. 100277. – URL: <https://www.sciencedirect.com/science/article/pii/S2352771421000677>

Background

During the first wave of COVID-19 it was hypothesized that COVID-19 is subject to multi-wave seasonality, similar to Influenza-Like Illnesses since time immemorial. One year into the pandemic, we aimed to test the seasonality hypothesis for COVID-19.

Methods

We calculated the average annual time-series for Influenza-Like Illnesses based on incidence data from 2016 till 2019 in the Netherlands, and compared these with two COVID-19 time-series during 2020/2021 for the Netherlands. We plotted the time-series on a standardized logarithmic infection scale. Finally, we calculated correlation coefficients and used univariate regression analysis to estimate the strength of the association between the time-series of COVID-19 and Influenza-Like Illnesses.

Results

The time-series for COVID-19 and Influenza-Like Illnesses were strongly and highly significantly correlated. The COVID-19 peaks were all during flu season, and lows were all in the opposing period. Finally, COVID-19 meets the multi-wave characteristics of earlier flu-like pandemics, namely a short first wave at the tail-end of a flu season, and a longer and more intense second wave during the subsequent flu season.

Conclusions

We conclude that seasonal patterns of COVID-19 incidence and Influenza-Like Illnesses incidence are highly similar, in a country in the temperate climate zone, such as the Netherlands. Further, the COVID-19 pandemic satisfies the criteria of earlier respiratory pandemics, namely a first wave that is short-lived at the tail-end of flu season, and a second wave that is longer and more severe.

This seems to imply that the same factors that are driving the seasonality of Influenza-Like Illnesses are causing COVID-19 seasonality as well, such as solar radiation (UV), temperature, relative humidity, and subsequently seasonal allergens and allergies.

230. Hossaina M. M. Psychological states of Bangladeshi people and associated factors during the outbreak of COVID-19: A cross-sectional survey / M. M. Hossaina, K. Hsan, M. S. Islam [et al.] // *Emerging Trends in Drugs, Addictions, and Health*. – 2020. – Vol. 1. – P. 100012. – URL: <https://www.sciencedirect.com/science/article/pii/S2667118221000106>

COVID-19 is imposing an extremely serious challenge to individuals' physical and mental health. The enforcement of lockdown, restriction on public gathering, social distancing strategy, and unprecedented quarantine measures has affected many aspects of peoples' lives in Bangladesh with potential consequences

on their mental and physical health. This study aimed to assess the psychological states and their related factors among general people in Bangladesh during the COVID-19 outbreak. An e-questionnaire-based cross-sectional survey was conducted among 565 Bangladeshi general people between April and May, 2020. Measures included socio-demographics, chronic disease-related variables, the Self-Rating Depression Scale (SDS), and the Self-Rating Anxiety Scale (SAS). Descriptive analysis and bivariate linear regression with “depression” and “anxiety” as the dependent variables were carried out to identify the factors associated with these. Results showed that 30.1% and 32.6% of participants had mild to extremely severe levels of anxiety and depression, respectively. Females were 2.3 (OR = 2.26; 95% CI = 1.58-3.25, $p < 0.001$) and 2.2 (OR = 2.19; 95% CI = 1.51-3.16, $p < 0.001$) times more likely to have depression and anxiety, respectively compared to males. In contrast, the odds of depression and anxiety were 2.9 (OR = 2.85; 95% CI = 1.66-4.90, $p < 0.001$) and 2.0 (OR = 2.00; 95% CI = 1.20-3.36, $p = 0.008$) times higher, respectively among individuals aged above 40 years than those aged between 18-40 years. The healthcare authority should take necessary steps considering the psychological problems of the general people during the health emergency.

231. Hossain M. The effect of the Covid-19 on sharing economy activities / M. Hossain // *Journal of Cleaner Production*. – 2021. – Vol. 280, Pt. 1. – P. 124782. – URL: <https://www.sciencedirect.com/science/article/pii/S0959652620348265>

Activities within the sharing economy (SE) are in a precarious situation due to the Covid-19 pandemic. Even though the SE is considered a disruptive phenomenon, especially in the accommodation and transport sectors, the Covid-19 has raised concerns about its survivability. Thousands of people have lost their jobs, the value of SE firms has dropped, and many service providers have no other option but to stop working. Understanding the effect of the Covid-19 pandemic on the SE sector is therefore essential. The objective of this study is therefore to examine the effect of the Covid-19 on sharing economy activities. We have used various publications—such as news articles, TV news items, YouTube videos, and blog posts—as data sources for this study purpose. Through content analysis, the study shows how the SE phenomenon is coping with the changing environment caused by the Covid-19. We analyzed the SE sector mainly from the perspective of four stakeholders: SE firms, service providers, service receivers (customers), and regulatory bodies. We explored the SE phenomenon based mainly on the following themes: anxiety, cancellation, job loss, income reduction, hygiene and safety, overcoming strategy, and outcomes. Based on the findings, we point out implications and avenues for future research.

232. Hossain M. Unequal experience of COVID-induced remote schooling in four developing countries / M. Hossain // *International Journal of*

Educational Development. – 2021. – Vol. 85. – P. 102446. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000997>

Lockdown measures during the pandemic have resulted in school closure worldwide affecting nearly 9 out of 10 students. Consequently, remote schooling has become a growing phenomenon. However, due to a lack of infrastructural capacity and widespread poverty, the experience of remote learning in developing countries may have been unequal by pupils' socioeconomic status, gender and location. This study draws evidence from a phone survey conducted by Young Lives (YL) in Ethiopia, two states of India, Peru and Vietnam enquiring which sociodemographic groups are benefiting more from remote schooling. Logit regression results suggest that students from wealthier households, urban areas and with internet access from all countries are more likely to experience remote schooling. Pupils from higher-educated households in all countries but Peru also tend to have alternative schooling. Additionally, apart from Peru, the gender difference in experiencing remote learning is not found significant. We suggest that access to remote learning resources for marginalised students would be paramount to reduce inequality in learning loss in the global South.

233. Hryniewska W. Checklist for responsible deep learning modeling of medical images based on COVID-19 detection studies / W. Hryniewska, P. Bombiński, P. Szatkowski [et al.] // Pattern Recognition. – 2021. – Vol. 118. – P. 108035. – URL: <https://www.sciencedirect.com/science/article/pii/S0031320321002223>

The sudden outbreak and uncontrolled spread of COVID-19 disease is one of the most important global problems today. In a short period of time, it has led to the development of many deep neural network models for COVID-19 detection with modules for explainability. In this work, we carry out a systematic analysis of various aspects of proposed models. Our analysis revealed numerous mistakes made at different stages of data acquisition, model development, and explanation construction. In this work, we overview the approaches proposed in the surveyed Machine Learning articles and indicate typical errors emerging from the lack of deep understanding of the radiography domain. We present the perspective of both: experts in the field - radiologists and deep learning engineers dealing with model explanations. The final result is a proposed checklist with the minimum conditions to be met by a reliable COVID-19 diagnostic model.

234. Huang S. Impact of COVID-19 on stock price crash risk: Evidence from Chinese energy firms / S. Huang, H. Liu // Energy Economics. – 2021. – Vol. 101. – P. 105431. – URL: <https://www.sciencedirect.com/science/article/pii/S0140988321003248>

This paper studies the impact of the outbreak of coronavirus disease 2019 (COVID-19) on the stock price crash risk of energy firms in China. We find that

the stock price crash risk of energy firms significantly decreases in the post-COVID-19 period. We also find that firms that engage in more corporate social responsibility (CSR) activities are less exposed to stock price crash risk in the post-COVID-19 period than those that engage in less CSR activities. Finally, we show that the effect of COVID-19 on stock price crash risk is less severe for state-owned enterprises (SOEs) than for non-SOEs in the post-COVID-19 period. Our findings demonstrate China's economic recovery in the post-COVID-19 period and have policy implications for firms to improve their resilience to exogenous shocks.

235. Huang Y.-C. Evolving reporting criteria of COVID-19 in Taiwan during the epidemic / Y.-C. Huang, P.-I. Lee, P.-R. Hsueh [et al.] // *Journal of Microbiology, Immunology and Infection*. – 2020. – Vol. 53, № 3. – P. 413–418. – URL: <https://www.sciencedirect.com/science/article/pii/S1684118220300748>

The epidemic

Since first reported in Wuhan, China, in late December 2019, the outbreak of the coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread globally.^{1, 2, 3} As of March 15, 2020, data from World Health Organization (WHO), more than 153,517 confirmed cases of coronavirus disease 2019 (COVID-19) and 5735 deaths have been reported from 143 countries/territories/areas.³ In China, as of March 15, there were 81,048 confirmed cases of COVID-19 and 3204 deaths.³ On March 11, 2020, the WHO declared COVID-19 a pandemic, pushing the threat beyond the global health emergency it had announced earlier.

236. Huang Z. The structural characteristics and influential factors of psychological stress of urban residents in Jiangxi province during the COVID-19 pandemic: cross sectional study / Z. Huang, L. Zhang, J. Wang [et al.] // *Heliyon*. – 2021. – Vol. 7, № 8. – P. e07829. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021019320>

Aims

To explore the structural characteristics and influential factors of psychological stress of urban residents in Jiangxi province during the COVID-19 pandemic through a survey of psychological stress, personality traits, family function and life satisfaction.

Methods

By the convenient sampling, 1422 urban residents from Jiangxi province were assessed with Eysenck Personality Questionnaire Short Scale (EPQ-RSC), Psychological Questionnaires for Emergent Events of Public Health (PQEEPH), Family APGAR Scale (APGAR) and Satisfaction With Life Scale (SWLS). The relation among personality traits, psychological stress, family function and life satisfaction during the COVID-19 pandemic was analyzed by using the canonical correlation analysis and the serial mediation model.

Results

(1) Among the estimated correlation coefficients, the first two pairs were significant ($P < 0.001$ in each). (2) In the first pair of canonical variables, the loadings of neuroticism and neurasthenia were the higher (0.94, 0.70). (3) Neuroticism and life satisfaction mediated the relationship between family function and neurasthenia ($\beta_{\text{neuroticism}} = -0.174$; 95%CI:-0.224, -0.134; $\beta_{\text{life satisfaction}} = -0.034$, 95%CI:-0.012, -0.062), respectively. In addition, serial mediation analyses indicated that the association of family function and neurasthenia is mediated by neuroticism and life satisfaction in a sequential manner ($\beta = -0.010$; 95%CI:-0.020, -0.004).

Conclusions

During the COVID-19 pandemic, neuroticism was closely related to psychological stress of urban residents, especially neurasthenia. In addition, the serial mediating effect of neuroticism and life satisfaction played an important role in the process of family function influencing neurasthenia. These findings contributed to a more comprehensive understanding of the influential factors for psychological stress of urban residents during the COVID-19 pandemic.

237. Husnayain A. High variability in model performance of Google relative search volumes in spatially clustered COVID-19 areas of the USA / A. Husnayain, T.-W. Chuang, A. Fuad [et al.] // *International Journal of Infectious Diseases*. – 2021. – Vol. 109. – P. 269–278. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971221005877>

Objective: Incorporating spatial analyses and online health information queries may be beneficial in understanding the role of Google relative search volume (RSV) data as a secondary public health surveillance tool during pandemics. This study identified coronavirus disease 2019 (COVID-19) clustering and defined the predictability performance of Google RSV models in clustered and non-clustered areas of the USA.

Methods: Getis-Ord General and local G statistics were used to identify monthly clustering patterns. Monthly country- and state-level correlations between new daily COVID-19 cases and Google RSVs were assessed using Spearman's rank correlation coefficients and Poisson regression models for January–December 2020.

Results: Huge clusters involving multiple states were found, which resulted from various control measures in each state. This demonstrates the importance of state-to-state coordination in implementing control measures to tackle the spread of outbreaks. Variability in Google RSV model performance was found among states and time periods, possibly suggesting the need to use different frameworks for Google RSV data in each state. Moreover, the sign of correlation can be utilized to

understand public responses to control and preventive measures, as well as in communicating risk.

Conclusion: COVID-19 Google RSV model accuracy in the USA may be influenced by COVID-19 transmission dynamics, policy-driven community awareness and past outbreak experiences.

238. Hyman M. Data analytics to evaluate the impact of infectious disease on economy: Case study of COVID-19 pandemic / M. Hyman, C. Mark, A. Imteaj [et al.] // Patterns. – 2021. – Vol. 2, № 8. – P. 100315. – URL: <https://www.sciencedirect.com/science/article/pii/S2666389921001586>

Summary

SARS-CoV-2 (COVID-19) is a new strain of coronavirus that is regarded as a respiratory disease and is transmittable among humans. At present, the disease has caused a pandemic, and COVID-19 cases are ballooning out of control. The impact of such turbulent situations can be controlled by tracking the patterns of infected and death cases through accurate prediction and by taking precautions accordingly. We collected worldwide COVID-19 case information and successfully predicted infected victims and possible death cases around the world and in the United States. In addition, we analyzed some leading stock market shares and successfully forecast their trends. We also scrutinized the share market price by proper reasoning and considered the state of affairs of COVID-19, including geographical dispersity. We publicly release our developed dashboard that presents statistical data of COVID-19 cases, shows predicted results, and reveals the impact of COVID-19 on leading companies and different countries' job markets.

239. Ibrahim E. H. Development of in-house ELISAs for the detection of anti-SARS-CoV-2 RBD and N IgG and IgM antibodies in biological samples / E. H. Ibrahim, H. A. Ghramh, M. Kilany // Journal of King Saud University - Science. – 2021. – Vol. 33, № 4. – P. 101439. – URL: <https://www.sciencedirect.com/science/article/pii/S1018364721001002>

By the end of year 2019, the new virus SARS-CoV-2 appeared, causing the Coronavirus Disease 2019 (COVID-19), and spread very fast globally. A continuing need for diagnostic tools is a must to contain its spread. Till now, the gold standard method, the reverse transcription polymerase chain reaction (RT-PCR), is the precise procedure to detect the virus. However, SARS-CoV-2 may escape RT-PCR detection for several reasons. The development of well-designed, specific and sensitive serological test like enzyme immunoassay (EIA) is needed. This EIA can stand alone or work side by side with RT-PCR.

In this study, we developed several EIAs including plates that are coated with either specially designed SARS-CoV-2 nucleocapsid or surface recombinant

proteins. Each protein type can separately detect anti-SARS-CoV-2 IgM or IgG antibodies. For each EIAs, the cut-off value, specificity and sensitivity were determined utilizing RT-PCR confirmed Covid-19 and pre-pandemic healthy and other viruses-infected sera. Also, the receiver operator characteristic (ROC) analysis was performed to define the specificities and sensitivities of the optimized assay. The in-house EIAs were validated by comparing against commercial EIA kits. All in-house EIAs showed high specificity (98–99%) and sensitivity (97.8–98.9%) for the detection of IgG/IgM against RBD and N proteins of SARS-CoV-2.

From these results, the developed Anti-RBD and anti-N IgG and IgM antibodies EIAs can be used as a specific and sensitive tool to detect SARS-CoV-2 infection, calculate the burden of disease and case fatality rates.

240. Ifijeh G. Covid – 19 pandemic and the future of Nigeria's university system: The quest for libraries' relevance / G. Ifijeh, F. Yusuf // The Journal of Academic Librarianship. – 2020. – Vol. 46, № 6. – P. 102226. – URL: <https://www.sciencedirect.com/science/article/pii/S0099133320301178>

The paper examined the role of academic libraries in the evolving paradigm shift in teaching methodologies in Nigerian universities as a result of the outbreak of Covid-19. It x-rayed the current global trends in online education and significant roles libraries can play. Responsive library website design and adoption, adoption of blended librarianship model and use of social networks among others were identified as best practices to adopt in order to secure a place for libraries in Nigeria in the face of the eminent change in teaching methodologies post Covid-19. Furthermore, the study considered perceived challenges libraries may be confronted with in deploying relevant ICT infrastructures geared towards transitioning from traditional to online provision of services in support of teaching and learning. The paper recommended dynamism in library service delivery, urgency in the acquisition of new skill sets by academic librarians in Nigeria, while also calling on relevant stakeholders to provide adequate funding for libraries in order to be able to deploy relevant ICT infrastructures needed to adequately support teaching and learning in a virtual environment.

241. Iftekhar E. N. A look into the future of the COVID-19 pandemic in Europe: an expert consultation / E. N. Iftekhar, V. Priesemann, R. Balling [et al.] // The Lancet Regional Health - Europe. – 2021. – Vol. 8. – P. 100185. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221001629>

How will the coronavirus disease 2019 (COVID-19) pandemic develop in the coming months and years? Based on an expert survey, we examine key aspects that are likely to influence the COVID-19 pandemic in Europe. The challenges and developments will strongly depend on the progress of national and global vaccination programs, the emergence and spread of variants of concern (VOCs), and public responses to non-pharmaceutical interventions (NPIs). In the short term,

many people remain unvaccinated, VOCs continue to emerge and spread, and mobility and population mixing are expected to increase. Therefore, lifting restrictions too much and too early risk another damaging wave. This challenge remains despite the reduced opportunities for transmission given vaccination progress and reduced indoor mixing in summer 2021. In autumn 2021, increased indoor activity might accelerate the spread again, whilst a necessary reintroduction of NPIs might be too slow. The incidence may strongly rise again, possibly filling intensive care units, if vaccination levels are not high enough. A moderate, adaptive level of NPIs will thus remain necessary. These epidemiological aspects combined with economic, social, and health-related consequences provide a more holistic perspective on the future of the COVID-19 pandemic.

242. Iloanusi O. Leveraging weather data for forecasting cases-to-mortality rates due to COVID-19 / O. Iloanusi, A. Ross // Chaos, Solitons & Fractals. – 2021. – Vol. 152. – P. 111340. – URL: <https://www.sciencedirect.com/science/article/pii/S0960077921006949>

There are several recent publications criticizing the failure of COVID-19 forecasting models, with swinging over predictions and underpredictions, which have made it difficult for decision and policy making. Observing the failures of several COVID-19 forecasting models and the alarming spread of the virus, we seek to use some stable response for forecasting COVID-19, viz., ratios of COVID-19 cases to mortalities, rather than COVID-19 cases or fatalities. A trend of low COVID-19 cases-to-mortality ratios calls for urgent attention: the need for vaccines, for instance. Studies have shown that there are influences of weather parameters on COVID-19; and COVID-19 may have come to stay and could manifest a seasonal outbreak profile similar to other infectious respiratory diseases. In this paper, the influences of some weather, geographical, economic and demographic covariates were evaluated on COVID-19 response based on a series of Granger-causality tests. The effect of four weather parameters, viz., temperature, rainfall, solar irradiation and relative humidity, on daily COVID-19 cases-to-mortality ratios of 36 countries from 5 continents of the world were determined through regression analysis. Regression studies show that these four weather factors impact ratios of COVID-19 cases-to-mortality differently. The most impactful factor is temperature which is positively correlated with COVID-19 cases-to-mortality responses in 24 out of 36 countries. Temperature minimally affects COVID-19 cases-to-mortality ratios in the tropical countries. The most influential weather factor – temperature – was incorporated in training random forest and deep learning models for forecasting the cases-to-mortality rate of COVID-19 in clusters of countries in the world with similar weather conditions. Evaluation of trained forecasting models incorporating temperature features show better performance compared to a similar set of models trained without temperature features. This implies that COVID-19 forecasting models will predict more accurately if temperature features are factored in, especially for temperate countries.

243. Iluno C. Modelling the effect of Covid-19 mortality on the economy of Nigeria / C. Iluno, J. Taylor, O. Akinmoladun [et al.] // *Research in Globalization*. – 2021. – Vol. 3. – P. 100050. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000150>

Objectives

This paper is aimed at modelling the effect of COVID-19 mortality per population (CMP), a proxy for COVID-19 on the Gross Domestic Product (GDP) per capita per COVID-19 cases (RGDPC), a proxy for the economic wellbeing of a nation.

Methods

Nine models divided into three groups (Gaussian polynomial, other non-linear, and Gamma generalized polynomial models) were fitted for RGDPC data on CMP, collected from 1st June to 31st December 2020.

Results

The result showed that the gamma cubic model was selected as the best model out of the 9 competing models to predict the economic wellbeing of Nigeria. Predictions were made for the whole day in the year 2021.

Conclusion

It is therefore concluded that there is a non-linear relationship between COVID-19 mortality and the economic wellbeing of Nigerians. Thus, COVID-19 mortality has an adverse effect on the wellbeing of Nigerians. The economic wellbeing of Nigerians can be improved if COVID-19 mortality is stopped.

244. Im J. CEO letters: Hospitality corporate narratives during the COVID-19 pandemic / J. Im, H. Kim, L. Miao // *International Journal of Hospitality Management*. – 2021. – Vol. 92. – P. 102701. – URL: <https://www.sciencedirect.com/science/article/pii/S027843192030253X>

For hospitality organizations, the need for compelling corporate narratives is particularly acute in dealing with the COVID-19 crisis due to the scope and severity of its threat to employees, customers, the general public, and the fundamental survival of the company itself. Thus, this study aims to identify corporate narrative strategies and examine how hospitality companies deploy such narrative strategies with impression management tactics during the COVID-19 pandemic. Anchored in the Aristotelian concept of persuasive rhetoric and impression management theory, this study content-analyzed 57 CEO letters published by hospitality companies during the COVID-19 outbreak and found the prevalent rhetoric appeals and patterns of rhetoric appeals with impression management tactics embedded in the letters.

245. Impouma B. Preparing for a COVID-19 resurgence in the WHO African region / B. Impouma, F. Mboussou, F. Kasolo [et al.] // *The Lancet*. – 2021. – Vol. 397, № 10272. – P. 373. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673620327252>

The emergence of COVID-19 in January, 2020, has led to the largest pandemic in recent history. With fragile health systems, limited testing capacities, and potentially vulnerable populations, Africa was projected to be the worst affected continent.¹ However, as of Dec 31, 2020, the African region, with 14% of the global population and 47 member states, remains among the least affected of the WHO regions, accounting for 2·4% of confirmed cases and 2·4% of deaths globally. In 2020, following substantial increases in June and July, COVID-19 cases declined in August and September, before plateauing in October and steadily increasing again in November and December.

246. Ioannidis J. P. A. Second versus first wave of COVID-19 deaths: Shifts in age distribution and in nursing home fatalities / J. P. A. Ioannidis, C. Axfors, D. G. Contopoulos-Ioannidis [et al.] // *Environmental Research*. – 2021. – Vol. 195. – P. 110856. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S001393512100150X>

Objective

To examine whether the age distribution of COVID-19 deaths and the share of deaths in nursing homes changed in the second versus the first pandemic wave.

Eligible data

We considered all countries that had at least 4000 COVID-19 deaths occurring as of January 14, 2021, at least 200 COVID-19 deaths occurring in each of the two epidemic wave periods; and which had sufficiently detailed information available on the age distribution of these deaths. We also considered countries with data available on COVID-19 deaths of nursing home residents for the two waves.

Main outcome measures

Change in the second wave versus the first wave in the proportion of COVID-19 deaths occurring in people <50 years (“young deaths”) among all COVID-19 deaths and among COVID-19 deaths in people <70 years old; and change in the proportion of COVID-19 deaths in nursing home residents among all COVID-19 deaths.

247. Jaber C. A. Changes in trends during the COVID-19 lockdown: An urban, Level-1 trauma center's experience / C. A. Jaber, C.-Y. Fu, F. E. Bryan [et al.] // *The American Journal of Surgery*. – 2021. – Vol. 222, № 4. – P. 832–841. – URL: <https://www.sciencedirect.com/science/article/pii/S0002961021000957>

Background

A community lockdown has a profound impact on its citizens. Our objective was to identify changes in trauma patient demographics, volume, and pattern of injury following the COVID-19 lockdown.

Methods

A retrospective review was conducted at a Level-1 Trauma Center from 2017 to 2020.

Results

A downward trend in volume is seen December–April in 2020 ($R^2 = 0.9907$). February through April showed an upward trend in 2018 and 2019 ($R^2 = 0.80$ and $R^2 = 0.90$ respectively), but a downward trend in 2020 ($R^2 = 0.97$). In April 2020, there was 41.6% decrease in total volume, a 47.4% decrease in blunt injury and no decrease in penetrating injury. In contrast to previous months, in April the majority of injuries occurred in home zip codes.

Conclusions

A community lockdown decreased the number of blunt trauma, however despite social distancing, did not decrease penetrating injury. Injuries were more likely to occur in home zip codes.

248. Jabłońska K. Factors influencing the COVID-19 daily deaths' peak across European countries / K. Jabłońska, S. Aballéa, M. Toumi // Public Health. – 2021. – Vol. 194. – P. 135–142. – URL: <https://www.sciencedirect.com/science/article/pii/S0033350621001104>

Objectives

The purpose of this study was to determine predictors of the height of coronavirus disease 2019 (COVID-19) daily deaths' peak and time to the peak, to explain their variability across European countries.

Study design

For 34 European countries, publicly available data were collected on daily numbers of COVID-19 deaths, population size, healthcare capacity, government restrictions and their timing, tourism and change in mobility during the pandemic.

Methods

Univariate and multivariate generalised linear models using different selection algorithms (forward, backward, stepwise and genetic algorithm) were analysed with height of COVID-19 daily deaths' peak and time to the peak as dependent variables.

Results

The proportion of the population living in urban areas, mobility at the day of first reported death and number of infections when borders were closed were assessed as significant predictors of the height of COVID-19 daily deaths' peak. Testing the model with a variety of selection algorithms provided consistent

results. Total hospital bed capacity, population size, the number of foreign travellers and the day of border closure were found to be significant predictors of time to COVID-19 daily deaths' peak.

Conclusions

Our analysis demonstrated that countries with higher proportions of the population living in urban areas, countries with lower reduction in mobility at the beginning of the pandemic and countries having more infected people when closing borders experienced a higher peak of COVID-19 deaths. Greater bed capacity, bigger population size and later border closure could result in delaying time to reach the deaths' peak, whereas a high number of foreign travellers could accelerate it.

249. Jabłońska K. The real-life impact of vaccination on COVID-19 mortality in Europe and Israel / K. Jabłońska, S. Aballéa, M. Toumi // Public Health. – 2021. – Vol. 198. – P. 230–237. – URL: <https://www.sciencedirect.com/science/article/pii/S0033350621003073>

Objectives

This study aimed at estimating the real-life impact of vaccination on COVID-19 mortality, with adjustment for SARS-CoV-2 variants spread and other factors across Europe and Israel.

Study design

Time series analysis.

Methods

Time series analysis of the daily number of COVID-19 deaths was performed using non-linear Poisson mixed regression models. Variables such as variants' frequency, demographics, climate, health, and mobility characteristics of thirty-two countries between January 2020 and April 2021 were considered as potentially relevant adjustment factors.

Results

The analysis revealed that vaccination efficacy in terms of protection against deaths was 72%, with a lower reduction of the number of deaths for B.1.1.7 vs non-B.1.1.7 variants (70% and 78%, respectively). Other factors significantly related to mortality were arrivals at airports, mobility change from the prepandemic level, and temperature.

Conclusions

Our study confirms a strong effectiveness of COVID-19 vaccination based on real-life public data, although lower than expected from clinical trials. This suggests the absence of indirect protection for non-vaccinated individuals. Results also show that vaccination effectiveness against mortality associated with the

B.1.1.7 variant is slightly lower than that with other variants. Lastly, this analysis confirms the role of mobility reduction, within and between countries, as an effective way to reduce COVID-19 mortality and suggests the possibility of seasonal variations in COVID-19 incidence.

250. Jacob L. Prevalence of and factors associated with COVID-19 diagnosis in symptomatic patients followed in general practices in Germany between March 2020 and March 2021 / L. Jacob, A. Koyanagi, L. Smith [et al.] // International Journal of Infectious Diseases. – 2021. – Vol. 111. – P. 37–42. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971221006421>

Aims

This study aimed to investigate the prevalence of and the factors associated with the diagnosis of coronavirus disease 2019 (COVID-19) in symptomatic patients followed in general practices in Germany between March 2020 and March 2021.

Methods

Symptomatic patients tested for COVID-19 and followed in one of 962 general practices in Germany from March 2020 to March 2021 were included in this study. Covariates included sex, age, and comorbidities present in at least 3% of the population. The association between these factors and the diagnosis of COVID-19 was analyzed using an adjusted logistic regression model.

Results

A total of 301,290 patients tested for COVID-19 were included in this study (54.7% women; mean [SD] age 44.6 [18.5] years). The prevalence of COVID-19 was 13.8% in this sample. Male sex and older age were positively and significantly associated with COVID-19. In terms of comorbidities, the strongest positive associations with COVID-19 were observed for cardiac arrhythmias, depression, and obesity. There was also a negative relationship between the odds of being diagnosed with COVID-19 and several conditions such as chronic sinusitis, asthma, and anxiety disorders.

Conclusions

Approximately 14% of symptomatic patients tested for COVID-19 were diagnosed with COVID-19 in German general practices from March 2020 to March 2021.

251. Jain N. Effect of COVID19 on prehospital pronouncements and ED visits for stroke and myocardial infarction / N. Jain, M. Berkenbush, D. C. Feldman [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 43. – P. 46–49. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000279>

Objective

The Novel Coronavirus19 (COVID19) arrived in northern New Jersey (NJ) in early March 2020, peaked at the beginning of April, and then declined. Starting in March, some patients who called 911 and required advanced life support (ALS) may have decompensated more rapidly than would have been expected, possibly because of concomitant COVID19 infection and/or delays in seeking medical care because of fear of exposure to the virus, and social isolation. In this study, our goal was to determine if there was an increase in prehospital ALS pronouncements and a decrease in ED visits for potentially serious conditions such as MI and stroke during the peak of the COVID-19 pandemic in northern NJ.

Methods study design

Retrospective cohort of prehospital patients pronounced dead by paramedics and patients with MI and stroke in the EDs of receiving hospitals of these paramedics. Study Setting and Population: Ten ground ALS units in northern NJ and nine receiving hospital EDs. Each ALS unit is staffed by two NJ-certified mobile intensive care paramedics and respond with a paramedic flycar in a two-tiered dispatch system. Data Analysis: We identified prehospital pronouncements using the EMSCharts electronic record (Zoll Medical, Chelmsford, Massachusetts). We tabulated the number of pronouncements by week from January 1 to June 30 in 2019 and 2020. We tabulated the combined total number of pronouncements and ED visits by month along with visits for MI and stroke and calculated the changes during the same timeframe. We used Chi-square to test for statistical significance for the monthly changes from 2019 to 2020.

Results

For January through June in 2019 and 2020, there were 12,210 and 13,200 ALS dispatches, and 366 and 555 prehospital pronouncements, respectively. In 2020, pronouncements rose from a weekly baseline of 13 in early March, reached a peak of 45 at the beginning of April, then returned to the baseline level by the end of May. April 2020, the month with the most pronouncements, had 183% more pronouncements than April 2019 but total ED visits and visits for MI and stroke were 49%, 46% and 42% less, respectively ($p < 0.0001$ for each of these changes).

Conclusion

Following the arrival of the COVID-19 pandemic in northern NJ, we found pre-hospital ALS death pronouncements increased and ED visits for MI and stroke decreased. Although we have speculated about the reasons for these findings, further studies are needed to determine what the actual causes were.

252. Jaguszewski. M. J. Impact of COVID-19 pandemic on out-of-hospital cardiac arrest survival rate / M. J. Jaguszewski, L. Szarpak, K. J. Filipiak // Resuscitation. – 2021. – Vol. 159. – P. 40–41. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0300957220306109>

We read with great interest an article by Ball et al.¹ Authors showed that in early during the pandemic, rates of sustained ROSC for OHCA and overall survival were lower in COVID-19 period. To verify the results obtained by Ball, a systematic review and meta-analysis were performed.

The detailed study procedure is presented in the Supplementary file. The analysis of the obtained results revealed many potential causes of increased OHCA patients' mortality in the COVID-19 era. First, as Chan and other authors bystanders point out, during the COVID-19 pandemic, they are much more afraid of undertaking cardiac resuscitation, which translates into a delay in the commencement of emergency procedures, thus reducing its effectiveness and increasing both pre-hospital and inpatient audacity [OR = 0.95; 95% CI: 0.79, 1.16; P = 0.64; I2 = 94%].

Another potential reason for reducing the survival rate of patients during the COVID-19 pandemic is the longer travel time to the patient [MD = 1.11; 95% CI: 0.67, 1.55; P < 0.001; I2 = 100%], which is related to each time need to disinfect an ambulance after transporting a patient with suspected COVID-19. Subsequently, this limits the number of ambulances available at a time, and to conduct resuscitation in protective suits, which, as many studies show, reduce the effectiveness of medical procedures, including chest compression.

Many studies show that in patients with COVID-19, microclots are often observed in both the central nervous system and the heart muscle. They can cause many areas of ischemia in the heart, thus increasing mortality. The above-described potential causes of increased insolvency because of OHCA in the era of COVID-19 pandemic translate into survival to hospital admission [OR = 0.56; 95% CI = 0.44, 0.71; P < 0.001; I2 = 90%] and survival to hospital discharge [OR = 0.68; 95% CI: 0.62, 0.73; P < 0.001; I2 = 0%]. A detailed list of the publications included in the above-pooled analyzes has been presented in the Supplementary File.

253. Jang S. Spatial and experimental analysis of peer-to-peer accommodation consumption during COVID-19 / S. Jang, J. Kim, J. Kim [et al.] // Journal of Destination Marketing & Management. – 2021. – Vol. 20. – P. 100563. – URL: <https://www.sciencedirect.com/science/article/pii/S2212571X21000111>

The COVID-19 pandemic has disrupted peer-to-peer (P2P) accommodation markets. However, how the interplay between tourists and destination attributes has affected P2P accommodation consumption during the pandemic has not been investigated. To address this gap, this study first explored the spatially varying relationship between destination attributes and COVID-19-disrupted Airbnb performance change across Florida counties. Subsequently, we performed two experimental studies to examine whether trip purpose and the level of perceived threat affect Airbnb use intention. The results of the spatial analysis show that,

depending on the type of destination attribute, Airbnb listings experienced different revenue losses across urban and rural areas. Additionally, results of experimental studies show that business tourists with a low perceived threat of COVID-19 are more willing to consume Airbnb listings than leisure tourists. This study contributes to ascertaining the destination and behavioral heterogeneity in pandemic-induced P2P accommodation consumption using spatial analytic and experimental studies.

254. Jarvis S. Examining emergency medical services' prehospital transport times for trauma patients during COVID-19 / S. Jarvis, K. Salottolo, G. M. Berg [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 44. – P. 33–37. – URL:<https://www.sciencedirect.com/science/article/pii/S0735675721001029>

Introduction

Longer prehospital times were associated with increased odds for survival in trauma patients. The purpose of this study was to determine how the COVID-19 pandemic affected emergency medical services (EMS) prehospital times for trauma patients.

Methods

This retrospective cohort study compared trauma patients transported via EMS to six US level I trauma centers admitted 1/1/19–12/31/19 (2019) and 3/16/20–6/30/20 (COVID-19). Outcomes included: total EMS pre-hospital time (dispatch to hospital arrival), injury to dispatch time, response time (dispatch to scene arrival), on-scene time (scene arrival to scene departure), and transportation time (scene departure to hospital arrival). Fisher's exact, chi-squared, or Kruskal-Wallis tests were used, alpha = 0.05. All times are presented as median (IQR) minutes.

Results

There were 9400 trauma patients transported by EMS: 79% in 2019 and 21% during the COVID-19 pandemic. Patients were similar in demographics and transportation mode. Emergency room deaths were also similar between 2019 and COVID-19 [0.6% vs. 0.9%, $p = 0.13$]. There were no differences between 2019 and during COVID-19 for total EMS prehospital time [44 (33, 63) vs. 43 (33, 62), $p = 0.12$], time from injury to dispatch [16 (6, 55) vs. 16 (7, 77), $p = 0.41$], response time [7 (5, 12) for both groups, $p = 0.27$], or on-scene time [16 (12–22) vs. 17 (12,22), $p = 0.31$]. Compared to 2019, transportation time was significantly shorter during COVID-19 [18 (13, 28) vs. 17 (12, 26), $p = 0.01$].

Conclusion

The median transportation time for trauma patients was marginally significantly shorter during COVID-19; otherwise, EMS prehospital times were not significantly affected by the COVID-19 pandemic.

255. Jáuregui A. Factors associated with changes in movement behaviors in toddlers and preschoolers during the COVID-19 pandemic: A national cross-sectional study in Mexico / A. Jáuregui, G. Argumedo, C. Medina [et al.] // Preventive Medicine Reports. – 2021. – Vol. 24. – P. 101552. – URL: <https://www.sciencedirect.com/science/article/pii/S2211335521002424>

Little is known about physical activity, screen time and sleep among Mexican toddlers and preschoolers. The COVID-19 pandemic led to the closure of childcare education centers and restrictions to spend time outdoors. This study aimed to investigate the correlates of changes in movement behaviors from before to during the early stages of the COVID-19 lockdown in a national sample of toddlers and preschoolers in Mexico. A cross-sectional study was conducted using an open online survey completed by caretakers of children aged 1–5 years from April to July 2020. The questionnaire enquired about the time spent in each movement behavior during a regular week before and during lockdown, and family and household characteristics. Factors associated with changes in movement behaviors were explored using adjusted linear regression models. A total of 631 children (3.3y, 95% CI: 3.1, 3.4) were included in the study. During lockdown, physical activity decreased by 25%, screen time doubled, and sleep quality declined in 17% ($p < 0.001$). Toddlers and preschoolers of older age, attending a childcare education center before the lockdown, with a screen in their bedroom, higher access to electronic devices, and lower socioeconomic level experienced greater changes during this period. Those with limits on the use of electronic devices, who had someone available to play with them, and availability of toys experienced less pronounced changes. Pandemic restrictions have impacted movement behaviors of toddlers and preschoolers, with disproportionate effects among lower socioeconomic levels. Interventions with a multi-level equity-oriented approach are urgently needed to mitigate these effects.

256. Javaid M. Dentistry 4.0 technologies applications for dentistry during COVID-19 pandemic / M. Javaid, A. Haleem, R. P. Singh [et al.] // Sustainable Operations and Computers. – 2021. – Vol. 2. – P. 87–96. – URL: <https://www.sciencedirect.com/science/article/pii/S2666412721000179>

Background

Care homes have been disproportionately affected by the COVID-19 pandemic. We investigated the potential role of asymptomatic infection and silent transmission in London care homes that reported no cases of COVID-19 during the first wave of the pandemic.

Methods

Five care homes with no cases and two care homes reporting a single case of COVID-19 (non-outbreak homes) were investigated with nasal swabbing for

SARS-CoV-2 RT-PCR and serology for SARS-CoV-2 antibodies five weeks later. Whole genome sequencing (WGS) was performed on RT-PCR positive samples. Serology results were compared with those of six care homes with recognised outbreaks.

Findings

Across seven non-outbreak homes, 718 (387 staff, 331 residents) individuals had a nasal swab and 651 (386 staff, 265 residents) had follow-up serology. Sixteen individuals (13 residents, 3 staff) in five care homes with no reported cases were RT-PCR positive (care home positivity rates, 0 to 7.6%) compared to 13 individuals (3.0 and 10.8% positivity) in two homes reporting a single case.

Seropositivity across these seven homes varied between 10.7-56.5%, with four exceeding community seroprevalence in London (14.8%). Seropositivity rates for staff and residents correlated significantly (r_s 0.84, [95% CI 0.51-0.95] $p < 0.001$) across the 13 homes. WGS identified multiple introductions into some homes and silent transmission of a single lineage between staff and residents in one home.

Interpretation

We found high rates of asymptomatic infection and transmission even in care homes with no COVID-19 cases. The higher seropositivity rates compared to RT-PCR positivity highlights the true extent of the silent outbreak.

Funding

PHE

257. Jayawardena R. Impact of the vitamin D deficiency on COVID-19 infection and mortality in Asian countries / R. Jayawardena, D. T. Jeyakumar, T. V. Francis [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 3. – P. 757–764. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1871402121000746>

Context

Resilience is the ability to deal with shocks and stresses, including the unknown and previously unimaginable, such as the Covid-19 crisis.

Objective

This paper assesses (i) how different farming systems were exposed to the crisis, (ii) which resilience capacities were revealed and (iii) how resilience was enabled or constrained by the farming systems' social and institutional environment.

Methods

The 11 farming systems included have been analysed since 2017. This allows a comparison of pre-Covid-19 findings and the Covid-19 crisis. Pre-Covid

findings are from the SURE-Farm systematic sustainability and resilience assessment. For Covid-19 a special data collection was carried out during the early stage of lockdowns.

258. Jayawardena R. Obesity: A potential risk factor for infection and mortality in the current COVID-19 epidemic / R. Jayawardena, D. T. Jeyakumar, A. Misra [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 89. – P. 2199–2203. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1871402120304616>

Background and aims

COVID-19 is an ongoing global pandemic, affecting nearly 35 million people from 214 countries as at September 30, 2020 and emerging evidence suggests that obesity is a potential risk factor for communicable diseases, including viral infections. Therefore, we investigated the relationship between obesity prevalence of the total adult population and COVID-19 infection and mortality rates, in different countries.

Methods

A total of 54 countries from six continents were selected. Country-specific obesity prevalence data were retrieved from the latest non-communicable diseases profiles released by the Non-communicable Diseases and Mental Health Cluster of World Health Organization, while the real time statistics from the Worldometer website were used to extract data on COVID-19 infections and mortality per million of the total population as of September 30, 2020.

259. Jæger M. M. Inequality in learning opportunities during Covid-19: Evidence from library takeout / M. M. Jæger, H. Blaabæk // Research in Social Stratification and Mobility. – 2020. – Vol. 68. – P. 100524. – URL: <https://www.sciencedirect.com/science/article/pii/S0276562420300603>

Research shows that Covid-19 enhanced inequality in families' learning environments. We use register data from Denmark to analyze inequality in families' takeout of digital children's books from public libraries. Our register data, which include more than 55 million observations of families' daily library takeout, show that the socioeconomic gradient in library takeout (by parents' education and income) that existed before the Covid-19 lockdown increased after the lockdown. We also find that the increase in the socioeconomic gradient during Covid-19 was weaker in immigrant than in native families, stronger in families with recent experience in taking out digital materials from the library, and stronger in families with children in the early stages of elementary school. Overall, our results suggest that Covid-19 increased inequality in learning opportunities because better off families were more successful at using libraries during the pandemic than worse off families.

260. Jeffery-Smith A. Infection and transmission of SARS-CoV-2 in London care homes reporting no cases or outbreaks of COVID-19: Prospective observational cohort study, England 2020 / A. Jeffery-Smith, K. Dun-Campbell, R. Janarthanan [et al.] // The Lancet Regional Health - Europe. – 2021. – Vol. 3. – P. 100038. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000156>

Background

Care homes have been disproportionately affected by the COVID-19 pandemic. We investigated the potential role of asymptomatic infection and silent transmission in London care homes that reported no cases of COVID-19 during the first wave of the pandemic.

Methods

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Findings

Across seven non-outbreak homes, 718 (387 staff, 331 residents) individuals had a nasal swab and 651 (386 staff, 265 residents) had follow-up serology. Sixteen individuals (13 residents, 3 staff) in five care homes with no reported cases were RT-PCR positive (care home positivity rates, 0 to 7.6%) compared to 13 individuals (3.0 and 10.8% positivity) in two homes reporting a single case.

Seropositivity across these seven homes varied between 10.7-56.5%, with four exceeding community seroprevalence in London (14.8%). Seropositivity rates for staff and residents correlated significantly (r_s 0.84, [95% CI 0.51-0.95] $p < 0.001$) across the 13 homes. WGS identified multiple introductions into some homes and silent transmission of a single lineage between staff and residents in one home.

Interpretation

We found high rates of asymptomatic infection and transmission even in care homes with no COVID-19 cases. The higher seropositivity rates compared to RT-PCR positivity highlights the true extent of the silent outbreak.

Funding

PHE

261. Jenness S. M. Dynamic network strategies for SARS-CoV-2 control on a cruise ship / S. M. Jenness, K. S. Willebrand, A. A. Malik [et al.] // *Epidemics*. – 2021. – Vol. 37. – P. 100488. – URL: <https://www.sciencedirect.com/science/article/pii/S1755436521000402>

SARS-CoV-2 outbreaks have occurred on several nautical vessels, driven by the high-density contact networks on these ships. Optimal strategies for prevention and control that account for realistic contact networks are needed. We developed a network-based transmission model for SARS-CoV-2 on the Diamond Princess outbreak to characterize transmission dynamics and to estimate the epidemiological impact of outbreak control and prevention measures. This model represented the dynamic multi-layer network structure of passenger-passenger, passenger-crew, and crew-crew contacts, both before and after the large-scale network lockdown imposed on the ship in response to the disease outbreak. Model scenarios evaluated variations in the timing of the network lockdown, reduction in contact intensity within the sub-networks, and diagnosis-based case isolation on outbreak prevention. We found that only extreme restrictions in contact patterns during network lockdown and idealistic clinical response scenarios could avert a major COVID-19 outbreak. Contact network changes associated with adequate outbreak prevention were the restriction of passengers to their cabins, with limited passenger-crew contacts. Clinical response strategies required for outbreak prevention may be infeasible in many cruise settings: early mass screening with an ideal PCR test (100 % sensitivity) and immediate case isolation upon diagnosis. Personal protective equipment (e.g., facemasks) had limited impact in this environment because the majority of transmissions after the ship lockdown occurred between passengers in cabins where masks were not consistently used. Public health restrictions on optional leisure activities like these should be considered until longer-term effective solutions such as a COVID-19 vaccine become widely available.

262. Ji B. Water science under the global epidemic of COVID-19: Bibliometric tracking on COVID-19 publication and further research needs / B. Ji, Y. Zhao, T. Wei [et al.] // *Journal of Environmental Chemical Engineering*. – 2021. – Vol. 9, № 4. – P. 105357. – URL: <https://www.sciencedirect.com/science/article/pii/S2213343721003341>

There are overwhelming increases of studies and over 200,000 publications related to all the aspects of COVID-19. Among them, 262 papers were published by authors from 67 countries regarding COVID-19 with water science and technology. Although the transmission routes of SARS-CoV-2 in water cycle have not been proved, the water and wastewater play an important role in the control of COVID-19 pandemic. Accordingly, it is scholarly relevant and interesting to look into publications of COVID-19 in water science and technology to track the investigations for moving forward in the years to come. It is believed that, through the literature survey, the question on what we know and what we do not know

about COVID-19 so far can be clear, thus providing useful information for helping curbing the epidemic from water sector. This forms the basis of the current study. As such, a bibliometric analysis was conducted. It reveals that wastewater-based epidemiology (WBE) has recently gained global attention with the source and survival characteristics of coronavirus in the aquatic environment; the methodology of virus detection; the water hygiene; and the impact of the COVID-19 pandemic on the water ecosystem being the main topics in 2020. Various studies have shown that drinking water is safety whereas wastewater may be a potential risk during this pandemic. From the perspective of the water cycle, the scopes for further research needs are discussed and proposed, which could enhance the important role and value of water science in warning, monitoring, and predicting COVID-19 during epidemic outbreaks.

263. Jia Z. The effects and reacts of COVID-19 pandemic and international oil price on energy, economy, and environment in China / Z. Jia, S. Wen, B. Lin // Applied Energy. – 2021. – Vol. 302. – P. 117612. – URL: <https://www.sciencedirect.com/science/article/pii/S0306261921009818>

In 2020, the world experienced several significant events, including the COVID-19 pandemic and the collapse of international crude oil prices. Both have a great impact on a sustainable economy. Taking China as an example, we use a computable general equilibrium model with multi-sectors and multi-households and consider six different scenarios to simulate and evaluate the aggregate impacts of the pandemic and crude oil prices. We divide the impact of the pandemic into the changes of factor input and the changes of consumer preference and find that the decline of factor input is the leading cause of the economic downturn. The sharp drop in crude oil prices has a significant negative impact on the low-carbon economy. Although the pandemic has led to a decline in global carbon emissions, it is only because of the economic downturn. The epidemic situation and the change of oil price have double impacts on the economy, especially the sustainable economy. Adjusting the price gap between fossil energy and renewable energy (e.g., more stringent carbon pricing) and appropriate tax cuts on residents may be effective ways to alleviate the impact, which should be one of the environmental policies in the post-COVID-19 era.

264. Jit M. Multi-country collaboration in responding to global infectious disease threats: lessons for Europe from the COVID-19 pandemic / M. Jit, A. Ananthakrishnan, M. McKee [et al.] // The Lancet Regional Health - Europe. – 2021. – Vol. 9. – P. 100221. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221001988>

Since 2005, the world has faced several public health emergencies of international concern arising from infectious disease outbreaks. Of these, the COVID-19 pandemic has had by far the greatest health and economic consequences. During these emergencies, responses taken by one country often

have an impact on other countries. The implication is that coordination between countries is likely to achieve better outcomes, individually and collectively, than each country independently pursuing its own self-interest. During the COVID-19 pandemic, gaps in multilateral cooperation on research and information sharing, vaccine development and deployment, and travel policies have hampered the speed and equity of global recovery. In this Health Policy article, we explore how multilateral collaboration between countries is crucial to successful responses to public health emergencies linked to infectious disease outbreaks. Responding to future global infectious disease threats and other health emergencies will require the creation of stronger mechanisms for multilateral collaboration before they arise. A change to the governance of multilateral institutions is a logical next step, with a focus on providing equal ownership and leadership opportunities to all member countries. Europe can be an example and advocate for stronger and better governed multilateral institutions.

265. Joachim A. Pooled RT-qPCR testing for SARS-CoV-2 surveillance in schools - a cluster randomised trial / A. Joachim, F. Dewald, I. Suárez [et al.] // *EClinicalMedicine*. – 2021. – Vol. 39. – P. 101082. – URL: <https://www.sciencedirect.com/science/article/pii/S258953702100362X>

Background

The extent to which children and adolescents contribute to SARS-CoV-2 transmission remains not fully understood. Novel high-capacity testing methods may provide real-time epidemiological data in educational settings helping to establish a rational approach to prevent and minimize SARS-CoV-2 transmission. We investigated whether pooling of samples for SARS-CoV-2 detection by RT-qPCR is a sensitive and feasible high-capacity diagnostic strategy for surveillance of SARS-CoV-2 infections in schools.

Methods

In this study, students and school staff of 14 educational facilities in Germany were tested sequentially between November 9 and December 23, 2020, two or three times per week for at least three consecutive weeks. Participants were randomized for evaluation of two different age adjusted swab sampling methods (oropharyngeal swabs or buccal swabs compared to saliva swabs using a ‘lolly method’). Swabs were collected and pooled for SARS-CoV-2 RT-qPCR. Individuals of positive pooled tests were retested by RT-qPCR the same or the following day. Positive individuals were quarantined while the SARS-CoV-2 negative individuals remained in class with continued pooled RT-qPCR surveillance. The study is registered with the German Clinical Trials register (registration number: DRKS00023911).

Findings

5,537 individuals were eligible and 3970 participants were enrolled and included in the analysis. In students, a total of 21,978 swabs were taken and combined in 2218 pooled RT-qPCR tests. We detected 41 positive pooled tests (1.8%) leading to 36 SARS-CoV-2 cases among students which could be identified by individual re-testing. The cumulative 3-week incidence for primary schools was 564/100,000 (6/1064, additionally 1 infection detected in week 4) and 1249/100,000 (29/2322) for secondary schools. In secondary schools, there was no difference in the number of SARS-CoV-2 positive students identified from pooled oropharyngeal swabs compared to those identified from pooled saliva samples (lolly method) (14 vs. 15 cases; 1.3% vs. 1.3%; OR 1.1; 95%-CI 0.5–2.5). A single secondary school accounted for 17 of 36 cases (47%) indicating a high burden of asymptomatic prevalent SARS-CoV-2 cases in the respective school and community.

Interpretation

In educational settings, SARS-CoV-2 screening by RT-qPCR-based pooled testing with easily obtainable saliva samples is a feasible method to detect incident cases and observe transmission dynamics.

Funding

Federal Ministry of education and research (BMBF; Project B-FAST in “NaFoUniMedCovid19”; registration number: 01KX2021).

266. Johnson-León M. Executive summary: It's wrong not to test: The case for universal, frequent rapid COVID-19 testing / M. Johnson-León, A. L. Caplan, L. Kenny [et al.] // *EClinicalMedicine*. – 2021. – Vol. 33. – P. 100759. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021000390>

One year into the COVID-19 pandemic, rapid tests are still unavailable to most of the public. Rapid antigen tests [1], using lateral flow devices, have been proven effective in home and community settings for identifying people who are most likely to be contagious—even in the absence of symptoms—and to empower them to isolate before unknowingly infecting others. Despite empirical evidence from across the world demonstrating the utility of rapid tests, well-intentioned academic discussions about the potential risks of false positives, false negatives, and data reporting issues continue to overshadow a devastating fact: The ongoing failure to widely deploy rapid tests can be measured in the real consequence of mounting infections, economic and social costs, morbidity, and deaths worldwide.

267. Jones V. A. Rescuing medical education in times of COVID-19 / V. A. Jones, K. A. Clark, C. Puyana [et al.] // *Clinics in Dermatology*. – 2021. – Vol. 39, № 1. – P. 33–40. – URL: <https://www.sciencedirect.com/science/article/pii/S0738081X20302455>

The coronavirus disease 2019 (COVID-19) pandemic has caused widespread disruptions in various sectors of medicine, including medical education. Although the necessary focus has been on patient care and public safety and the long-lasting impact of COVID-19 remains to be determined, the impact on medical education warrants further attention and action. While it seems minuscule compared with the toll the global pandemic has caused worldwide, the impact on medical education, including graduate medical education, carries the potential to alter career progression and outcomes. We have assessed the effects of COVID-19 on dermatology clinics, residency education, and medical education, exploring recommendations and actions taken by governing bodies and offering additional suggestions of our own.

268. Kaggwa M. M. Excessive eating and weight gain: A rare post-acute COVID-19 syndrome / M. M. Kaggwa, A. Favina, S. M. Najjuka [et al.] // *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. – 2021. – Vol. 15, № 5. – P. 102252. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121002721>

The coronavirus disease - 2019 (COVID-19) is a multisystem illness associated with several metabolic derangements. Studies report that post-acute COVID-19 syndromes (PACs) continue to evolve, however, polyphagia is not uncommon. Herein, we report a rare occurrence of polyphagia in a patient following acute COVID-19 illness. A 41-year-old Ugandan female with a negative past medical history presented with complaints of excessive appetite, eating large amounts of food, inability to feel satisfied, failure to control desire to eat, and weight gain 6 months following recovery from a mild episode of acute COVID-19 pneumonia. Her body mass index rose to 30 Kg/m² from 22 Kg/m² prior to suffering from COVID-19. There was no history of polyuria, polydipsia, pruritus, or prior eating disorder or related history. Investigation found that brain computed tomography scan was normal, fasting blood sugar to be 5.6 mmol/L (normal range, 3.9–7.0 mmol/L), adrenocorticotropin hormone level to be 8.763 pg/mL (normal range, 6–40 pg/mL), erythrocyte sedimentation rate to be 12 mm/hour (0–30 mm/hour), but there was an elevation in glycosylated hemoglobin level (HbA_{1c}, 7.7%). She was commenced on psychotherapy and behavioral changes with good outcomes. Polyphagia may be one of the rare PACs, requiring further research.

269. Kalafat E. SARS-CoV-2 vaccination in pregnancy: a unique opportunity for equity / E. Kalafat, L. A. Magee, P. von Dadelsze [et al.] // *The Lancet*. – 2021. – Vol. 398, № 10304. – P. 951. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621017566>

We read the Comment by Bollyky and colleagues¹ with great interest and wanted to echo the sentiment from the maternal health-care perspective. Pregnant women and their babies in under-resourced settings bear the greatest burden of mortality and morbidity related to pregnancy complications, so it is unsurprising

that this is also true of COVID-19.2 Maternal mortality due to COVID-19 is 149 per 10 000 infections in Mexico, compared with 15 per 10 000 symptomatic infections in the USA.

270. Kanno M. Assessing the impact of COVID-19 on major industries in Japan: A dynamic conditional correlation approach / M. Kanno // Research in International Business and Finance. – 2021. – Vol. 58. – P. 101488. – URL: <https://www.sciencedirect.com/science/article/pii/S0275531921001094>

This study assesses the impact of the novel coronavirus disease (COVID-19) cases on the Japanese stock market. As of October 30, 2020, the cumulative number of cases in Japan has reached over one hundred thousand. COVID-19 has significantly affected both the lifestyle and the economy in Japan. First, this study develops composite stock indices by industry sector and prefecture, taking into consideration the effects of the increase in infections on industries and firms in the core prefectures. Second, this study investigates the dynamic conditional correlations between the composite stock index returns and the increment in COVID-19 cases using dynamic conditional correlation multivariate GARCH models. Finally, it can contribute to financial research in terms of coexistence of regional business economies with COVID-19.

271. Karagöz. A. Temporal association of contamination obsession on the prehospital delay of STEMI during COVID-19 pandemic / A. Karagöz, B. Keskin, B. Kültürsay [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 43. – P. 134–141. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000863>

Background

One of the modifiable risk factors for ST elevation myocardial infarction is prehospital delay. The purpose of our study was to look at the effect of contamination contamination obsession on prehospital delay compared with other measurements during the Covid-19 pandemic.

Method

A total of 139 patients with acute STEMI admitted to our heart center from 20 March 2020 to 20 June 2020 were included in this study. If the time interval between the estimated onset of symptoms and admission to the emergency room was >120 min, it was considered as a prehospital delay. The Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), and Padua Inventory-Washington State University Revision (PI-WSUR) test were used to assess Contamination-Obsessive compulsive disorder (C-OCD).

Result

The same period STEMI count compared to the previous year decreased 25%. The duration of symptoms onset to hospital admission was longer in the first

month compared to second and third months (180 (120–360), 120 (60–180), and 105 (60–180), respectively; $P = 0.012$). Multivariable logistic regression (model-2) was used to examine the association between 7 candidate predictors (age, gender, diabetes mellitus (DM), hypertension, smoking, pain-onset time, and coronary artery disease (CAD) history), PI-WSUR C-OCD, and admission month with prehospital delay. Among variables, PI-WSUR C-OCD and admission month were independently associated with prehospital delay (OR 5.36 (2.11–13.61) ($P = 0.01$); 0.26 (0.09–0.87) $p < 0.001$] respectively].

Conclusion

Our study confirmed that contamination obsession was associated with prehospital delay of STEMI patients, however anxiety and depression level was not associated during the pandemic.

272. Karp C. Youth Relationships in the Era of COVID-19: A Mixed-Methods Study Among Adolescent Girls and Young Women in Kenya / C. Karp, C. Moreau, G. Sheehy [et al.] // *Journal of Adolescent Health*. – 2021. – Vol. 69, № 5. – P. 754–761. – URL: <https://www.sciencedirect.com/science/article/pii/S1054139X21003748>

Background

Measures to mitigate COVID-19's impact may inhibit development of healthy youth relationships, affecting partnership quality and sexual and reproductive health (SRH) outcomes.

Methods

We conducted a mixed-methods study to understand how COVID-19 affected girls' and young women's relationships in Kenya. Bivariate and multivariate logistic regression examined factors associated with relationship quality dynamics and SRH outcomes among 756 partnered adolescents aged 15–24 years. Qualitative data from in-depth interviews were analyzed using inductive thematic analysis to explore youth perceptions of how intimate relationships changed during COVID-19.

Results

Nearly three-quarters of youth described changes in relationship quality since COVID-19 began, with 24% reporting worsening. Reduced time with partners was the strongest predictor of changed relationship quality. Youth experiencing complete or partial COVID-19-related household income loss had heightened risk of deteriorating partnerships (relative risk ratio = 2.43 and 2.02; $p < .05$); those whose relationships worsened were more likely to experience recent intimate partner violence, relative to no relationship change (20.8% vs. 3.5%; $p < .001$). Qualitative analysis revealed how COVID-19 mitigation measures hindered intimate relationships, school closures accelerated marriage timelines, and

economic hardships strained relationships, while increasing early pregnancy risk and girls' financial dependency on their partners.

Conclusions

COVID-19 disrupted adolescent girls' and young women's romantic relationships, depriving some of partner emotional support and exposing others to sexual violence, early pregnancy, and economically motivated transactional relationships. Increased social support systems, including access to psychosocial services, are needed in low-income communities in Kilifi, Kisumu, and Nairobi, in particular the informal settlement areas, to mitigate COVID-19's consequences on girls' SRH.

273. Kampf G. Calling for benefit–risk evaluations of COVID-19 control measures / G. Kampf, M. Kulldorff // *The Lancet*. – 2021. – Vol. 397, № 10274. – P. 576–577. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621001938>

We think government lockdowns cause substantial collateral health damage. For example, hospital admissions in the USA for emergency treatment of acute ischaemic strokes have been substantially lower in February–March, 2020, than in February–March, 2019, resulting in delayed treatment.¹ Compared with a historical baseline, UK nursing homes and hospices saw an increase in the number of deaths between February and June, 2020, associated with acute coronary syndrome (a 41% increase), stroke (a 39% increase), and heart failure (a 25% increase).²

The situation is similar for patients with cancer. In German hospitals, cancer cases decreased during the first national lockdown between March 12 and April 19, 2020: by 13.9% for breast cancer, 16.5% for bladder cancer, 18.4% for gastric cancer, 19.8% for lung cancer, 22.3% for colon cancer, and 23.1% for prostate cancer,³ suggesting that cancers might have been undetected and untreated during this period. In England, hospital admissions for chemotherapy appointments have fallen by 60%, and urgent referrals for early diagnosis of suspected cancers have decreased by 76% compared with pre-COVID-19 levels, which could contribute to 6270 additional deaths within 1 year.⁴ Delayed diagnosis and treatment are expected to increase the numbers of deaths up to year 5 after diagnosis by 7.9–9.6% for breast cancer, 15.3–16.6% for colorectal cancer, 4.8–5.3% for lung cancer, and 5.8–6.0% for oesophageal cancer.

274. Kassas B. Promoting higher social distancing and stay-at-home decisions during COVID-19: The underlying conflict between public health and the economy / B. Kassas, R. M. Nayga // *Safety Science*. – 2021. – Vol. 140. – P. 105300. – URL: <https://www.sciencedirect.com/science/article/pii/S0925753521001454>

Social distancing and stay-at-home orders were implemented as a quick response to the public health crisis created by COVID-19. However, these measures led to competing concerns for public health versus the wellbeing of the economy during the pandemic. This drove polarized views and attitudes towards these measures in the US that threatened their effectiveness in controlling the spread of infections. Our study addresses this point by investigating uptake of messaging treatments that highlight the health risks of COVID-19. We also investigate how priming economic risk of COVID-19 affects responsiveness to the health information messaging. A sample of 1200 US respondents were randomly assigned to a control and four messaging treatments that included information about risks of COVID-19 on own health, public health, the economy, and combination of public health and the economy, respectively. Our results indicate a significant difference in messaging uptake based on political partisanship. Individuals identifying as Democrats increased their social distancing and stay-at-home decisions in response to all information treatments, contrary to Republicans who showed no significant change in their behavior. Using a latent class analysis model, we classify individuals into three main types (dismissive, amenable, and conscious) that differ in their perceptions of the risks associated with COVID-19. We show that only amenable individuals, who account for approximately 34% of the sample, respond significantly to the messaging treatments.

275. Keita H. Clinical, obstetrical and anaesthesia outcomes in pregnant women during the first COVID-19 surge in France: A prospective multicentre observational cohort study / H. Keita, A. James, L. Bouvet [et al.] // Anaesthesia Critical Care & Pain Medicine. – 2021. – Vol. 40, № 5. – P. 100937. – URL: <https://www.sciencedirect.com/science/article/pii/S2352556821001417>

Introduction

Clinical outcomes and critical care utilisation associated with Coronavirus Disease 2019 (COVID-19) in obstetric patients remain limited particularly in relation to severe cases.

Methods

A retrospective multicentre cohort study was conducted during the first wave of COVID-19 in France in 18 tertiary referral maternity units. Consecutive women with confirmed or suspected COVID-19 during pregnancy or the delivery hospitalisation were included between March and July 2020 (17-week period). We report clinical, obstetrical and anaesthetic outcomes of pregnant women with COVID-19 and report the prevalence of severe forms and risk factors for respiratory support in this cohort.

Results

There were 126 included cases; RT-PCR testing occurred in 82 cases, of which 64 (78%) had a positive test. The caesarean section rate was 52%, and

preterm delivery (< 37 weeks) rate was 40%. Neuraxial anaesthesia was performed in 108 (86%) cases with an increasing proportion compared to general anaesthesia over time ($p < 0.0002$). Twenty-eight cases received oxygen supplementation (nasal oxygen therapy or mechanical ventilation); the SOFAresp score was associated with gestational age at the time of COVID-19 presentation ($p = 0.0036$) and at delivery ($p < 0.0001$). Postpartum intensive care unit (ICU) admission occurred in 21 cases (17%) with 17 (13%) receiving invasive or non-invasive ventilation. Pre-delivery factors associated with postpartum ventilation were oxygen support, oxygen saturation and haemoglobin levels.

Conclusion

In our cohort, COVID-19 was associated with significant maternal morbidity resulting in high ICU admission rates (17%) and invasive or non-invasive ventilation utilisation (10%).

276. Keogh-Brown M. R. The impact of Covid-19, associated behaviours and policies on the UK economy: A computable general equilibrium model / M. R. Keogh-Brown, H. T. Jensen, W. J. Edmunds [et al.] // SSM - Population Health. – 2020. – Vol. 12. – P. 100651. – URL: <https://www.sciencedirect.com/science/article/pii/S2352827320302883>

We estimate the potential impact of COVID-19 on the United Kingdom economy, including direct disease effects, preventive public actions and associated policies. A sectoral, whole-economy macroeconomic model was linked to a population-wide epidemiological demographic model to assess the potential macroeconomic impact of COVID-19, together with policies to mitigate or suppress the pandemic by means of home quarantine, school closures, social distancing and accompanying business closures.

Our simulations indicate that, assuming a clinical attack rate of 48% and a case fatality ratio of 1.5%, COVID-19 alone would impose a direct health-related economic burden of £39.6bn (1.73% of GDP) on the UK economy. Mitigation strategies imposed for 12 weeks reduce case fatalities by 29%, but the total cost to the economy is £308bn (13.5% of GDP); £66bn (2.9% of GDP) of which is attributable to labour lost from working parents during school closures, and £201bn (8.8% of GDP) of which is attributable to business closures. Suppressing the pandemic over a longer period of time may reduce deaths by 95%, but the total cost to the UK economy also increases to £668bn (29.2% of GDP), where £166bn (7.3% of GDP) is attributable to school closures and 502bn (21.9% of GDP) to business closures.

Our analyses suggest Covid-19 has the potential to impose unprecedented economic costs on the UK economy, and whilst public actions are necessary to minimise mortality, the duration of school and business closures are key to determining the economic cost. The initial economic support package promised by

the UK government may be proportionate to the costs of mitigating Covid-19, but without alternative measures to reduce the scale and duration of school and business closures, the economic support may be insufficient to compensate for longer term suppression of the pandemic which could generate an even greater health impact through major recession.

277. Khajanchi S. Mathematical modeling of the COVID-19 pandemic with intervention strategies / S. Khajanchi, K. Sarkar, J. Mondal // *Results in Physics*. – 2021. – Vol. 25. – P. 104285. – URL: <https://www.sciencedirect.com/science/article/pii/S2211379721004198>

Mathematical modeling plays an important role to better understand the disease dynamics and designing strategies to manage quickly spreading infectious diseases in lack of an effective vaccine or specific antivirals. During this period, forecasting is of utmost priority for health care planning and to combat COVID-19 pandemic. In this study, we proposed and extended classical SEIR compartment model refined by contact tracing and hospitalization strategies to explain the COVID-19 outbreak. We calibrated our model with daily COVID-19 data for the five provinces of India namely, Kerala, Karnataka, Andhra Pradesh, Maharashtra, West Bengal and the overall India. To identify the most effective parameters we conduct a sensitivity analysis by using the partial rank correlation coefficients techniques. The value of those sensitive parameters were estimated from the observed data by least square method. We performed sensitivity analysis for to investigate the relative importance of the system parameters. Also, we computed the sensitivity indices for to determine the robustness of the model predictions to parameter values. Our study demonstrates that a critically important strategy can be achieved by reducing the disease transmission coefficient and clinical outbreak rate to control the COVID-19 outbreaks. Performed short-term predictions for the daily and cumulative confirmed cases of COVID-19 outbreak for all the five provinces of India and the overall India exhibited the steady exponential growth of some states and other states showing decays of daily new cases. Long-term predictions for the Republic of India reveals that the COVID-19 cases will exhibit oscillatory dynamics. Our research thus leaves the option open that COVID-19 might become a seasonal disease. Our model simulation demonstrates that the COVID-19 cases across India at the end of September 2020 obey a power law.

278. Khan A. S. Mental health of young people amidst COVID-19 pandemic in Bangladesh / A. S. Khan, S. Debnath, S. Islam [et al.] // *Heliyon*. – 2021. – Vol. 7, № 6. – P. e07173. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021012767>

Background

The psychological burden of the coronavirus disease 2019 (COVID-19) outbreak and lockdown strategy among young people not diagnosed with COVID-

19 in the general population remains unknown and often have been overlooked. The objective of the study was to assess the prevalence and predictors of anxiety, depression and stress among young people diagnosed with COVID-19 of Bangladesh amidst the pandemic.

Methods

A cross-sectional online survey was conducted from 1 May to 30 May 2020 using an online Google form-based questionnaire posted on Facebook. A snowball sampling approach was used for data collection. A total of 974 self-declared healthy individuals not diagnosed with COVID-19 participated here. Anxiety, depression and stress were measured using Bangla validated Generalized Anxiety Disorder Scale-7 (GAD-7), Patient Health Questionnaire (PHQ-9) scale, and Perceived Stress Scale (PSS), respectively. Statistical software SPSS 20 was used for analysis.

Result

Average age of the population was 25.86 ± 6.26 (SD) years with nearly half (48.6%) of them being young people (15 to ≤ 24 years). Most of the participants were male (76.3%). The overall prevalence of anxiety, depression and stress was found to be 64.1%, 73.3% and 69.4%, respectively. Young people had significantly higher proportion of anxiety (67.2% vs 61.1%), and depression (78.2% vs 68.7%) compared to adults ($p = 0.045$ and $p < 0.001$, respectively). However, most of the participants had mild depression (30.3%), minimal anxiety (31.4%), and moderate stress (67.5%), and severity of depression and anxiety was higher in the young participants. The mean GAD-7, PHQ-9 and PSS scores were 7.57 ± 5.61 , 9.19 ± 6.15 and 16.02 ± 5.55 (SD), respectively. On multivariable logistic analysis, unemployment (Adjusted Odds Ratio [AOR] 3.642; Confidence Interval [CI]: 1.005–13.200; $p < 0.05$) was the single most important predictor of depression. For stress, unemployment (AOR 1.399; CI: 1.055–1.855), and female sex (AOR 1.638; CI: 1.158–2.317) were significant predictors.

Conclusion

Anxiety, depression and stress were highly prevalent among young people (≤ 24 years) not diagnosed with COVID-19 in Bangladesh amidst the pandemic. Unemployment is the most common underlying determinant. Authorities should address the issue on a priority basis.

279. Kim M. Passenger, airline, and policy responses to the COVID-19 crisis: The case of South Korea / M. Kim, J. Sohn // Journal of Air Transport Management. – 2021. – Vol. 98. – P. 102144. – URL: <https://www.sciencedirect.com/science/article/pii/S0969699721001265>

In recent years, domestic and international air passenger markets have expanded steadily around the world with the rapid growth of low cost carriers and aggressive route expansion; however, the unprecedented crisis caused by the

coronavirus disease 2019 (COVID-19) pandemic resulted in greatly decreased air travel and an uncertain future for the aviation industry. The present study examined South Korean passengers, airlines, and government policy responses to the COVID-19 pandemic, and it suggests policy directions for the pandemic and post-pandemic periods. Air passengers respond to internal and external factors, and their demand for travel will increase with the reduction in global COVID cases and vaccine distribution. South Korean airlines have used various means to overcome decreased passenger numbers, such as domestic route transitions, freight transportation expansion, and mergers and acquisitions; Korean Air recorded a profit through its foray into cargo transport in 2020. The Korean government is trying to curb the spread of COVID-19 and help the industry to recover by establishing an airport quarantine system at Incheon international airport. As the COVID-19 pandemic continues, it is necessary to continuously monitor the responses of passengers, industry, and governments and to share relevant information.

280. Kim Y. J. Estimating a breakpoint in the pattern of spread of COVID-19 in South Korea / Y. J. Kim, M. H. Seo, H. E. Yeom // International Journal of Infectious Diseases. – 2020. – Vol. 97. – P. 360–364. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220304896>

Objectives

Amid the global coronavirus disease 2019 (COVID-19) crisis, South Korea has been lauded for successfully preventing the spread of this infectious disease, which may be due to the aggressive implementation of preventive policies. This study was performed to evaluate the pattern of spread of COVID-19 in South Korea considering the potential impact of policy interventions on transmission rates.

Methods

A SIR (susceptible–infected–removed) model with a breakpoint that allows a change in transmission rate at an unknown point was established. Estimated trajectories of COVID-19 from SIR models with and without a breakpoint were compared.

Results

The proposed model with a break fitted the actual series of infection cases much better than the classic model. The estimated breakpoint was March 7, 2020 and the transmission rate dropped by 0.23 after the breakpoint. A counterfactual study based on our estimate indicated that the number of infected could have reached 2 500 000 compared to the peak of 8000 in the observed series.

281. Kite T. A. International Prospective Registry of Acute Coronary Syndromes in Patients With COVID-19 / T. A. Kite, P. F. Ludman, C. P. Gale [et al.] // Journal of the American College of Cardiology. – 2021. – Vol. 77, № 20. –

BACKGROUND Published data suggest worse outcomes in acute coronary syndrome (ACS) patients and concurrent coronavirus disease 2019 (COVID-19) infection. Mechanisms remain unclear.

OBJECTIVES The purpose of this study was to report the demographics, angiographic findings, and in-hospital outcomes of COVID-19 ACS patients and compare these with pre-COVID-19 cohorts.

METHODS From March 1, 2020 to July 31, 2020, data from 55 international centers were entered into a prospective, COVID-ACS Registry. Patients were COVID-19 positive (or had a high index of clinical suspicion) and underwent invasive coronary angiography for suspected ACS. Outcomes were in-hospital major cardiovascular events (all-cause mortality, re-myocardial infarction, heart failure, stroke, unplanned revascularization, or stent thrombosis). Results were compared with national pre-COVID-19 databases (MINAP [Myocardial Ischaemia National Audit Project] 2019 and BCIS [British Cardiovascular Intervention Society] 2018 to 2019).

282. Knotz C. M. Public attitudes toward pandemic triage: Evidence from conjoint survey experiments in Switzerland / C. M. Knotz, M. K. Gandenberger, F. Fossati [et al.] // Social Science & Medicine. – 2021. – Vol. 285. – P. 114238. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621005700>

The question of how to implement medical triages has become highly salient during the COVID-19 pandemic and continues to be actively discussed. It is important to know how members of the general public think about this issue. For one, knowledge about the public's standpoint can help resolve important questions where ethical considerations are by themselves not sufficient, for instance whether the patient's age should matter. It can also help identify if more communication with the public about medical ethics is needed. We study how members of the Swiss public would allocate intensive medical care among COVID-19 patients using data from two original conjoint survey experiments conducted in Switzerland in the context of the first and second pandemic waves in 2020 (N = 1457 & N = 1450). We find that our participants would not base triage decisions on the patient's age. However, they do give much importance to the patient's behavior prior and during illness, discriminate against non-nationals, and assign only a relatively small and inconsistent role to medical considerations. Our findings suggest that there is a need for more communication with the public about the ethics of medical triage.

283. Kondilis E. Essential public healthcare services utilization and excess non-COVID-19 mortality in Greece / E. Kondilis, F. Tarantilis, A. Benos

Objectives

Ensuring access to care for all patients—especially those with life-threatening and chronic conditions—during a pandemic is a challenge for all healthcare systems. During the COVID-19 pandemic, many countries faced excess mortality partly attributed to disruptions in essential healthcare services provision. This study aims to estimate the utilization of public primary care and hospital services during the COVID-19 epidemic in Greece and its potential association with excess non-COVID-19 mortality in the country.

Study design

This is an observational study.

Methods

A retrospective analysis of national secondary utilization and mortality data from multiple official sources, covering the first nine months of the COVID-19 epidemic in Greece (February 26th to November 30th, 2020), was carried out.

Results

Utilization rates of all public healthcare services during the first nine months of the epidemic dropped significantly compared to the average utilization rates of the 2017–19 control period; hospital admissions, hospital surgical procedures, and primary care visits dropped by 17.3% (95% CI: 6.6%–28.0%), 23.1% (95% CI: 7.3%–38.9%), and 24.8% (95% CI: 13.3%–36.3%) respectively. This underutilization of essential public services—mainly due to supply restrictions such as suspension of outpatient care and cancelation of elective surgeries—is most probably related to the 3778 excess non-COVID-19 deaths (representing 62% of all-cause excess deaths) that have been reported during the first 9 months of the epidemic in the country.

Conclusions

Greece's healthcare system, deeply wounded by the 2008–18 recession and austerity, was ill-resourced to cope with the challenges of the COVID-19 epidemic. Early and prolonged lockdowns have kept COVID-19 infections and deaths at relatively low levels. However, this “success” seems to have been accomplished at the expense of non-COVID-19 patients. It is important to acknowledge the “hidden epidemic” of unmet non-COVID-19 needs and increased non-COVID-19 deaths in the country and urgently strengthen public healthcare services to address it.

284. Kostenzer J. Neonatal care during the COVID-19 pandemic - a global survey of parents' experiences regarding infant and family-centred developmental care / J. Kostenzer, J. Hoffmann, S. Mader [et al.] //

Background

The COVID-19 pandemic restrictions affect provision and quality of neonatal care. This global study explores parents' experiences regarding the impact of the restrictions on key characteristics of infant and family-centred developmental care (IFCDC) during the first year of the pandemic.

Methods

For this cross-sectional study, a pre-tested online survey with 52 questions and translated into 23 languages was used to collect data between August and November 2020. Parents of sick or preterm infants born during the pandemic and receiving special/intensive care were eligible for participation. Data analysis included descriptive statistics and statistical testing based on different levels of restrictive measures.

Findings

In total, 2103 participants from 56 countries provided interpretable data. Fifty-two percent of respondents were not allowed to have another person present during birth. Percentages increased with the extent of restrictions in the respondents' country of residence ($p = 0.002$). Twenty-one percent of total respondents indicated that no-one was allowed to be present with the infant receiving special/intensive care. The frequency ($p < 0.001$) and duration ($p = 0.001$) of permitted presence largely depended on the extent of restrictions. The more restrictive the policy measures were, the more the respondents worried about the pandemic situation during pregnancy and after birth.

Interpretation

COVID-19 related restrictions severely challenged evidence-based cornerstones of IFCDC, such as separating parents/ legal guardians and their newborns. Our findings must therefore be considered by public health experts and policy makers alike to reduce unnecessary suffering, calling for a zero separation policy.

**285. Kowalewska D. Dataset of Ukrainian migrant workers opinions on their stay in Poland during COVID-19 lockdown / D. Kowalewska, A. Adamczyk, M. Trojanowska–Strzęboszewska // Data in Brief. – 2021. – Vol. 38. – P. 107415. – URL:
<https://www.sciencedirect.com/science/article/pii/S2352340921006971>**

The study contains a dataset from survey on the opinions of labour migrants from Ukraine in Poland, collected at the beginning of the COVID-19 pandemic. Participants (conducted in May and June 2020) were 617 migrant workers from Ukraine who remained in Poland during the first period of the pandemic in Poland.

Due to limitations in face-to-face contact, the survey was conducted online (Google Forms questionnaire). The developed questionnaire was available in three languages: Ukrainian, Polish and Russian. The researchers were supported in sending the questionnaire by NGOs, Ukrainian minority organisations, as well as labour migrants from Ukraine who had participated in previous research conducted by the team.

The questionnaire contained 34 questions (in three languages: Ukrainian, Polish and Russian), including attribute variables of the participants). Questions addressed issues such as perception of COVID risks, changes in the respondent's labor market situation, and assessment of their quality-of-life changes.

The study will contribute to the knowledge of institutions and NGOs that work with labour migrants. The data collected provides a starting point for comparing the situation of migrant workers one year after the pandemic. The results of the study can be taken into account when planning migration management in the host country.

286. Kowalska J. D. The characteristics of HIV-positive patients with mild/asymptomatic and moderate/severe course of COVID-19 disease – A report from Central and Eastern Europe / J. D. Kowalska, K. Kase, A. Vassilenko [et al.] // International Journal of Infectious Diseases. – 2021. – Vol. 104. – P. 293–296. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220325480>

Background

There is currently no evidence suggesting that COVID-19 takes a different course in HIV-positive patients on antiretroviral treatment compared to the general population. However, little is known about the relation between specific HIV-related factors and the severity of the COVID-19 disease.

Methods

We performed a retrospective analysis of cases collected through an on-line survey distributed by the Euroguidelines in Central and Eastern Europe Network Group. In statistical analyses characteristics of HIV-positive patients, asymptomatic/moderate and moderate/severe course were compared.

Results

In total 34 HIV-positive patients diagnosed with COVID-19 were reported by 12 countries (Estonia, Czech Republic, Lithuania, Albania, Belarus, Romania, Serbia, Bosnia and Herzegovina, Poland, Russia, Hungary, Bulgaria). Asymptomatic courses of COVID-19 were reported in four (12%) cases, 11 (32%) patients presented with mild disease not requiring hospitalization, moderate disease with respiratory and/or systemic symptoms was observed in 14 (41%) cases, and severe disease with respiratory failure was found in five (15%) patients. The HIV-

related characteristics of patients with an asymptomatic/mild course of COVID-19 were comparable to those with a moderate/severe course of COVID-19, except for the use of non-nucleoside reverse transcriptase inhibitors (NNRTIs) in cART regimen (0.0% vs. 31.6% respectively, $p = 0.0239$).

Conclusions

In our analyses HIV viral suppression and immunological status were not associated with the course of COVID-19 disease. On the contrary the cART regimen could contribute to severity of SARS-CoV-2 infection. Large and prospective studies are necessary to further investigate this relationship.

287. Kowalski P. A. Numerical analysis of factors, pace and intensity of the corona virus (COVID-19) epidemic in Poland / P. A. Kowalski, M. Szwagrzyk, J. Kielpinska [et al.] // Ecological Informatics. – 2021. – Vol. 63. – P. 101284. – URL: <https://www.sciencedirect.com/science/article/pii/S1574954121000753>

This article focuses on a statistical analysis of the corona virus disease 2019 (COVID-19) data that appeared until November 31, 2020 in Poland. The studied database, expressed in terms of both population and air pollution (particulate) indicators, is provided mainly by the Airly company, the Central Statistical Office (GUS) and the Rogalski project. The particular measured factors, which underwent standardization, were assessed for mutual dependency by means of a Pearson correlation coefficient and analysed by a linear regression. Based on the presented models, our results indicate that air quality (air pollution level) is the most important factor in the context of enabling COVID-19 case load increase in Poland.

288. Kozlovskaya L. Isolation and phylogenetic analysis of SARS-CoV-2 variants collected in Russia during the COVID-19 outbreak / L. Kozlovskaya, A. Pinaeva, G. Ignatyev [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 40–46. – URL: <https://www.sciencedirect.com/science/article/pii/S120197122030566X>

Objectives

The outbreak of coronavirus disease 2019 (COVID-19) started in December 2019 in China and then spread worldwide over the following months, involving 188 countries. The objective of this study was to determine the molecular epidemiology of the COVID-19 outbreak in Russia.

Methods

In this study, two severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) strains were isolated and genetically characterized. A phylogenetic analysis of all available Russian sequences was then performed and these were compared to the epidemiological data on COVID-19 incidence to evaluate the molecular epidemiology and pattern of virus spread in the territory of Russia.

Results and conclusions

Whole genome analysis of the isolates obtained in this study and 216 others isolated in Russia revealed a set of seven common mutations when compared to the original Wuhan virus, including amino acid substitutions in spike protein S and nucleoprotein N, possibly affecting their properties. Phylogenetic analysis of all Russian sequences and 8717 sequences from other countries showed multiple importations of the virus into Russia, local circulation, and several patterns of virus spread.

289. Krueger E. A. Sexual and Gender Minority Young Adult Coping Disparities During the COVID-19 Pandemic / E. A. Krueger, J. L. Barrington-Trimis, J. B. Unger [et al.] // *Journal of Adolescent Health*. – 2021. – Vol. 69, № 5. – P. 746–753. – URL: <https://www.sciencedirect.com/science/article/pii/S1054139X21003785>

Purpose

The COVID-19 pandemic has exacerbated several existing health disparities in the U.S. Sexual and gender minority (SGM) health disparities may also be widening during the pandemic, though few studies have assessed this question. This study examined SGM young adult disparities in health-related behaviors to cope with isolation during the pandemic.

Methods

Respondents from a prospective cohort of Southern California young adults (N = 2,298) reported whether they engaged in various strategies (e.g., substance use, diet, exercise, relaxation) to cope with isolation during the pandemic (each: yes/no). Differences in coping were assessed across five SGM subgroups: heterosexual men and women, lesbian, gay, bisexual, pansexual, queer (LGBQ) men and women, transgender/nonbinary (TNB) respondents. Negative binomial regressions estimated sexual/gender identity differences in the number of positive or negative behaviors endorsed, adjusting for sociodemographic characteristics and prepandemic health behaviors. Differences were also tested across individual coping behaviors.

Results

Heterosexual women (IRR = 1.11 [1.01–1.21]), LGBQ men (IRR = 1.31 [1.12–1.54]), LGBQ women (IRR = 1.33 [1.19–1.49]), and TNB respondents (IRR = 1.29 [1.03–1.61]) engaged in more negative coping behaviors than heterosexual men. LGBQ men (IRR = 1.19 [1.02–1.39]) and LGBQ women (IRR = 1.20 [1.08–1.34]) also reported more negative coping behaviors versus heterosexual women. Generally, LGBQ men reported the highest prevalence of substance use, while LGBQ women and TNB reported the highest prevalence of adverse eating behaviors and self-harm.

Conclusions

SGM young adults may be disproportionately, adversely impacted by the COVID-19 pandemic. Tailored public health and clinical interventions are needed to decrease pandemic-related SGM health disparities.

290. Kubota S. Consumption responses to COVID-19 payments: Evidence from a natural experiment and bank account data / S. Kubota, K. Onishi, Y. Toyama // Journal of Economic Behavior & Organization. – 2021. – Vol. 188. – P. 1–17. – URL: <https://www.sciencedirect.com/science/article/pii/S016726812100192X>

We document households' spending responses to a stimulus payment in Japan during the COVID-19 pandemic. In response to the pandemic, the Japanese government launched a universal cash entitlement program offering a sizable lump sum of money to all residents to alleviate the financial burden of the pandemic on households. The timings of cash deposits varied substantially across households due to unexpected delays in administrative procedures. Using a unique panel of 2.8 million bank accounts, we find an immediate jump in spending during the week of payments, followed by moderately elevated levels of spending that persist for more than one month after payments are received. We also document sizable heterogeneity in consumption responses by recipients' financial status and demographic characteristics. In particular, demand deposit balances play a more crucial role than other financial asset holdings, suggesting the importance of the wealthy hand-to-mouth.

291. Kulohoma B. W. COVID-19 risk factors: The curious case of Africa's governance and preparedness / B. W. Kulohoma // Scientific African. – 2021. – Vol. 13. – P. e00948. – URL: <https://www.sciencedirect.com/science/article/pii/S2468227621002520>

COVID-19 is now established in Africa, and requires appropriate prioritization of resources and customized control measures. Although there have been lower than predicted number of COVID-19 cases (6,839,159 (3.4% of global cases)) and fatalities (172,413 (4.1% of cases in Africa)) compared to global estimates from other regions, as of 3rd August 2021. The World Health Organization (WHO) has warned that poor mitigation strategies could worsen the current situation in African countries. Several aspects have been attributed to the lower COVID-19 magnitude observed in Africa that include: warmer climate, a youthful population, and previous experience in managing infectious diseases. However, the level of COVID-19 risk of exposure and vulnerability to develop complications varies greatly across the continent. At present, most COVID-19 disease trajectories have been predicted using mathematical models focused solely on demographic factors. We compared the global health security and governance indices in forty-one African countries, with a population of more than 2.5 million,

and matched these to the magnitude of COVID-19 burden, to establish whether there is correlation. These findings suggests that more accurate comparisons of responses to COVID-19 can only be made within clusters of African countries that share similar governance and preparedness standards. We conclude that proper implementation of the continental framework on disaster preparedness and management is required for management of the COVID-19 pandemic.

292. Kuwelker K. Attack rates amongst household members of outpatients with confirmed COVID-19 in Bergen, Norway: A case-ascertained study / K. Kuwelker, F. Zhou, B. Blomberg [et al.] // *The Lancet Regional Health - Europe*. – 2021. – Vol. 3. – P. 100014. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776220300144>

Background

Households studies reflect the natural spread of SARS-CoV-2 in immunologically naive populations with limited preventive measures to control transmission.

We hypothesise that seropositivity provides more accurate household attack rates than RT-PCR. Here, we investigated the importance of age in household transmission dynamics.

Methods

We enrolled 112 households (291 participants) in a case-ascertained study in Bergen, Norway from 28th February to 4th April 2020, collecting demographic and clinical data from index patients and household members. SARS-CoV-2-specific antibodies were measured in sera collected 6–8 weeks after index patient nasopharyngeal testing to define household attack rates.

Findings

The overall attack rate was 45% (95% CI 38–53) assessed by serology, and 47% when also including seronegative RT-PCR positives. Serology identified a higher number of infected household members than RT-PCR. Attack rates were equally high in children (48%) and young adults (42%). The attack rate was 16% in asymptomatic household members and 42% in RT-PCR negative contacts. Older adults had higher antibody titres than younger adults. The risk of household transmission was higher when the index patient had fever (aOR 3.31 [95% CI 1.52–7.24]; $p = 0.003$) or dyspnoea (aOR 2.25 [95% CI 1.80–4.62]; $p = 0.027$) during acute illness.

Interpretation

Serological assays provide more sensitive and robust estimates of household attack rates than RT-PCR. Children are equally susceptible to infection as young adults. Negative RT-PCR or lack of symptoms are not sufficient to rule out infection in household members.

293. Ladhani S. N. Investigation of SARS-CoV-2 outbreaks in six care homes in London, April 2020 / S. N. Ladhani, J. Y. Chow, R. Janarthanan [et al.] // *EClinicalMedicine*. – 2020. – Vol. 26. – P. 100533. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302777>

Background: Care homes are experiencing large outbreaks of COVID-19 associated with high case-fatality rates. We conducted detailed investigations in six London care homes reporting suspected COVID-19 outbreaks during April 2020.

Methods: Residents and staff had nasal swabs for SARS CoV-2 testing using RT-PCR and were followed-up for 14 days. They were categorized as symptomatic, post-symptomatic or pre-symptomatic if they had symptoms at the time of testing, in the two weeks before or two weeks after testing, respectively, or asymptomatic throughout. Virus isolation and whole genome sequencing (WGS) was also performed.

Findings: Across the six care homes, 105/264 (39.8%) residents were SARS CoV-2 positive, including 28 (26.7%) symptomatic, 10 (9.5%) post-symptomatic, 21 (20.0%) pre-symptomatic and 46 (43.8%) who remained asymptomatic. Case-fatality at 14-day follow-up was highest among symptomatic SARS-CoV-2 positive residents (10/28, 35.7%) compared to asymptomatic (2/46, 4.3%), post-symptomatic (2/10, 20.0%) or pre-symptomatic (3/21, 14.3%) residents. Among staff, 53/254 (20.9%) were SARS-CoV-2 positive and 26/53 (49.1%) remained asymptomatic. RT-PCR cycle-thresholds and live-virus recovery were similar between symptomatic/asymptomatic residents/staff. Higher RT-PCR cycle threshold values (lower virus load) samples were associated with exponentially decreasing ability to recover infectious virus ($P < 0.001$). WGS identified multiple (up to 9) separate introductions of different SARS-CoV-2 strains into individual care homes.

Interpretation: A high prevalence of SARS-CoV-2 positivity was found in care homes residents and staff, half of whom were asymptomatic and potential reservoirs for on-going transmission. A third of symptomatic SARS-CoV-2 residents died within 14 days. Symptom-based screening alone is not sufficient for outbreak control.

Funding: None

294. Lam C. Personalized stratification of hospitalization risk amidst COVID-19: A machine learning approach / C. Lam, J. Calvert, A. Siefkas [et al.] // *Health Policy and Technology*. – 2021. – Vol. 10, №3. – P. 100554. – URL: <https://www.sciencedirect.com/science/article/pii/S2211883721000770>

Objective: In the wake of COVID-19, the United States (U.S.) developed a three stage plan to outline the parameters to determine when states may reopen businesses and ease travel restrictions. The guidelines also identify subpopulations of Americans deemed to be at high risk for severe disease should they contract COVID-19. These guidelines were based on population level demographics, rather than individual-level risk factors. As such, they may misidentify individuals at high risk for severe illness, and may therefore be of limited use in decisions surrounding resource allocation to vulnerable populations. The objective of this study was to evaluate a machine learning algorithm for prediction of serious illness due to COVID-19 using inpatient data collected from electronic health records.

Methods: The algorithm was trained to identify patients for whom a diagnosis of COVID-19 was likely to result in hospitalization, and compared against four U.S. policy-based criteria: age over 65; having a serious underlying health condition; age over 65 or having a serious underlying health condition; and age over 65 and having a serious underlying health condition.

Results: This algorithm identified 80% of patients at risk for hospitalization due to COVID-19, versus 62% identified by government guidelines. The algorithm also achieved a high specificity of 95%, outperforming government guidelines.

Conclusions: This algorithm may identify individuals likely to require hospitalization should they contract COVID-19. This information may be useful to guide vaccine distribution, anticipate hospital resource needs, and assist health care policymakers to make care decisions in a more principled manner.

295. Langavant L. Clinical description of the broad range of neurological presentations of COVID-19: A retrospective case series / L. Cleret de Langavant, A. Petit, Q. T. R. Nguyen [et al.] // *Revue Neurologique*. – 2021. – Vol. 177, № 3. – P. 275–282. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0035378721000333>

Background

Neurological disorders associated with SARS-CoV-2 infection represent a clinical challenge because they encompass a broad neurological spectrum and may occur before the diagnosis of COVID-19.

Methods

In this monocentric retrospective case series, medical records from patients with acute neurological disorders associated with SARS-CoV-2 infection from medicine departments of an academic center in Paris area were collected between March 15th and May 15th 2020. Diagnosis of SARS-CoV-2 was ascertained through specific RT-PCR in nasopharyngeal swabs or based on circulating serum IgG antibodies.

296. Laurence J. Individual and community social capital, mobility restrictions, and psychological distress during the COVID-19 pandemic: a multilevel analysis of a representative US survey / J. Laurence, H. H. Kim // *Social Science & Medicine*. – 2021. – Vol. 287. – P. 114361. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621006936>

This paper explores the role of social capital in mitigating the mental health harms of social/mobility restrictions instigated in the wake of the COVID-19 pandemic. We test whether: (a) social capital continued to predict lower mental distress during the pandemic; and (b) whether social capital buffered (moderated) the harm of social/mobility restrictions on psychological distress. In addition, we test the level at which social capital mitigation effects operated, i.e., at the individual- and/or contextual-level. To do so, we apply multilevel models to three waves of the COVID-19 Household Impact Survey consisting of probability samples of U.S. adults (with the average interview completion rate of 93%). In a novel approach, we explore two modes of capturing contextual social capital: aggregated individual-level survey responses and independently measured social capital indices (SCIs). Findings show that at the individual level social capital was associated with lower psychological distress. It also buffered the harm of restrictions: increasing restrictions had a weaker effect on distress among individuals interacting with neighbors more frequently. Importantly, mitigating processes of contextual social capital appeared conditional on how it was measured. Using aggregated survey responses, contextual social capital had no direct effect on distress but exerted an additional buffering role: individuals in counties with higher average neighbor-interaction experienced a weaker impact of restrictions. Using the independent SCI measures, we found county social capital reduced distress. However, its negative effect on distress becomes increasingly weaker the more restrictions an individual reported: where individuals reported lower restrictions, higher county SCI reduced distress; however, where individuals reported higher restrictions, higher county SCI had no effect on distress. More restrictive environments thus cut individuals off from the benefits of higher county social capital as measured using the SCI.

297. Lega I. Psychiatric disorders among hospitalized patients deceased with COVID-19 in Italy / I. Lega, L. Nisticò, L. Palmieri [et al.] // *EClinicalMedicine*. – 2021. – Vol. 35. – P. 100854. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021001346>

Background

there is concern about the increased risk for SARS-CoV-2 infection, COVID-19 severe outcomes and disparity of care among patients with a psychiatric disorder (PD). Based on the Italian COVID-19 death surveillance, which collects data from all the hospitals throughout the country, we aimed to describe clinical features and care pathway of patients dying with COVID-19 and a preceding diagnosis of a PD.

Methods

in this cross-sectional study, the characteristics of a representative sample of patients, who have died with COVID-19 in Italian hospitals between February 21st and August 3rd 2020, were drawn from medical charts, described and analysed by multinomial logistic regression according to the recorded psychiatric diagnosis: no PD, severe PD (SPD) (i.e. schizophrenia and other psychotic disorders, bipolar and related disorders), common mental disorder (CMD) (i.e. depression without psychotic features, anxiety disorders).

298. Leichtweis B. G. How the global health security index and environment factor influence the spread of COVID-19: A country level analysis / B. G. Leichtweis, L. F. Silva, F. L. Silva [et al.] // One Health. – 2021. – Vol. 12. – P. 100235. – URL: <https://www.sciencedirect.com/science/article/pii/S2352771421000252>

The progress of viral diseases such as the new coronavirus (COVID-19) can be influenced not only by social isolation policies, but also by climatic factors. Understanding how these factors affect the progress of the pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) may be essential to know the risks each country is facing because of the disease. In this study, we verified the existence of a relationship between the basic reproduction number (R0) of SARS-CoV-2 with different climate variables, while also considering the Global Health Security Index (GHS). We collected data from confirmed cases of COVID-19 along with their respective GHS notes and climate data, from December 31, 2019 to April 13, 2020, for 52 countries. The generalized additive model (GAM) was applied to explore the effect of temperature, relative humidity, solar radiation index, and GHS score on the spread rate of COVID-19. The countries that showed similarity to each other were grouped into clusters using the Kohonen self-organizing map methodology to investigate the importance of each variable in the dissemination of the disease. The temperature variable presented a linear relationship ($p < 0.001$) with the R0, with an explained variation of 36.2%, while the relative humidity variable did not present a significant relationship with the R0. The response curve of the solar radiation variable presented a significant nonlinear relationship ($p < 0.001$) with an explained variation of 32.3%. The GHS index variable, with a significant nonlinear relationship ($p < 0.001$), presented the largest explanatory response in the control of COVID-19, with an explained variation of 38.4%; further, it was observed that the countries with the largest GHS index scores were less influenced by climate variables.

299. Leigh J. K. “What are you signing up for?”: Pre-medical students' perception of physicians' risk and responsibility during COVID-19 / J. K. Leigh // Social Science & Medicine. – 2021. – Vol. 287. – P. 114320. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621006523>

Though there has been growing attention to the impact of the coronavirus pandemic on the career trajectories of current health care workers, research remains sparse on how those in earlier stages of medical education have been affected by the pandemic. To better understand the pandemic's influence on pre-medical students' professional trajectories, this study draws on 48 interviews with freshmen and sophomore pre-medical students at a private university in the northeastern United States. For many students, witnessing physicians' role during the pandemic made them more aware of both the vulnerability of physicians and the limits of their power in the medical field and society at large. Notably, students primarily explained the risks that physicians confronted as an individual professional expectation rather than a structural concern in the medical system. Despite acknowledging these risks, students emphasized that the pandemic had reinforced their interest in becoming a physician by validating their perception of the vital role that physicians play in society. Additionally, they expressed greater concern about meeting expectations for admission to medical school in light of additional barriers due to COVID-19. This study builds upon existing literature on the medical profession by both centering earlier stages of education and examining processes of socialization during times of crisis. More broadly, these findings indicate a need for greater attention to the normalization of health care workers' sacrifices, as well as the potential exacerbation of existing inequities in pre-medical education during the pandemic.

300. Leimgruber W. Tourism in Switzerland – How can the future be? / W. Leimgruber // Research in Globalization. – 2021. – Vol. 3. – P. 100058. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X2100023X>

The COVID-19 pandemic has dealt a severe blow to the tourism business in Switzerland. Although it is a minor position in the Swiss export balance, it is nevertheless of considerable importance for those regions of the country that attract domestic and foreign visitors. As a consequence of the lockdown measures, combined with close borders and travel bans, tourism collapsed and only briefly and partly recovered in summer. Its future is uncertain and depends on people's (future guests') attitudes and decisions as much as on the economy, political measures and, of course, the progress of the pandemic. Will there be an 'after' COVID-19?

301. Lennox J. UNICEF's lessons learned from the education response to the COVID-19 crisis and reflections on the implications for education policy / J. Lennox, N. Reuge, F. Benavides // International Journal of Educational Development. – 2021. – Vol. 85. – P. 102429. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000821>

COVID-19 triggered mass innovation that grew flexible learning modalities and pathways that can be built upon in future sector plans to make education systems more resilient. These tools must be paired with investments in the people

expected to use them and strengthened data systems. To ensure plans are rooted in ever-pressurised budgets, Education Ministers will increasingly need to turn to economic analysis. Expansion of partnerships will be necessary to secure greater and more innovative forms of finance but also affordable digital learning solutions. If these opportunities are seized alongside the disruption wrought by the pandemic, they can equalize opportunities and accelerate progress.

302. Leta S. D. Learn from the past and prepare for the future: A critical assessment of crisis management research in hospitality / S. D. Leta, I. C. C. Chan // International Journal of Hospitality Management. – 2021. – Vol. 95. – P. 102915. – URL: <https://www.sciencedirect.com/science/article/pii/S027843192100058X>

Given the substantial impact of crisis on the hospitality industry, crisis and crisis management have drawn attention from scholars. While each study makes a significant contribution to the existing knowledge of crisis management in hospitality, the fragmented perspective of each study makes it difficult to identify the key findings and unsolved problems. This paper presents a synthesis and critical assessment of state-of-the-art crisis management research in hospitality. It categorizes articles based on a three-stage framework covering pre-crisis planning, mid-crisis management, and post-crisis recovery. Two main perspectives in the literature are identified: one from hospitality service providers and one from stakeholders. Core research topics and concepts in each stage and perspective are reviewed. In addition, this paper proposes four major directions for future research: crisis management from stakeholders' perspectives, integrative research, causal and behavioral research, and theoretical enhancement. It discusses the theoretical and practical implications of this study.

303. Levene R. The ongoing impact of COVID-19 on asthma and pediatric emergency health-seeking behavior in the Bronx, an epicenter / R. Levene, D. M. Fein, E. J. Silver [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 43. – P. 109–114. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000759>

Background

The Bronx has the highest prevalence of asthma in the United States (US), and was also an early COVID-19 epicenter, making it a unique study location. Worldwide reports describe significant declines in pediatric emergency department (PED) visits during COVID-19. The ongoing impact of COVID-19 on all PED presentations, including asthma, at an early epicenter has not been studied beyond the pandemic peak and into the early phases of state re-opening.

Objectives

To compare PED health-seeking behaviors and clinical characteristics during the 2020 pandemic and subsequent initial New York State (NYS) phased re-opening to the same period in 2019.

Methods

Retrospective chart review of children <21 years utilizing the PED at a high-volume quaternary children's hospital in The Bronx, NY from March 15th 2020 – July 6th 2020 (pandemic cohort) and the same interval in 2019 (comparison cohort). Visits were assigned to pre-determined diagnostic categories. Demographic and clinical data were compared.

Results

19,981 visits were included. Visits declined by 66% during 2020. Proportions of asthma visits (2% vs. 7%, $p < 0.0001$) and minor medical problems (61% vs. 67%, $p < 0.0001$) had significant declines in the pandemic cohort, while major medical problems (13% vs. 8%, $p < 0.0001$), appendicitis (1% vs. 0.4%, $p < 0.0001$) and other surgical complaints (1% vs. 0.5%, $p < 0.0001$) had proportional increases in the pandemic cohort. No significant proportional changes were noted among psychosocial and trauma groups between the two cohorts.

Conclusion

The pandemic cohort experienced a substantial decrease in PED volume, but an increase in acuity and admission rates, which was sustained through the NYS phase-II re-opening. Despite being located in an asthma hub, the incidence of asthma-related PED visits declined appreciably in the pandemic cohort. Future studies examining the effects of indoor allergens in isolation on pediatric asthma are warranted.

304. Li C. COVID-19 and trade: Simulated asymmetric loss / C. Li, X. Lin // Journal of Asian Economics. – 2021. – Vol. 75. – P. 101327. – URL: <https://www.sciencedirect.com/science/article/pii/S1049007821000567>

This paper uses 2018 data as a benchmark to build a numerical 26-country global general equilibrium model with trade cost and an endogenous trade imbalance structure. We assume that COVID-19 will increase the trade cost between countries and decrease labor supply in production. We use China's trade data from January to April in 2020 to calibrate the influence level parameters and then simulate the trade effects of COVID-19 in China, the EU, the US, and the world. Our simulation results find that all countries' trade and exports will be significantly hurt by the pandemic. Due to the trade diversion effect and the price growth effect, some countries will see an increase in import trade. Comparatively, the pandemic has the most negative impact on global trade, followed by the EU, the US, and China. As the pandemic deepens, the negative impact on trade will increase. The worldwide pandemic has the most significant impact on US trade, with an effect about 1.5 times that of the average world effect.

305. Li J. Online teaching in universities during the Covid-19 epidemic: a study of the situation, effectiveness and countermeasures / J. Li, C. Qin, Y. Zhu // Procedia Computer Science. – 2021. – Vol. 187. – P. 566–573. – URL: <https://www.sciencedirect.com/science/article/pii/S187705092100898X>

This paper studies the online teaching practices carried out in universities during the Covid-19 epidemic. This study, through interviews, questionnaires, and model construction, finds: 1) the number of learning sessions designed by teachers, teaching methods, problems encountered in conducting online teaching, class interactions are all significantly related to teaching effectiveness and support attitude; 2) as to the students, the gender, number of class platforms adopted, number of courses participation, difficulties encountered in online learning and preferred learning styles are all significantly related to course quality, learning effectiveness and support attitude.

306. Li K. Estimate the Trend of COVID-19 Outbreak in China: a Statistical and Inferential Analysis on Provincial-level Data / K. Li, Y. Zhang, C. Wang // Procedia Computer Science. – 2021. – Vol. 187. – P. 512–517. – URL: <https://www.sciencedirect.com/science/article/pii/S1877050921008905>

The ongoing COVID-19 epidemic spreads with strong transmission power in every part of China. Analyses of the trend is highly need when the Chinese government makes plans and policies on epidemic control. This paper provides an estimation process on the trend of COVID-19 outbreak using the provincial-level data of the confirmed cases. On the basis of the previous studies, we introduce an effective and practical method to compute accurate basic reproduction numbers (R_0 s) in each province-level division of China. The statistical results show a non-stop downward trend of the R_0 s in China, and confirm that China has made significant progress on the epidemic control by lowering the provincial R_0 s from 10 or above to 3.21 or less. In the inferential analysis, we introduce an effective AR(n) model for the trend forecasting. The inferential results imply that the nationwide epidemic risk will fall to a safe level by the end of April in China, which matches the actual situation. The results provide more accurate method and information about COVID-19.

307. Li N. Risk Factors of Psychological Disorders After the COVID-19 Outbreak: The Mediating Role of Social Support and Emotional Intelligence / N. Li, S. Li, L. Fan // Journal of Adolescent Healt. – 2021. – Vol. 69, № 5. – P. 696–704. – URL: <https://www.sciencedirect.com/science/article/pii/S1054139X2100375X>

Purpose

The present study examined the risk factors of psychological disorders after COVID-19 outbreak and tested the possible mediating role of social support and emotional intelligence on the relationship between COVID-19 pandemic exposure and psychological disorders.

Methods

We conducted an online survey from May 25, 2020 until June 10, 2020 among Chinese university students who had been quarantined at home due to the COVID-19 pandemic. Social support was assessed using the Social Support Rating Scale. Self-perceived emotional competency was measured using a Chinese version of the self-report Wong Law Emotional Intelligence Scale. The 10-item Kessler Psychological Distress Scale was used to assess nonspecific symptoms of psychological disorders.

Results

A total of 6,027 college students participated in the survey, of whom 2,732 (45.3%) reported mental health issues. Men and people in a relationship showed higher frequencies of psychological disorders. Social support and emotional intelligence were both negatively associated with psychological disorders. Stepwise linear regression revealed that the most important predictors of psychological disorders were self-emotion appraisal, family relationships, and showing panic about COVID-19 on the social media. Path analysis suggested that the association between pandemic exposure and psychological disorders was partially mediated by emotional intelligence, but not by social support.

Conclusions

Emotional intelligence may mediate the relationship between COVID-19 pandemic exposure and psychological disorders. Psychological interventions fostering emotional intelligence and social support should be implemented among university students to reduce the psychological harm caused by the COVID-19 pandemic

308. Li V. R. Evaluating current chest imaging practices of pediatric patients with COVID-19: A retrospective analysis / V. R. Li, A. Sura, T. Pickering [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 300–303. – URL: <https://www.sciencedirect.com/science/article/pii/S109037982100146X>

Purpose

This retrospective analysis aims to examine the effectiveness of the current chest imaging guidelines regarding COVID-19 positive pediatric patients on our study group of patients aged 0 to 18.

Materials and methods

We examined clinical and imaging data of 178 pediatric COVID-19 positive patients confirmed by PCR admitted to the Children's Hospital of Los Angeles between March 6, 2020 and June 23, 2020.

Results

Of 178 patients, only 46 (27%) patients underwent any form of chest imaging. Thirteen (28%) of 46 imaged patients had positive chest X-rays (CXR) or computed tomography (CT) chest findings, with 8 (62%) of the 13 patients suggesting pneumonia or multifocal pneumonia, 3 (23%) patients having acute respiratory distress syndrome, and 2 (15%) patients demonstrating left sided pleural effusions thought to be the result of ruptured appendicitis unrelated to their COVID-19 diagnosis. All but one patient had significant prior medical histories with an associated comorbid medical condition. Of the 46 imaged patients, 17 (37%) patients had a negative chest X-ray, and 15 (33%) patients had suggestive findings of viral etiology. 132 patients were not imaged.

Conclusion

Our study population corroborated current chest imaging guidelines in pediatric patients. Chest imaging modalities such as CXR and CT should be reserved for patients who are severely symptomatic and/or possess prior comorbidities such as immunosuppression, diabetes, asthma, obesity, or where other differential etiologies must be entertained.

309. Li X.-P. A dynamical study of SARS-COV-2: A study of third wave / X.-P. Li, Y. Wang, M. A. Khan [et al.] // Results in Physics. – 2021. – Vol. 29. – P. 104705. – URL: <https://www.sciencedirect.com/science/article/pii/S2211379721007828>

The coronavirus still an epidemic in most countries of the world and put the people in danger with so many infected cases and death. Considering the third wave of corona virus infection and to determine the peak of the infection curve, we suggest a new mathematical model with reported cases from March 06, 2021, till April 30, 2021. The model provides an accurate fitting to the suggested data, and the basic reproduction number calculated to be

. We study the stability of the model and show that the model is locally as well as globally asymptotically stable when , for the disease free case. The parameters that are sensitive to the basic reproduction number, their effect on the model variables are shown graphically. We can observe that the suggested parameters can decrease efficiently the infection cases of the third wave in Pakistan. Further, our model suggests that the infection peak is to be May 06, 2021. The present results determine that the model can be useful in order to predict other countries data.

310. Li Y. Analysis of the impact of COVID-19 pandemic on G20 stock markets / Y. Li, X. Zhuang, J. Wang [et al.] // The North American Journal of

Economics and Finance. – 2021. – Vol. 58. – P. 101530. – URL: <https://www.sciencedirect.com/science/article/pii/S1062940821001455>

We examine the impact of the COVID-19 pandemic on G20 stock markets from multiple perspectives. To measure the impact of COVID-19 on cross-market linkages and deeply explore the dynamic evolution of risk transmission relations and paths among G20 stock markets, we statically and dynamically measure total, net, and pairwise volatility connectedness among G20 stock markets based on the DY approach by Diebold and Yilmaz (2012, 2014). The results indicate that the total volatility connectedness among G20 stock markets increases significantly during the COVID-19 crisis, moreover, the volatility connectedness display dynamic evolution characteristics during different periods of the COVID-19 pandemic. Besides, we also find that the developed markets are the main spillover transmitters while the emerging markets are the main spillover receivers. Furthermore, to capture the impact of COVID-19 on the volatility spillovers of G20 stock markets, we individually apply the spatial econometrics methods to analyze both the direct and indirect effects of COVID-19 on the stock markets' volatility spillovers based on the “volatility spillover network matrix” innovatively constructed in this paper. The empirical results suggest that stock markets react more strongly to the COVID-19 confirmed cases and cured cases than the death cases. In general, our study offers some reference for both the investors and policymakers to understand the impact of COVID-19 on global stock markets.

311. Li Y. The role of the IDEMV in predicting European stock market volatility during the COVID-19 pandemic / Y. Li, C. Liang, F. Ma [et al.] // Finance Research Letters. – 2020. – Vol. 36. – P. 101749. – URL: <https://www.sciencedirect.com/science/article/pii/S1544612320308515>

The main purpose of this paper is to investigate whether the Infectious Disease EMV tracker (IDEMV) proposed by Baker et al. (2020) has additional predictive ability for European stock market volatility during the COVID-19 pandemic. The three European stock markets we consider are France, UK and Germany. Our investigation is based on the HAR and its augmented models. We find that the IDEMV has stronger predictive power for the France and UK stock markets volatilities during the global pandemic, and the VIX has also superior predictive ability for the three European stock markets during this period.

312. Lia X. Restoration of dental services after COVID-19: The fallow time determination with laser light scattering / X. Lia, C. M. Mak, K. W. Ma [et al.] // Sustainable Cities and Society. – 2021. – Vol. 74. – P. 103134. – URL: <https://www.sciencedirect.com/science/article/pii/S2210670721004169>

In time, dental health care has slowly expanded beyond emergency treatment to treat oral diseases. How to reduce the cross-transmission risk in dental surgery has raised much more attention. Considering the lack of consistency of fallow time

(FT) in its necessity and duration, the highly sensitive laser light scattering method has been proposed to visualize the airborne lifetime and decay rate of suspended particles in the dental surgery environment. The FT is defined as when the number of suspended particles drops to the level that the next patient can safely enter after the aerosol-generating procedures (AGPs). The ultrasonic scaling was performed in the mock-up experimental dental clinic with 6 air changes per hour (ACH), and the instantaneous moments of the droplets were recorded by a high-speed camera. Without any mitigation measures, the estimated FT in the single dental surgery environment with 6 ACH was in the range of 27–35 min, significantly affecting the number of daily dental services. Despite the cooperation of high-volume evacuation (HVE [IO]) cannot eliminate the FT to zero minutes, the equipment could reduce the required FT by 3–11 min for the suspended particles reducing the baseline levels. Owing to the longer airborne lifetime of suspended particles, the relevant protection equipment, especially respiratory protection, is quite essential in dental surgery. The obtained results of this study will provide evidence to establish the revised FT in dental surgery guidelines and protect the health and wellbeing of urban dwellers.

313. Liu A. COVID-19 and the aviation industry: The interrelationship between the spread of the COVID-19 pandemic and the frequency of flights on the EU market / A. Liu, Y. R. Kim, J. F. O'Connell // Annals of Tourism Research. – 2021. – Vol. 91. – P. 103298. – URL: <https://www.sciencedirect.com/science/article/pii/S0160738321001766>

This study aims to investigate the contribution of aviation related travel restrictions to control the spread of COVID-19 in Europe by using quasi-experiment approaches including the regression discontinuity design and a two-stage spatial Durbin model with an instrumental variable. The study provides concrete evidence that the severe curtailing of flights had a spontaneous impact in controlling the spread of COVID-19. The counterfactual analysis encapsulated the spillover effects deduced that a 1% decrease in flight frequency can decrease the number of confirmed cases by 0.908%. The study also reveals that during the lockdown, the aviation industry cancelled over 795,000 flights, which resulted in averting an additional six million people from being infected and saving 101,309 lives.

314. Liu S. Public attitudes toward COVID-19 vaccines on English-language Twitter: A sentiment analysis / S. Liu, J. Liu // Vaccine. – 2021. – Vol. 39, № 39. – P. 5499–5505. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X21011063>

Objective

To identify themes and temporal trends in the sentiment of COVID-19 vaccine-related tweets and to explore variations in sentiment at world national and United States state levels.

Methods

We collected English-language tweets related to COVID-19 vaccines posted between November 1, 2020, and January 31, 2021. We applied the Valence Aware Dictionary and sEntiment Reasoner tool to calculate the compound score to determine whether the sentiment mentioned in each tweet was positive (compound ≥ 0.05), neutral ($-0.05 < \text{compound} < 0.05$), or negative (compound ≤ -0.05). We applied the latent Dirichlet allocation analysis to extract main topics for tweets with positive and negative sentiment. Then we performed a temporal analysis to identify time trends and a geographic analysis to explore sentiment differences in tweets posted in different locations.

Results

Out of a total of 2,678,372 COVID-19 vaccine-related tweets, tweets with positive, neutral, and negative sentiments were 42.8%, 26.9%, and 30.3%, respectively. We identified five themes for positive sentiment tweets (trial results, administration, life, information, and efficacy) and five themes for negative sentiment tweets (trial results, conspiracy, trust, effectiveness, and administration). On November 9, 2020, the sentiment score increased significantly (score = 0.234, $p = 0.001$), then slowly decreased to a neutral sentiment in late December and was maintained until the end of January. At the country level, tweets posted in Brazil had the lowest sentiment score of -0.002 , while tweets posted in the United Arab Emirates had the highest sentiment score of 0.162. The overall average sentiment score for the United States was 0.089, with Washington, DC having the highest sentiment score of 0.144 and Wyoming having the lowest sentiment score of 0.036.

Conclusions

Public sentiment on COVID-19 vaccines varied significantly over time and geography. Sentiment analysis can provide timely insights into public sentiment toward the COVID-19 vaccine and guide public health policymakers in designing locally tailored vaccine education programs.

315. Lobo A. P. COVID-19 epidemic in Brazil: Where are we at? / A. P. Lobo, A. C. Cardoso-dos-Santos, M. S. Rocha [et al.] // *International Journal of Infectious Diseases*. – 2020. – Vol. 97. – P. 382–385. – URL: <https://pubmed.ncbi.nlm.nih.gov/32561425/>

Objective

To analyze the trends of COVID-19 in Brazil in 2020 by Federal Units (FU).

Method

Ecological time-series based on cumulative confirmed cases of COVID-19 from March 11 to May 12. Joinpoint regression models were applied to identify points of inflection in COVID-19 trends, considering the days since the 50th confirmed case as time unit.

Results

Brazil reached its 50th confirmed case of COVID-19 in 11 March 2020 and, 63 days after that, on May 12, 177,589 cases had been confirmed. The trends for all regions and FU are upward. In the last segment, from the 31st to the 63rd day, Brazil presented a daily percentage change (DPC) of 7.3% (95%CI= 7.2;7.5). For the country the average daily percentage change (ADPC) was 14.2% (95%CI: 13.8;14.5). The highest ADPC values were found in the North, Northeast and Southeast regions.

316. Logunov D. Y. Safety and efficacy of an rAd26 and rAd5 vector-based heterologous prime-boost COVID-19 vaccine: an interim analysis of a randomised controlled phase 3 trial in Russia / D. Y. Logunov, I. V. Dolzhikova, D. V. Shcheblyakov [et al.] // The Lancet. – 2021. – Vol. 397, № 10275. – P. 671–681. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0140673621002348>

Background

A heterologous recombinant adenovirus (rAd)-based vaccine, Gam-COVID-Vac (Sputnik V), showed a good safety profile and induced strong humoral and cellular immune responses in participants in phase 1/2 clinical trials. Here, we report preliminary results on the efficacy and safety of Gam-COVID-Vac from the interim analysis of this phase 3 trial.

Methods

We did a randomised, double-blind, placebo-controlled, phase 3 trial at 25 hospitals and polyclinics in Moscow, Russia. We included participants aged at least 18 years, with negative SARS-CoV-2 PCR and IgG and IgM tests, no infectious diseases in the 14 days before enrolment, and no other vaccinations in the 30 days before enrolment. Participants were randomly assigned (3:1) to receive vaccine or placebo, with stratification by age group. Investigators, participants, and all study staff were masked to group assignment. The vaccine was administered (0.5 mL/dose) intramuscularly in a prime-boost regimen: a 21-day interval between the first dose (rAd26) and the second dose (rAd5), both vectors carrying the gene for the full-length SARS-CoV-2 glycoprotein S. The primary outcome was the proportion of participants with PCR-confirmed COVID-19 from day 21 after receiving the first dose. All analyses excluded participants with protocol violations: the primary outcome was assessed in participants who had received two doses of vaccine or placebo, serious adverse events were assessed in all participants who had received at least one dose at the time of database lock, and rare adverse events were assessed in all participants who had received two doses and for whom all available data were verified in the case report form at the time of database lock. The trial is registered at ClinicalTrials.gov (NCT04530396).

Findings

Between Sept 7 and Nov 24, 2020, 21 977 adults were randomly assigned to the vaccine group (n=16 501) or the placebo group (n=5476). 19 866 received two doses of vaccine or placebo and were included in the primary outcome analysis. From 21 days after the first dose of vaccine (the day of dose 2), 16 (0·1%) of 14 964 participants in the vaccine group and 62 (1·3%) of 4902 in the placebo group were confirmed to have COVID-19; vaccine efficacy was 91·6% (95% CI 85·6–95·2). Most reported adverse events were grade 1 (7485 [94·0%] of 7966 total events). 45 (0·3%) of 16 427 participants in the vaccine group and 23 (0·4%) of 5435 participants in the placebo group had serious adverse events; none were considered associated with vaccination, with confirmation from the independent data monitoring committee. Four deaths were reported during the study (three [$<0\cdot1\%$] of 16 427 participants in the vaccine group and one [$<0\cdot1\%$] of 5435 participants in the placebo group), none of which were considered related to the vaccine.

Interpretation

This interim analysis of the phase 3 trial of Gam-COVID-Vac showed 91·6% efficacy against COVID-19 and was well tolerated in a large cohort.

317. Loh K. P. COVID-19 vaccines in older adults with cancer: a Young International Society of Geriatric Oncology perspective / K. P. Loh, E. Soto-Perez-de-Celis, A. R. Misleng // The Lancet Healthy Longevity. – 2021. – Vol. 2, № 5. – P. e240–e242. – URL: <https://www.sciencedirect.com/science/article/pii/S266675682100060X>

As of March 3, 2021, 115 million COVID-19 cases and 2·6 million COVID-19-related deaths had been reported. Although older adults (aged ≥ 65 years) are no more susceptible to SARS-CoV-2 infection than younger adults, they are more likely to develop serious illness and die after they become infected.¹ In addition to age, patients with cancer also have worse outcomes compared with those without cancer.² Therefore, these groups of patients should ideally be prioritised for receipt of COVID-19 vaccines.

Several COVID-19 vaccines have been developed extremely quickly, with the first vaccine developed in 11 months. However, it has been noted that older adults continue to be under-represented in vaccine trials. For example, in the interim analyses of 11 636 participants enrolled in the AstraZeneca vaccine trials, only 8·4% of participants were aged 56–79 years and 3·8% were aged 70 years or older.³ Among the 30 351 patients enrolled in the Moderna vaccine trial, 25% of participants were younger than 65 years.⁴ Most countries do not exclude older adults from receiving the vaccine; however, there are a few exceptions. In Germany, the Standing Committee on Vaccination initially recommended against the use of the AstraZeneca vaccine in adults aged 65 years and older due to paucity of data in this age group.⁵ However, this recommendation was later changed to allow routine use in people aged older than 60 years. On March 30, 2021, routine

use in people younger than 60 years was no longer recommended due to concerns about the risk of blood clots.⁶ In China, it is recommended that vaccination is postponed for people older than 59 years pending additional safety and efficacy data in this age group.⁷ Vaccine trials focusing on older adults are ongoing.⁸

The WHO Strategic Advisory Group of Experts on Immunization provided a prioritization roadmap to guide countries in developing public health and prioritisation strategies based on vaccine availability (very limited, limited, moderate) and epidemiological settings (widespread transmission, localised or limited transmission, countries with no reported cases but at risk for an outbreak).⁹ New Zealand, for example, uses this strategy when prioritising groups for vaccine. In the context of widespread community transmission, adults older than 65 years and adults younger than 65 years with underlying conditions and disabilities are prioritised first (table; appendix).¹⁰ However, in the context of low or no community transmission or clusters of cases, the priorities change. Most countries use a stepwise approach based on chronological age with prioritisation of certain groups (eg, people living in long-term care facilities, health-care workers, frontline workers) irrespective of comorbidity during initial vaccine rollout. Older adults are generally prioritised before or shortly after health-care workers. Comorbidity, rather than cancer specifically, is prioritised in younger adults.

318. Lombardi S. Improvising resilience: The unfolding of resilient leadership in COVID-19 times / S. Lombardi, M. P. Cunha, L. Giustiniano // *International Journal of Hospitality Management*. – 2021. – Vol. 95. – P. 102904. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921000475>

The spread of the COVID-19 pandemic in Italy has had disastrous effects on the national economy. The hospitality sector has experienced a significant impact from the crisis: starting from March 2020 it has literally collapsed. Experts believe it will take three years for the sector to recover. Confronted with a dramatic uncertainty, which imposed rapid action, hospitality leaders need to nurture resilience. To enrich current understanding of the way resilient leadership unfolds to respond to jolts, we draw on an exploratory qualitative research involving Italian hotel managers. Following in-depth interviews, we show that resilient leadership and improvisation are deeply interconnected. Their interdependence entails two practices, namely gardening and learning. This suggests a paradoxical tension: to exercise resilience, leaders need to be at the same time in the system, by actively learning from events, and outside the system, by zooming out as they focus on ongoing planning for the next move.

319. López-Medrano F. Combination therapy with tocilizumab and corticosteroids for aged patients with severe COVID-19 pneumonia: A single-center retrospective study / F. López-Medrano, M. A. Pérez-Jacoiste, A. J. M. Aguado [et al.] // *International Journal of Infectious Diseases*. – 2021. –

Background

The role of combination immunomodulatory therapy with systemic corticosteroids and tocilizumab (TCZ) for aged patients with COVID-19-associated cytokine release syndrome remains unclear.

Methods

A retrospective single-center study was conducted on consecutive patients aged ≥ 65 years who developed severe COVID-19 between 03 March and 01 May 2020 and were treated with corticosteroids at various doses (methylprednisolone 0.5 mg/kg/12 h to 250 mg/24 h), either alone (CS group) or associated with intravenous tocilizumab (400–600 mg, one to three doses) (CS-TCZ group). The primary outcome was all-cause mortality by day +14, whereas secondary outcomes included mortality by day +28 and clinical improvement (discharge and/or a ≥ 2 point decrease on a 6-point ordinal scale) by day +14. Propensity score (PS)-based adjustment and inverse probability of treatment weights (IPTW) were applied.

Results

Totals of 181 and 80 patients were included in the CS and CS-TCZ groups, respectively. All-cause 14-day mortality was lower in the CS-TCZ group, both in the PS-adjusted (hazard ratio [HR]: 0.34; 95% confidence interval [CI]: 0.17–0.68; $P = 0.002$) and IPTW-weighted models (odds ratio [OR]: 0.38; 95% CI: 0.21–0.68; $P = 0.001$). This protective effect was also observed for 28-day mortality (PS-adjusted HR: 0.38; 95% CI: 0.21–0.72; $P = 0.003$). Clinical improvement by day +14 was higher in the CS-TCZ group with IPTW analysis only (OR: 2.26; 95% CI: 1.49–3.41; $P < 0.001$). The occurrence of secondary infection was similar between both groups.

Conclusions

The combination of corticosteroids and TCZ was associated with better outcomes among patients aged ≥ 65 years with severe COVID-19.

320. Lopez-Ridaura S. Immediate impact of COVID-19 pandemic on farming systems in Central America and Mexico / S. Lopez-Ridaura, A. Sanders, L. Barba-Escoto [et al.] // Agricultural Systems. – 2021. – Vol. 192. – P. 103178.

URL:

<https://www.sciencedirect.com/science/article/pii/S0308521X21001311>

CONTEXT

The COVID-19 pandemic has affected all sectors and human activities around the World.

OBJECTIVE

In this article we present a first attempt to understand the immediate impact of COVID-19 and the sanitary measures taken by governments on farming systems in Central America and Mexico (CAM).

METHODS

Through a review of information generated in these initial months of the COVID-19 pandemic (webinars, blogs, electronic publications, media) and 44 interviews with key informants across the region, we have identified the main impacts felt by different types of farming systems in the region.

RESULTS AND CONCLUSIONS

From corporate agricultural production systems, to small and medium scale entrepreneurs and smallholder subsistence farm households, all types of farming systems were impacted, more or less severely, by the different measures implemented by governments such as reduced mobility, closure of public and private venues and restrictions in borders. Larger corporate farming systems with vertical market integration and high level of control or coordination within the supply chain, and smallholder or subsistence farming systems with important focus on production for self-consumption and little external input use, were both relatively less impacted and showed greater adaptive capacity than the medium and small entrepreneurial farming systems dependent on agriculture as their primary income and with less control over the upstream and downstream parts of their supply chain. All types of farming systems implemented a series of mechanisms to cope with the COVID-19 pandemic including the development of alternative value chains, food and agricultural products delivery systems and the exponential use of digital means to communicate and maintain the viability of the different agricultural systems. Collective action and organization of farmers also proved to be an important coping mechanism that allowed some farmers to acquire inputs and deliver outputs in the context of restricted mobility, price volatility, and general uncertainty. Some features of the CAM region played an important role in mediating the impact of COVID-19 and associated sanitary measures. We identify as particularly relevant the nature of agricultural exports, the current structure of the agricultural sector, the diversified livelihood strategies of rural households, and the importance of mobility for rural livelihoods.

321. Lopes R. D. Therapeutic versus prophylactic anticoagulation for patients admitted to hospital with COVID-19 and elevated D-dimer concentration (ACTION): an open-label, multicentre, randomised, controlled trial / R. D. Lopes, P. G. M. de Barros e Silva, R. H. M. Furtado [et al.] // The Lancet. – 2021. – Vol. 397, №10291. – P. 2253–2263. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621012034>

Summary

Background

COVID-19 is associated with a prothrombotic state leading to adverse clinical outcomes. Whether therapeutic anticoagulation improves outcomes in patients hospitalised with COVID-19 is unknown. We aimed to compare the efficacy and safety of therapeutic versus prophylactic anticoagulation in this population.

Methods

We did a pragmatic, open-label (with blinded adjudication), multicentre, randomised, controlled trial, at 31 sites in Brazil. Patients (aged ≥ 18 years) hospitalised with COVID-19 and elevated D-dimer concentration, and who had COVID-19 symptoms for up to 14 days before randomisation, were randomly assigned (1:1) to receive either therapeutic or prophylactic anticoagulation. Therapeutic anticoagulation was in-hospital oral rivaroxaban (20 mg or 15 mg daily) for stable patients, or initial subcutaneous enoxaparin (1 mg/kg twice per day) or intravenous unfractionated heparin (to achieve a 0.3–0.7 IU/mL anti-Xa concentration) for clinically unstable patients, followed by rivaroxaban to day 30. Prophylactic anticoagulation was standard in-hospital enoxaparin or unfractionated heparin. The primary efficacy outcome was a hierarchical analysis of time to death, duration of hospitalisation, or duration of supplemental oxygen to day 30, analysed with the win ratio method (a ratio >1 reflects a better outcome in the therapeutic anticoagulation group) in the intention-to-treat population. The primary safety outcome was major or clinically relevant non-major bleeding through 30 days. This study is registered with ClinicalTrials.gov (NCT04394377) and is completed.

Findings

From June 24, 2020, to Feb 26, 2021, 3331 patients were screened and 615 were randomly allocated (311 [50%] to the therapeutic anticoagulation group and 304 [50%] to the prophylactic anticoagulation group). 576 (94%) were clinically stable and 39 (6%) clinically unstable. One patient, in the therapeutic group, was lost to follow-up because of withdrawal of consent and was not included in the primary analysis. The primary efficacy outcome was not different between patients assigned therapeutic or prophylactic anticoagulation, with 28 899 (34.8%) wins in the therapeutic group and 34 288 (41.3%) in the prophylactic group (win ratio 0.86 [95% CI 0.59–1.22], $p=0.40$). Consistent results were seen in clinically stable and clinically unstable patients. The primary safety outcome of major or clinically relevant non-major bleeding occurred in 26 (8%) patients assigned therapeutic anticoagulation and seven (2%) assigned prophylactic anticoagulation (relative risk 3.64 [95% CI 1.61–8.27], $p=0.0010$). Allergic reaction to the study medication occurred in two (1%) patients in the therapeutic anticoagulation group and three (1%) in the prophylactic anticoagulation group.

Interpretation

In patients hospitalised with COVID-19 and elevated D-dimer concentration, in-hospital therapeutic anticoagulation with rivaroxaban or enoxaparin followed by rivaroxaban to day 30 did not improve clinical outcomes and increased bleeding

compared with prophylactic anticoagulation. Therefore, use of therapeutic-dose rivaroxaban, and other direct oral anticoagulants, should be avoided in these patients in the absence of an evidence-based indication for oral anticoagulation.

Funding

Coalition COVID-19 Brazil, Bayer SA.

322. Lorente L. HLA genetic polymorphisms and prognosis of patients with COVID-19 / L. Lorente, M. M. Martín, A. Franco [et al.] // *Medicina Intensiva*. – 2021. – Vol. 45, № 2. – P. 96–103. – URL: <https://www.sciencedirect.com/science/article/pii/S2173572721000084>

Objective

Different genetic polymorphisms of human leukocyte antigen (HLA) have been associated with the risk and prognosis of autoimmune and infectious diseases. The objectives of this study were to determine whether there is an association between HLA genetic polymorphisms and the susceptibility to and mortality of coronavirus disease 2019 (COVID-19) patients.

Design

Observational and prospective study.

Setting

Eight Intensive Care Units (ICU) from 6 hospitals of Canary Islands (Spain).

Patients

COVID-19 patients admitted in ICU and healthy subjects.

Interventions

Determination of HLA genetic polymorphisms.

Main variable of interest

Mortality at 30 days.

Results

A total of 3886 healthy controls and 72 COVID-19 patients (10 non-survivors and 62 survivor patients at 30 days) were included. We found a trend to a higher rate of the alleles HLA-A*32 ($p = 0.004$) in healthy controls than in COVID-19 patients, and of the alleles HLA-B*39 ($p = 0.02$) and HLA-C*16 ($p = 0.02$) in COVID-19 patients than in healthy controls; however, all these p-values were not significant after correction for multiple comparisons. Logistic regression analysis showed that the presence of certain alleles was associated with higher mortality, such as the allele HLA-A*11 after controlling for SOFA (OR = 7.693; 95% CI = 1.063–55.650; $p = 0.04$) or APACHE-II (OR = 11.858; 95% CI = 1.524–92.273; $p = 0.02$), the allele HLA-C*01 after controlling for SOFA (OR = 11.182;

95% CI = 1.053–118.700; $p = 0.04$) or APACHE-II (OR = 17.604; 95% CI = 1.629–190.211; $p = 0.02$), and the allele HLA-DQB1*04 after controlling for SOFA (OR = 9.963; 95% CI = 1.235–80.358; $p = 0.03$).

Conclusions

The new finding from our preliminary study of small sample size was that HLA genetic polymorphisms could be associated with COVID-19 mortality; however, studies with a larger sample size before definitive conclusions can be drawn.

323. Luethgen M. Changes in taste and smell as an early marker for COVID-19 / M. Luethgen, J. Eggeling, J. Heyckendorf [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 8–9. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220305622>

Dear Editor,

Liang et al. report neurosensory dysfunction, such as hyposmia and hypogeusia, to be an early symptom of COVID-19 that could be used as a marker for early diagnosis (Liang et al., 2020). Data from our out-patient COVID-19 drive-through test center at the Research Center Borstel, Germany, support most of their findings. From March 19th until June 26th, 2020, we tested 1403 individuals (median age, 42 years; interquartile range, 30–54). All persons (42.6% male, 57.4% female) were tested by oropharyngeal and nasal swab for SARS-CoV-2 PCR. Tests were performed to confirm or rule out SARS-CoV-2 infection in symptomatic patients ($n = 1272$) as well as asymptomatic individuals ($n = 131$) who had been potentially exposed to SARS-CoV-2. In total, 115 persons tested positive (8.2%). Seven (6.1%) positive-test individuals were asymptomatic. Twenty one (18.2%) of positive-test patients had comorbidities.

A telephone follow-up was conducted 30 days after testing in 110 subjects with a positive swab result. The severity of disease was comparable to the cohort of Liang et al.: 106 subjects (96.3%) recovered from COVID-19 after mild disease (Liang et al.: 98.8%). While in the cohort of Liang et al. all patients were hospitalized, only four subjects (3.6%) of our group required hospital admission for severe disease. Three of them recovered (2.7%), and one person (0.9%) died. In Germany, mild cases are managed in domestic quarantine.

324. Luetic G. G. Oral administration of methylprednisolone powder for intravenous injection dissolved in water to treat MS and NMOSD relapses during COVID-19 pandemic in a real-world setting / G. G. Luetic, M. L. Menichini, Ó. Fernández // Multiple Sclerosis and Related Disorders. – 2021. – Vol. 54. – P. 103148. – URL: <https://www.sciencedirect.com/science/article/pii/S2211034821004156>

Background

Upon the COVID-19 pandemic emergence, safety concerns and logistic drawbacks stimulated the search for alternatives to pulse therapy at infusion centres to treat multiple sclerosis relapses.

Objective

To describe our experience treating multiple sclerosis relapses with a dilute injectable methylprednisolone powder orally administered, in a safe home-based environment and with totally virtual assessment and follow up via telemedicine.

Methods

Descriptive observational, retrospective, single-centre, open label, study in the real-world setting.

Results

Between August 2020 and March 2021, ten multiple sclerosis patients and one neuromyelitis optica spectrum disease patient, regularly assisted at our multiple sclerosis centre in Argentina, experienced twelve disease relapses (nine moderate/severe relapses and three mild relapses) and were treated with the oral dilute of injectable methylprednisolone powder pulses with good efficacy as well as adequate tolerance and safety profile.

Conclusions

The oral pulse therapy based on the methylprednisolone powder dilution we describe is simple and comfortable to administer and can be an option in countries like Argentina, where the oral methylprednisolone formulation is not marketed. In these pandemic times, a home based and virtually monitored pulse therapy could represent a safe and effective alternative to manage relapses while minimizing the patient's risk of exposure to SARS-CoV-2.

325. Lustig Y. BNT162b2 COVID-19 vaccine and correlates of humoral immune responses and dynamics: a prospective, single-centre, longitudinal cohort study in health-care workers / Y. Lustig, E. Sapir, G. Regev-Yochay [et al.] // The Lancet Respiratory Medicine. – 2021. – Vol. 9, №9. – P. 999–1009. – URL: <https://www.sciencedirect.com/science/article/pii/S2213260021002204>

Summary

Background

Concurrent with the Pfizer–BioNTech BNT162b2 COVID-19 vaccine roll-out in Israel initiated on Dec 19, 2020, we assessed the early antibody responses and antibody kinetics after each vaccine dose in health-care workers of different ages and sexes, and with different comorbidities.

Methods

We did a prospective, single-centre, longitudinal cohort study at the Sheba Medical Centre (Tel-Hashomer, Israel). Eligible participants were health-care

workers at the centre who had a negative anti-SARS-CoV-2 IgG assay before receiving the first dose of the intramuscular vaccine, and at least one serological antibody test after the first dose of the vaccine. Health-care workers with a positive SARS-CoV-2 PCR test before vaccination, a positive anti-SARS-CoV-2 IgG serology test before vaccination, or infection with COVID-19 after vaccination were excluded from the study. Participants were followed up weekly for 5 weeks after the first vaccine dose; a second dose was given at week 3. Serum samples were obtained at baseline and at each weekly follow-up, and antibodies were tested at 1–2 weeks after the first vaccine dose, at week 3 with the administration of the second vaccine dose, and at weeks 4–5 (ie, 1–2 weeks after the second vaccine dose). Participants with comorbidities were approached to participate in an enriched comorbidities subgroup, and at least two neutralising assays were done during the 5 weeks of follow-up in those individuals. IgG assays were done for the entire study population, whereas IgM, IgA, and neutralising antibody assays were done only in the enriched comorbidities subgroup. Concentrations of IgG greater than 0.62 sample-to-cutoff (s/co) ratio and of IgA greater than 1.1 s/co, and titres of neutralising antibodies greater than 10 were considered positive. Scatter plot and correlation analyses, logistic and linear regression analyses, and linear mixed models were used to investigate the longitudinal antibody responses.

Findings

Between Dec 19, 2020, and Jan 30, 2021, we obtained 4026 serum samples from 2607 eligible, vaccinated participants. 342 individuals were included in the enriched comorbidities subgroup. The first vaccine dose elicited positive IgG and neutralising antibody responses at week 3 in 707 (88.0%) of 803 individuals, and 264 (71.0%) of 372 individuals, respectively, which were rapidly increased at week 4 (ie, 1 week after the second vaccine dose) in 1011 (98.4%) of 1027 and 357 (96.5%) of 370 individuals, respectively. Over 4 weeks of follow-up after vaccination, a high correlation ($r=0.92$) was detected between IgG against the receptor-binding domain and neutralising antibody titres. First-dose induced IgG response was significantly lower in individuals aged 66 years and older (ratio of means 0.25, 95% CI 0.19–0.31) and immunosuppressed individuals (0.21, 0.14–0.31) compared with individuals aged 18.00–45.99 years and individuals with no immunosuppression, respectively. This disparity was partly abrogated following the second dose. Overall, endpoint regression analysis showed that lower antibody concentrations were consistently associated with male sex (ratio of means 0.84, 95% CI 0.80–0.89), older age (ie, ≥ 66 years; 0.64, 0.58–0.71), immunosuppression (0.44, 0.33–0.58), and other specific comorbidities: diabetes (0.88, 0.79–0.98), hypertension (0.90, 0.82–0.98), heart disease (0.86, 0.75–1.00), and autoimmune diseases (0.82, 0.73–0.92).

Interpretation

BNT162b2 vaccine induces a robust and rapid antibody response. The significant correlation between receptor-binding domain IgG antibodies and neutralisation titres suggests that IgG antibodies might serve as a correlate of

neutralisation. The second vaccine dose is particularly important for older and immunosuppressed individuals, highlighting the need for timely second vaccinations and potentially a reevaluation of the long gap between doses in some countries. Antibody responses were reduced in susceptible populations and therefore they might be more prone to breakthrough infections.

Funding

Sheba Medical Center, Israel Ministry of Health.

326. Madhi S. A. Safety and immunogenicity of the ChAdOx1 nCoV-19 (AZD1222) vaccine against SARS-CoV-2 in people living with and without HIV in South Africa: an interim analysis of a randomised, double-blind, placebo-controlled, phase 1B/2A trial / S. A. Madhi, A. L. Koen, A. Izu [et al.] // The Lancet HIV. – 2021. – Vol. 8, № 9. – P. e568–580. – URL: <https://www.sciencedirect.com/science/article/pii/S2049080120302028>

Summary

Background

People living with HIV are at an increased risk of fatal outcome when admitted to hospital for severe COVID-19 compared with HIV-negative individuals. We aimed to assess safety and immunogenicity of the ChAdOx1 nCoV-19 (AZD1222) vaccine in people with HIV and HIV-negative individuals in South Africa.

Methods

In this ongoing, double-blind, placebo-controlled, phase 1B/2A trial (COV005), people with HIV and HIV-negative participants aged 18–65 years were enrolled at seven South African locations and were randomly allocated (1:1) with full allocation concealment to receive a prime-boost regimen of ChAdOx1 nCoV-19, with two doses given 28 days apart. Eligibility criteria for people with HIV included being on antiretroviral therapy for at least 3 months, with a plasma HIV viral load of less than 1000 copies per mL. In this interim analysis, safety and reactogenicity was assessed in all individuals who received at least one dose of ChAdOx1 nCov 19 between enrolment and Jan 15, 2021. Primary immunogenicity analyses included participants who received two doses of trial intervention and were SARS-CoV-2 seronegative at baseline. This trial is registered with ClinicalTrials.gov, NCT04444674, and the Pan African Clinicals Trials Registry, PACTR202006922165132.

Findings

Between June 24 and Nov 12, 2020, 104 people with HIV and 70 HIV-negative individuals were enrolled. 102 people with HIV (52 vaccine; 50 placebo) and 56 HIV-negative participants (28 vaccine; 28 placebo) received the priming dose, 100 people with HIV (51 vaccine; 49 placebo) and 46 HIV-negative participants (24 vaccine; 22 placebo) received two doses (priming and booster). In

participants seronegative for SARS-CoV-2 at baseline, there were 164 adverse events in those with HIV (86 vaccine; 78 placebo) and 237 in HIV-negative participants (95 vaccine; 142 placebo). Of seven serious adverse events, one severe fever in a HIV-negative participant was definitely related to trial intervention and one severely elevated alanine aminotransferase in a participant with HIV was unlikely related; five others were deemed unrelated. One person with HIV died (unlikely related). People with HIV and HIV-negative participants showed vaccine-induced serum IgG responses against wild-type Wuhan-1 Asp614Gly (also known as D614G). For participants seronegative for SARS-CoV-2 antigens at baseline, full-length spike geometric mean concentration (GMC) at day 28 was 163.7 binding antibody units (BAU)/mL (95% CI 89.9–298.1) for people with HIV (n=36) and 112.3 BAU/mL (61.7–204.4) for HIV-negative participants (n=23), with a rising day 42 GMC booster response in both groups. Baseline SARS-CoV-2 seropositive people with HIV demonstrated higher antibody responses after each vaccine dose than did people with HIV who were seronegative at baseline. High-level binding antibody cross-reactivity for the full-length spike and receptor-binding domain of the beta variant (B.1.351) was seen regardless of HIV status. In people with HIV who developed high titre responses, predominantly those who were receptor-binding domain seropositive at enrolment, neutralising activity against beta was retained.

Interpretation

ChAdOx1 nCoV-19 was well tolerated, showing favourable safety and immunogenicity in people with HIV, including heightened immunogenicity in SARS-CoV-2 baseline-seropositive participants. People with HIV showed cross-reactive binding antibodies to the beta variant and Asp614Gly wild-type, and high responders retained neutralisation against beta.

Funding

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327. Mady A. Tocilizumab in the treatment of rapidly evolving COVID-19 pneumonia and multifaceted critical illness: A retrospective case series / A. Mady, W. Aletreby, B. Abdulrahman [et al.] // *Annals of Medicine and Surgery*. – 2020. – Vol. 60. – P. 417–424. – URL: <https://www.sciencedirect.com/science/article/pii/S2049080120304179>

Background

COVID-19 associated critical illness characterized by rapidly evolving acute respiratory failure (ARF) can develop, especially on the grounds of hyperinflammation.

Aim and methods

A case-series of 61 patients admitted to our intensive care unit (ICU) between August 12 and September 12, 2020 with confirmed COVID-19 pneumonia and rapidly evolving ARF requiring oxygen support therapy and/or mechanical ventilation was retrospectively analyzed. We examined whether intravenous administration of tocilizumab, a monoclonal interleukin-6 receptor antibody, was associated with improved outcome. All patients received empiric antivirals, dexamethasone 6 mg/day for 7 days, antibiotics, and prophylactic anticoagulation. Tocilizumab was administered at a dosage of 8 mg/kg [two consecutive intravenous infusions 12 h apart]. Outcome measures such as mortality on day-14, ICU length of stay, and rate of nosocomial acquired bacterial infections were also analyzed. Results: Patients were males (88.2%) aged 51 [interquartile range (IQR): 42.5–58.75], with admission Acute Physiology and Chronic Health Evaluation (APACHE) 4 score of 53 (IQR: 37.75–72.5), and had more than one comorbidity (62.3%). On admission, twenty nine patients (47.5%) were mechanically ventilated, and thirty two patients (52.5%) were receiving oxygen therapy. No serious adverse effects due to tocilizumab therapy were recorded. However, twelve patients (19.6%) developed nosocomial acquired infections. ICU length of stay was 13 (IQR: 9–17) days, and mortality on day-14 was 24.6%. Six patients were shifted to other hospitals but were followed-up. The overall mortality on day-30 was 31.1%. Non-mechanically ventilated patients had higher survival rates compared to mechanically ventilated patients although results were not significant [hazards ratio = 2.6 (95% confidence intervals: 0.9–7.7), $p = 0.08$]. Tocilizumab did not affect the mortality of critically ill COVID-19 patients.

Conclusion

Tocilizumab could be an adjunct safe therapy in rapidly evolving COVID-19 pneumonia and associated critical illness.

328. Maestrini V. Cardiac involvement in consecutive unselected hospitalized COVID-19 population: In-hospital evaluation and one-year follow-up / V. Maestrini, L. I. Birtolo, M. Francone [et al.] // International Journal of Cardiology. – 2021. – Vol. 339. – P. 235–242. – URL: <https://www.sciencedirect.com/science/article/pii/S0167527321010949>

Background

Cardiovascular disease (CVD) can occur in COVID-19 and has impact on clinical course. Data on CVD prevalence in hospitalized COVID-19 patients and sequelae in survivors is limited. Aim of this prospective study carried out on consecutive unselected COVID-19 population, was to assess: 1) CVD occurrence among hospitalized COVID-19 patients, 2) persistence or new onset of CVD at one-month and one-year follow-up.

Methods

Over 30 days $n = 152$ COVID-19 patients underwent cardiovascular evaluation. Standard electrocardiogram (ECG), Troponin and echocardiography

were integrated by further tests when indicated. Medical history, arterial blood gas, blood tests, chest computed tomography and treatment were recorded. CVD was defined as the occurrence of a new condition during the hospitalization for COVID-19. Survivors attended a one-month follow-up visit and a one-year telephone follow-up.

Results

Forty-two patients (28%) experienced a wide spectrum of CVD with acute myocarditis being the most frequent. Death occurred in 32 patients (21%) and more frequently in patients who developed CVD ($p = 0.032$). After adjustment for confounders, CVD was independently associated with death occurrence. At one-month follow-up visit, 7 patients (9%) presented persistent or delayed CVD. At one-year telephone follow-up, 57 patients (48%) reported persistent symptoms.

Conclusion

Cardiovascular evaluation in COVID-19 patients is crucial since the occurrence of CVD in hospitalized COVID-19 patients is common (28%), requires specific treatment and increases the risk of in-hospital mortality. Persistence or delayed presentation of CVD at 1-month (9%) and persistent symptoms at 1-year follow-up (48%) suggest the need for monitoring COVID-19 survivors.

329. Maffly-Kipp J. Mental health inequalities increase as a function of COVID-19 pandemic severity levels / J. Maffly-Kipp, N. Eisenbeck, D. F. Carreno [et al.] // Social Science & Medicine. – 2021. – Vol. 285. – P. 114275. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621006079>

Rationale

Current evidence suggests that mental health across the globe has suffered significantly during the COVID-19 global pandemic, and that disadvantaged communities are suffering these impacts more acutely. Lower income, female gender, and younger age have all been associated with worse psychopathology during COVID-19.

Objective and methods

The goal of this study was to determine whether these disparities are more pronounced in places where the pandemic is more severe. We analyzed self-report data and objective metrics from a large global sample ($N = 11,227$) in order to test the hypothesis that country-level severity of COVID-19 moderates the relationship between the target demographic variables (Subjective SES, gender and age) and psychopathology indicators.

Results

Severity of the pandemic emerged as a significant moderator of the relationship between these demographic variables and mental health outcomes. This pattern was extremely consistent for Subjective SES and gender, but slightly more nuanced for age.

Conclusion

Overall, we interpreted our data as suggesting that mental health disparities are greater in countries with more severe COVID-19 outbreaks. These findings are critical for understanding the ways that the ongoing pandemic is affecting global mental health, and contribute to the broader literature surrounding collective trauma.

330. Magar D. B. T. Pathways for building resilience to COVID-19 pandemic and revitalizing the Nepalese agriculture sector / D. B. T. Magar, S. Pun, R. Pandit [et al.] // Agricultural Systems. – 2021. – Vol. 187. – P. 103022. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X20308830>

The COVID-19 pandemic has seriously affected the agrarian and remittance-based economy of Nepal. Dwindling the employment opportunities and disrupting the food production and distribution channels, the pandemic has further exacerbated the unemployment and food insecurity situation. Providing employment opportunities and livelihood support to pandemic-affected households has, therefore, become increasingly challenging but a necessary priority to the government. Therefore, to build a sustainable and resilient economy that generates employment and enhance agricultural productivity, revitalization of the constraints-ridden agriculture sector is essential as it still contributes 65% and 24.3% to employment and Gross Domestic Product, respectively. Against this backdrop, this paper presents major pathways and priority actions to rebuild and revitalize the growth of the agricultural sector in Nepal while addressing the challenge posed by the pandemic to generate employment and income-earning opportunities. We emphasize the need for scale-appropriate strategies, programs and plans to build resilience of production, supply chains, and agribusiness systems. We conclude that the government should initially focus on targeted priority interventions to the pandemic-affected farmers and agro-entrepreneurs, and strengthen their productive, competitive, and adaptive capacities. These need to be followed by long-term strategies such as development of agricultural infrastructure, innovative policies, legal instruments, and institutional arrangements, including strengthening of the recently established local governments in line with the federal structure of Nepal.

331. Maharjan J. Application of deep learning to identify COVID-19 infection in posteroanterior chest X-rays / J. Maharjan, J. Calvert, E. Pellegrini [et al.] // Clinical Imaging. – 2022. – Vol. 80. – P. 268–273. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121003004>

Introduction

The objective of this study was to assess seven configurations of six convolutional deep neural network architectures for classification of chest X-rays (CXRs) as COVID-19 positive or negative.

Methods

The primary dataset consisted of 294 COVID-19 positive and 294 COVID-19 negative CXRs, the latter comprising roughly equally many pneumonia, emphysema, fibrosis, and healthy images. We used six common convolutional neural network architectures, VGG16, DenseNet121, DenseNet201, MobileNet, NasNetMobile and InceptionV3. We studied six models (one for each architecture) which were pre-trained on a vast repository of generic (non-CXR) images, as well as a seventh DenseNet121 model, which was pre-trained on a repository of CXR images. For each model, we replaced the output layers with custom fully connected layers for the task of binary classification of images as COVID-19 positive or negative. Performance metrics were calculated on a hold-out test set with CXRs from patients who were not included in the training/validation set.

Results

When pre-trained on generic images, the VGG16, DenseNet121, DenseNet201, MobileNet, NasNetMobile, and InceptionV3 architectures respectively produced hold-out test set areas under the receiver operating characteristic (AUROCs) of 0.98, 0.95, 0.97, 0.95, 0.99, and 0.96 for the COVID-19 classification of CXRs. The X-ray pre-trained DenseNet121 model, in comparison, had a test set AUROC of 0.87.

Discussion

Common convolutional neural network architectures with parameters pre-trained on generic images yield high-performance and well-calibrated COVID-19 CXR classification.

332. Maiorano E. Clinical, virological and immunological evolution of the olfactory and gustatory dysfunction in COVID-19 / E. Maiorano, A. Calastri, C. Robotti [et al.] // American Journal of Otolaryngology. – 2022. – Vol. 43, № 1. – P. 103170. – URL: <https://www.sciencedirect.com/science/article/pii/S0196070921002714>

Purpose

New-onset olfactory and gustatory dysfunction (OGD) represents a well-acknowledged COVID-19 red flag. Nevertheless, its clinical, virological and serological features are still a matter of debate.

Materials and methods

For this cohort study, 170 consecutive subjects with new-onset OGD were consecutively recruited. Otolaryngological examination, OGD subjective grading,

nasopharyngeal swabs (NS) for SARS-CoV-2 RNA detection and serum samples (SS) collection for SARS-CoV-2 IgG quantification were conducted at baseline and after one (T1), two (T2) and four weeks (T3).

Results

SARS-CoV-2 infection was confirmed in 79% of patients. Specifically, 43% of positive patients were detected only by SS analysis. The OGD was the only clinical complaint in 10% of cases. Concurrent sinonasal symptoms were reported by 45% of patients. Subjective improvement at T3 was reported by 97% of patients, with 40% recovering completely. Hormonal disorders and RNA detectability in NS were the only variables associated with OGD severity. Recovery rate was higher in case of seasonal influenza vaccination, lower in patients with systemic involvement and severe OGD. Not RNA levels nor IgG titers were correlated with recovery.

Conclusion

Clinical, virological and serological features of COVID-19 related OGD were monitored longitudinally, offering valuable hints for future research on the relationship between host characteristics and chemosensory dysfunctions.

333. Mair T. S. Neoliberal economics, planetary health, and the COVID-19 pandemic: a Marxist ecofeminist analysis / T. S. Mair // *The Lancet Planetary Health*. – 2020. – Vol. 4, №12. – P. 588–596. – URL: <https://www.sciencedirect.com/science/article/pii/S2542519620302527>

Planetary health sees neoliberal capitalism as a key mediator of socioecological crises, a position that is echoed in much COVID-19 commentary. In this Personal View, I set out an economic theory that emphasises some of the ways in which neoliberal capitalism's conceptualisation of value has mediated responses to COVID-19. Using the intersection of ecological, feminist, and Marxist economics, I develop an analysis of neoliberal capitalism as a specific historical form of the economy. I identify the accumulation of exchange value as a central tendency of neoliberal capitalism and argue that this tendency creates barriers to the production of other forms of value. I then analyse the implications of this tendency in the context of responses to COVID-19. I argue that resources and labour flow to the production of exchange value, at the expense of production of other value forms. Consequently, the global capitalist economy has unprecedented productive capacity but uses little of this capacity to create the conditions that improve and maintain people's health. To be more resilient to coming crises, academics, policy makers, and activists should do theoretical work that enables global economies to recognise multiple forms of value and political work that embeds these theories in societal institutions.

334. Mamun F. Sexual violence and rapes' increment during the COVID-19 pandemic in Bangladesh / F. Mamun, I. Hosen, M. A. Mamun //

Sexual violence includes acts ranging from verbal sexual harassment to sexual coercion to forced penetration [1]. According to the World Health Organization (WHO), sexual violence is “any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic or otherwise directed against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work” [1]. About 35% of the women have been violated sexually and/or physically by an intimate partner or by a non-partner during their lifetime, as estimated by WHO [2]. Specific statistics related to sexual violence is limited in Bangladesh, but in this context, nearly 60% of Bangladeshi men are found performing violent behaviors towards their intimate partner [3]. Bangladesh has the second highest prevalence of sexual intimate partner violence against women in the world, after Ethiopia (58•6% vs 49•7%) [1]. Likely this prevalence has increased, as there has been a global increase in domestic and sexual violence during the ongoing COVID-19 pandemic by the United Nations Population Fund [4]. Rape, a severe form of sexual violence, affects all aspects of women quality of life including–reproductive health (e.g., unsafe abortion, sexual dysfunction), mental health (e.g., depression, anxiety, suicidality), and behavioral health (e.g., unprotected sexual intercourse, multiple partners) [1].

Based on data from Odhikar, a Bangladeshi human rights organization, at least 14,718 victims (including 6900 women and 7664 children) were raped within the years of 2001 to 2019 in Bangladesh, and 2823 cases were gang-raped [5]. The highest rape incidence trend reported from 2001 to 2019 was between the year of 2002 to 2003 (with 1350 and 1336 victims reported, respectively), with a gradual decline in 2008. However, this was followed by an increase in the following years and in particular in 2019, when 1080 rape victims were reported compared to the 635 of 2018. Furthermore, daily 13-rape incidences were reported in the first four-month of the year of 2020 [6] and later on a surge in sexual violence including rape has been observed in Bangladesh. At the end of 2020, there were at least 1627 rape victims and 317 gang rape incidences reported, which were 1080 and 294, respectively for the year of 2019 [7].

Of additional concern, there is evidence of an increase in rape in Bangladesh, under the pandemic. According to the Manusher Jonno Foundation, in a telephone survey conducted among 38,125 participants in June 2020 in 53 districts in Bangladesh, at least 4622, 1839, and 203 of the women felt mentally tortured, physically abused, and sexually abused, respectively, dramatically higher numbers than that seen in prior years [8]. Also, one of the most concerning issues is that only 3% of the victims seek violence-related justice, 2% via local leaders and only 1% seek help from the formal legal authorities [9]. These data were from prior to the pandemic, and help-seeking may have declined further more recently.

This inadequate support and justice for Bangladeshi sexual violence victims has led to recent countrywide mass protests, but change in the system has not occurred.

Approximately 1093 rape cases were reported in national daily papers in Bangladesh between January and October 2020 [10]. These cases reported in the media are likely a tip of the iceberg and over-represent some of the most severe cases in the country, as 28 of these cases resulted in death. Nonetheless, they offer insight into the severity of violent rapes occurring in Bangladesh during the pandemic. In response to these cases, and resulting protests, the Bangladesh government in October 2020 approved a bill stating that anyone convicted of rape would face either lifetime imprisonment or the death penalty. Nonetheless, the incidence of rape showed continued increase in the last two months of the year 2020, with 534 cases reported [7,10]. Clearly, the increased penalty for rape is inadequate to create changes that must happen at a society level. Therefore, it has become crucial for the government to approach initiatives against sexual violence, such as developing prevention programs and programs to support the victims. In this regard, the participating role of the human rights organizations along with the government can be helpful. These programs should be focused on increase awareness on sexual abuse and on guidance on how to seek help and legal justice. There is a need for active help hotlines, where the victims can speak about the violence anonymously and freely. Social workers can play a role in circulating information on how and where to seek help. Besides, the law enforcement agencies should encourage the victims to file cases against the perpetrators. In relation to this, the government should reformulate the prosecution process in a fair and speedy trial to tackle sexual violence against women. Only by changing the system we will be able to effectively support women against sexual violence.

Contributors

All authors contributed equally to the realization of this work (conceptualization and writing).

Declaration of Competing Interest

The authors do not have any conflict of interest.

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335. Manzia T. M. Global management of a common, underrated surgical task during the COVID-19 pandemic: Gallstone disease - An international survey / T. M. Manzia, R. Angelico, A. Parente [et al.] // Annals of

Background

Since the Coronavirus disease-19(COVID-19) pandemic, the healthcare systems are reallocating their medical resources, with consequent narrowed access to elective surgery for benign conditions such as gallstone disease(GD). This survey represents an overview of the current policies regarding the surgical management of patients with GD during the COVID-19 pandemic.

Methods

A Web-based survey was conducted among 36 Hepato-Prancreato-Biliary surgeons from 14 Countries. Through a 17-item questionnaire, participants were asked about the local management of patients with GD since the start of the COVID-19 pandemic.

Results

The majority (n = 26,72.2%) of surgeons reported an alarming decrease in the cholecystectomy rate for GD since the start of the pandemic, regardless of the Country: 19(52.7%) didn't operate any GD, 7(19.4%) reduced their surgical activity by 50–75%, 10(27.8%) by 25–50%, 1(2.8%) maintained regular activity. Currently, only patients with GD complications are operated. Thirty-two (88.9%) participants expect these changes to last for at least 3 months.

In 15(41.6%) Centers, patients are currently being screened for SARS-CoV-2 infection before cholecystectomy [in 10(27.8%) Centers only in the presence of suspected infection, in 5(13.9%) routinely]. The majority of surgeons (n = 29,80.6%) have adopted a laparoscopic approach as standard surgery, 5(13.9%) perform open cholecystectomy in patients with known/suspected SARS-CoV-2 infection, and 2(5.6%) in all patients.

Conclusion

In the ongoing COVID-19 emergency, the surgical treatment of GD is postponed, resulting in a huge number of untreated patients who could develop severe morbidity. Updated guidelines and dedicated pathways for patients with benign disease awaiting elective surgery are mandatory to prevent further aggravation of the overloaded healthcare systems.

336. Malta M. Coronavirus in Brazil: The heavy weight of inequality and unsound leadership / M. Malta, L. Murray, C. M. F. P. da Silva [et al.] // *EClinicalMedicine*. – 2020. – Vol. 25. – P. 100472. – URL: <https://www.sciencedirect.com/science/article/pii/S2049080120302028>

As of early July, Brazil had over 1.6 million confirmed COVID-19 cases and the death toll passed 65,000. The lack of testing nationally suggests the overall figures may be about six times higher than the official count.

With a nominal GDP of \$1.87 trillion, Brazil is the ninth-largest economy in the world, but also one of the world's most unequal - 20% of its population lives in poverty. An estimated 12 million inhabitants live in overcrowded “favelas”, lacking piped water and proper sanitation. SARS-CoV-2 is spreading faster in these deprived neighbourhoods and indigenous communities, where access to adequate care is extremely limited.

337. Maraqa B. Demographic factors associated with COVID-19-related death in Palestine / B. Maraqa, K. Al-Shakhra, M. Alawneh [et al.] // *Public Health in Practice*. – 2021. – Vol. 2. – P.100145. – URL: <https://www.sciencedirect.com/science/article/pii/S2666535221000707>

Objectives

Understanding the case and death rates of COVID-19 in different countries should include socio-demographic variables to better guide health policies. We analysed COVID-19 cases in the Occupied Palestinian Territories (OPT) with attention to socio-demographic factors.

Study design

A retrospective chart review of laboratory confirmed COVID-19 cases was conducted between March and September 2020.

Methods

Demographic data such as age, gender, place of residence, pregnancy, and symptoms were analysed. Patients were divided into two outcome groups: discharged from quarantine restrictions and dead.

Results

A total of 15,338 confirmed cases was examined. COVID-19 cases tended to be young (48.2% were less than 30 years of age) with an average age of 34.3 ± 27.3 , most were female (55.5%), and 20% smoked. Overall, 5183 (38%) were symptomatic and if pregnant, symptoms were more commonly reported (65.3%). The overall case-fatality was 0.93 [95% CI 0.83–1.04]. Males had a greater risk of death (OR = 2.7 [95% CI = 1.7–2.8], $P < 0.001$), as did those 60 years of age and older (OR = 52.0 [30.5–89.7], $P < 0.001$).

Conclusion

Early detection of socio-demographic risk factors helps understand the case distribution and guide better planning, especially in countries with limited resources. Better targeting of interventions may help to limit more expensive

interventions such as intensive care admissions and avoid deaths. Such data are also important for planning vaccination campaigns.

338. Marcolino M. S. Clinical characteristics and outcomes of patients hospitalized with COVID-19 in Brazil: Results from the Brazilian COVID-19 registry / M. S. Marcolino, P. K. Ziegelmann, C. A. Polanczyk [et al.] // *International Journal of Infectious Diseases*. – 2021. – Vol. 107. – P. 300–310. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971221000308>

Objectives

To describe the clinical characteristics, laboratory results, imaging findings, and in-hospital outcomes of COVID-19 patients admitted to Brazilian hospitals.

Methods

A cohort study of laboratory-confirmed COVID-19 patients who were hospitalized from March 2020 to September 2020 in 25 hospitals. Data were collected from medical records using Research Electronic Data Capture (REDCap) tools. A multivariate Poisson regression model was used to assess the risk factors for in-hospital mortality.

Results

For a total of 2,054 patients (52.6% male; median age of 58 years), the in-hospital mortality was 22.0%; this rose to 47.6% for those treated in the intensive care unit (ICU). Hypertension (52.9%), diabetes (29.2%), and obesity (17.2%) were the most prevalent comorbidities. Overall, 32.5% required invasive mechanical ventilation, and 12.1% required kidney replacement therapy. Septic shock was observed in 15.0%, nosocomial infection in 13.1%, thromboembolism in 4.1%, and acute heart failure in 3.6%. Age \geq 65 years, chronic kidney disease, hypertension, C-reactive protein \geq 100 mg/dL, platelet count $<$ $100 \times 10^9/L$, oxygen saturation $<$ 90%, the need for supplemental oxygen, and invasive mechanical ventilation at admission were independently associated with a higher risk of in-hospital mortality. The overall use of antimicrobials was 87.9%.

Conclusions

This study reveals the characteristics and in-hospital outcomes of hospitalized patients with confirmed COVID-19 in Brazil. Certain easily assessed parameters at hospital admission were independently associated with a higher risk of death. The high frequency of antibiotic use points to an over-use of antimicrobials in COVID-19 patients.

339. Mariani R. Severe transient pancytopenia with dyserythropoiesis and dysmegakaryopoiesis in COVID-19-associated MIS-C / R. Mariani, H. Liu // *Blood*. – 2020. – Vol. 136, № 25. – P. 2964. – URL: <https://www.sciencedirect.com/science/article/pii/S0006497120778730>

A previously healthy 5-month-old girl was hospitalized for fever (39.6°C) and intermittent tachycardia. Five weeks earlier, her father had tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). She had both SARS-CoV-2 by reverse transcription polymerase chain reaction (nasopharynx) and anti-SARS-CoV-2 immunoglobulin G and was experiencing severe, progressive anemia (6.6 g/dL) and thrombocytopenia ($36 \times 10^3/\mu\text{L}$) with leukopenia ($3.2 \times 10^3/\mu\text{L}$). Bone marrow aspirate showed left-shifted granulocytes with reactive changes.

340. Marti L. The effects on European importers' food safety controls in the time of COVID-19 / L. Marti, R. Puertas, J. M. García-Álvarez-Coque // *Food Control*. – 2021. – Vol. 125. – P. 107952. – URL: <https://www.sciencedirect.com/science/article/pii/S0956713521000906>

COVID-19 has highlighted the fragility of the global economic system. In just a few months, the consequences of the pandemic have left their mark on the affected countries at all levels and without exception. This article analyses the profile of food safety notifications reported by European countries in the first five months of 2020. The aim was to detect possible changes in food safety regulations imposed by control authorities that could aggravate the economic impacts of the pandemic. While COVID-19 does not appear to be a foodborne disease, some outbreaks have been linked to imported food, which might have affected the food control behaviour of importing countries. In this study, contingency tables and clustering were used to assess differences between years and notification characteristics and to detect homogeneous groups to help identify how the reported notifications might have changed. In the period considered in this study, the volume of notifications on most imported foodstuffs decreased considerably. This decrease was a direct consequence of the fall in international trade, which might have increased countries' reliance on domestic sources. The COVID-19 crisis has not caused a substantial change in the profile of European countries' in terms of the characteristics of reported notifications (product category and risk decision). However, the worst affected countries have replaced border rejections with alerts, which may indicate greater reliance on intra-EU markets.

341. Martin C. A. Socio-demographic heterogeneity in the prevalence of COVID-19 during lockdown is associated with ethnicity and household size: Results from an observational cohort study / C. A. Martin, D. R. Jenkins, M. Pareek [et al.] // *EClinicalMedicine*. – 2020. – Vol. 25. – P. 100466. – URL: <https://www.sciencedirect.com/science/article/pii/S2666535221000707>

Background

Accumulating evidence indicates that COVID-19 causes adverse outcomes in ethnic minority groups. However, little is known about the impact of ethnicity and household size on acquiring infection with SARS-CoV-2.

Methods

We undertook a retrospective cohort study, in Leicester (UK), of all individuals assessed for COVID-19 with polymerase chain reaction (PCR) testing at University Hospitals of Leicester NHS Trust between 1st March and 28th April 2020. We used logistic regression to identify sociodemographic, clinical and temporal factors associated with SARS-CoV-2 PCR positivity before/after lockdown.

Findings

971/4051 (24.0%) patients with suspected COVID-19 were found to be PCR positive for SARS-CoV-2. PCR positivity was more common amongst individuals from ethnic minority backgrounds than their White counterparts (White 20.0%, South Asian 37.5%, Black 36.1%, Other 32.2%; $p < 0.001$ for all ethnic minority groups vs White). After adjustment, compared to White ethnicity, South Asian (aOR 2.44 95%CI 2.01, 2.97), Black (aOR 2.56 95%CI 1.71, 3.84) and Other (aOR 2.53 95%CI 1.74, 3.70) ethnicities were more likely to test positive, as were those with a larger estimated household size (aOR 1.06 95%CI 1.02, 1.11). We saw increasing proportions of positive tests in the three weeks post-lockdown amongst the ethnic minority, but not the White, cohort. Estimated household size was associated with PCR positivity after, but not before, lockdown (aOR 1.10 95%CI 1.03, 1.16).

Interpretation

In individuals presenting with suspected COVID-19, those from ethnic minority communities and larger households had an increased likelihood of SARS-CoV-2 PCR positivity. Pandemic control measures may have more rapid impact on slowing viral transmission amongst those of White ethnicity compared to ethnic minority groups. Research is urgently required to understand the mechanisms underlying these disparities and whether public health interventions have differential effects on individuals from ethnic minority groups.

342. Martincic Z. Severe immune thrombocytopenia in a critically ill COVID-19 patient / Z. Martincic, B. Skopec, K. Rener [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 269–271. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306330>

The novel coronavirus SARS-CoV-2 can cause a severe and even fatal respiratory illness named COVID-19. Apart from respiratory failure, COVID-19 may be associated with various autoimmune complications. We present a case of a critically ill patient with COVID-19 who developed severe immune thrombocytopenia that was successfully treated with a concomitant use of corticosteroids and intravenous immunoglobulins.

343. Martinot M. Predictors of mortality, ICU hospitalization, and extrapulmonary complications in COVID-19 patients / M. Martinot, M. Eyriey, S. Gravier [et al.] // Infectious Diseases Now. – 2021. – Vol. 51, № 6. – P. 518–525. – URL: <https://www.sciencedirect.com/science/article/pii/S2666991921004255>

Objective

A major coronavirus disease 2019 (COVID-19) outbreak occurred in Northeastern France in spring 2020. This single-center retrospective observational cohort study aimed to compare patients with severe COVID-19 and those with non-severe COVID-19 (survivors vs. non-survivors, ICU patients vs. non-ICU patients) and to describe extrapulmonary complications.

Patients and methods

We included all patients with a confirmed diagnosis of COVID-19 admitted to Colmar Hospital in March 2020.

Results

We examined 600 patients (median age 71.09 years; median body mass index: 26.9 kg/m²); 57.7% were males, 86.3% had at least one comorbidity, 153 (25.5%) required ICU hospitalization, and 115 (19.1%) died. Baseline independent factors associated with death were older age (> 75 vs. ≤ 75 years), male sex, oxygen supply, chronic neurological, renal, and pulmonary diseases, diabetes, cancer, low platelet and hemoglobin counts, and high levels of C-reactive protein (CRP) and serum creatinine. Factors associated with ICU hospitalization were age < 75 years, oxygen supply, chronic pulmonary disease, absence of dementia, and high levels of CRP, hemoglobin, and serum creatinine. Among the 600 patients, 80 (13.3%) had an acute renal injury, 33 (5.5%) had a cardiovascular event, 27 (4.5%) had an acute liver injury, 24 (4%) had venous thromboembolism, eight (1.3%) had a neurological event, five (0.8%) had rhabdomyolysis, and one had acute pancreatitis. Most extrapulmonary complications occurred in ICU patients.

Conclusion

This study highlighted the main risk factors for ICU hospitalization and death caused by severe COVID-19 and the frequency of numerous extrapulmonary complications in France.

344. Marzano A. V. The clinical spectrum of COVID-19–associated cutaneous manifestations: An Italian multicenter study of 200 adult patients / A. V. Marzano, G. Genovese, C. Moltrasio [et al.] // Journal of the American Academy of Dermatology. – 2021. – Vol. 84, № 5. – P. 1356–1363. – URL: <https://www.sciencedirect.com/science/article/pii/S0190962221001663>

Background

COVID-19 is associated with a wide range of skin manifestations.

Objective

To describe the clinical characteristics of COVID-19–associated skin manifestations and explore the relationships among the 6 main cutaneous phenotypes and systemic findings.

Methods

Twenty-one Italian Dermatology Units were asked to collect the demographic, clinical, and histopathologic data of 200 patients with COVID-19–associated skin manifestations. The severity of COVID-19 was classified as asymptomatic, mild, moderate, or severe.

Results

A chilblain-like acral pattern was significantly associated with a younger age ($P < .0001$) and, after adjusting for age, significantly associated with less severe COVID-19 ($P = .0009$). However, the median duration of chilblain-like lesions was significantly longer than that of the other cutaneous manifestations taken together ($P < .0001$). Patients with moderate/severe COVID-19 were more represented than those with asymptomatic/mild COVID-19 among the patients with cutaneous manifestations other than chilblain-like lesions, but only the confluent erythematous/maculo-papular/morbilliform phenotype was significantly associated with more severe COVID-19 ($P = .015$), and this significance disappeared after adjustment for age.

Limitations

Laboratory confirmation of COVID-19 was not possible in all cases.

Conclusions

After adjustment for age, there was no clear-cut spectrum of COVID-19 severity in patients with COVID-19–related skin manifestations, although chilblain-like acral lesions were more frequent in younger patients with asymptomatic/pauci-symptomatic COVID-19.

345. Mastroianni A. Subcutaneous tocilizumab treatment in patients with severe COVID-19–related cytokine release syndrome: An observational cohort study / A. Mastroianni, S. Greco, G. Apuzzo [et al.] // *EClinicalMedicine*. – 2021. – Vol. 24. – P. 100410. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020301541>

Background

Patients with severe coronavirus disease 2019 (COVID-19) have elevated levels of acute phase reactants and inflammatory cytokines, including interleukin-6, indicative of cytokine release syndrome (CRS). The interleukin-6 receptor inhibitor tocilizumab is used for the treatment of chimeric antigen receptor T-cell therapy–induced CRS.

Methods

Patients aged 18 years or older with laboratory-confirmed COVID-19 admitted to the Annunziata Hospital in Cosenza, Italy, through March 7, 2020, who received at least one dose of tocilizumab 162 mg subcutaneously for the treatment of COVID-19–related CRS in addition to standard care were included in this retrospective observational study. The primary observation was the incidence of grade 4 CRS after tocilizumab treatment. Chest computed tomography (CT) scans were evaluated to investigate lung manifestations.

Findings

Twelve patients were included; all had fever, cough, and fatigue at presentation, and all had at least one comorbidity (hypertension, six patients; diabetes, five patients; chronic obstructive lung disease, four patients). Seven patients received high-flow nasal cannula oxygen therapy and five received non-invasive mechanical ventilation for lung complications of COVID-19. No incidence of grade 4 CRS was observed within 1 week of tocilizumab administration in all 12 patients (100%) and within 2 days of tocilizumab administration in 5 patients (42%). The predominant pattern on chest CT scans at presentation was ground-glass opacity, air bronchograms, smooth or irregular interlobular or septal thickening, and thickening of the adjacent pleura. Follow-up CT scans 7 to 10 days after tocilizumab treatment showed improvement of lung manifestations in all patients. No adverse events or new safety concerns attributable to tocilizumab were reported.

Interpretation

Tocilizumab administered subcutaneously to patients with COVID-19 and CRS is a promising treatment for reduction in disease activity and improvement in lung function. The effect of tocilizumab should be confirmed in a randomised controlled trial.

346. Masudin I. Traceability system model of Indonesian food cold-chain industry: A Covid-19 pandemic perspective / I. Masudin, A. Ramadhani, D. P. Restuputri // Cleaner Engineering and Technology. – 2021. – Vol. 4. – P. 100238. – URL: <https://www.sciencedirect.com/science/article/pii/S2666790821001981>

This study analyzed the traceability system's effect on Indonesia's food cold chain performance during the Covid-19 pandemic and described the needs of cold food consumers in Indonesia regarding the traceability system. Five latent variables were used to form research models, including the adoption of electronic data interchange (EDI), radio frequency identification (RFID), blockchain, traceability system, and food cold chain performance. This study uses a quantitative approach with a questionnaire as a research instrument distributed to 140 respondents by purposive sampling. The total number of manifest variables measuring latent variables is 28 variables. A partial least square for structural

equation modeling (PLS-SEM) is used to analyze the relationship between latent variables. The results obtained through this study are that exogenous variables: EDI, RFID, and blockchain adoption, significantly affect endogenous variables, namely the traceability system. Blockchain adoption is proven to have a very significant influence compared to the three information technologies. This work also confirms that the traceability system also has a significant effect on food cold chain performance.

347. Mata J. Health behaviors and mental health during the COVID-19 pandemic: A longitudinal population-based survey in Germany / J. Mata, A. Wenz, T. Rettig [et al.] // Social Science & Medicine. – 2021. – Vol. 287. – P. 114333. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621006651>

Objective

To understand the mental health response to repeated and prolonged stress during the COVID-19 related lockdown and the role of specific health behaviors to buffer against this stress.

Methods

In a longitudinal study with several measurement points covering three months during the COVID-19 pandemic, about 3500 randomly selected participants representative of the German population reported on their mental health (anxiety, depression, loneliness) and health behaviors (screen time, snack consumption, physical activity).

Results

Symptoms of anxiety, depression, and loneliness were highest shortly after the lockdown came into effect. Over time, the symptoms were stable or went down slightly, corresponding to patterns of habituation. Among people with higher vulnerability to poor mental health during the lockdown (e.g., women), the proportion with high levels of anxiety, depression, and loneliness was considerably larger. These groups also reported fewer health-promoting behaviors. More screen time, more snacking, and less physical activity were related to higher symptoms of anxiety, depression, and loneliness across all time points. Changes in health behaviors over time mostly did not predict changes in mental health symptoms.

Conclusions

Mental health and engagement in protective health behaviors was lowest at the start of the lockdown. Health behaviors mostly returned to pre-lockdown levels within three months. Engaging in healthier behaviors was associated with better mental health. Policy implications of these findings are discussed. This study provides important insights into (unintended) side effects of an international crisis and can contribute to a better understanding of how to preserve mental health.

348. Mazza M. G. Persistent psychopathology and neurocognitive impairment in COVID-19 survivors: Effect of inflammatory biomarkers at three-month follow-up / M. G. Mazza, M. Palladini, P. Sara [et al.] // *Brain, Behavior, and Immunity*. – 2021. – Vol. 94. – P. 138–147. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0889159121000866>

COVID-19 outbreak is associated with mental health implications during viral infection and at short-term follow-up. Data on psychiatric and cognitive sequelae at medium-term follow-up are still lacking. During an ongoing prospective cohort study, the psychopathological and cognitive status of 226 COVID-19 pneumonia survivors (149 male, mean age 58) were prospectively evaluated one and three months after hospital discharge. Psychiatric clinical interview, self-report questionnaires, and neuropsychological profiling of verbal memory, working memory, psychomotor coordination, executive functions, attention and information processing, and verbal fluency were performed.

349. McCallum S. M. Associations of loneliness, belongingness and health behaviors with psychological distress and wellbeing during COVID-19 / S. M. McCallum, A. L. Calear, N. Cherbuin [et al.] // *Journal of Affective Disorders Reports*. – 2021. – Vol. 6. – P. 100214. – URL: <https://www.sciencedirect.com/science/article/pii/S2666915321001402>

Background

The aim of this study was to assess the effects of loneliness, belongingness and other modifiable factors on psychological distress and wellbeing and whether the effects of COVID-19 modulated these relationships.

Methods

The current study reported on 1217 participants aged 18 years or older who completed an online survey from 28 to 31 March 2020. Survey measures included demographic characteristics; exposure to COVID-19; impact of COVID-19 on employment, finance, and work and social adjustment; loneliness, thwarted belongingness, and health behavior changes as modifiable factors. Outcome measures were psychological distress and wellbeing.

Results

Linear regression models revealed that COVID-19 related work and social adjustment difficulties, financial distress, loneliness, thwarted belongingness, eating a less healthy diet poorer sleep and being female were all associated with increased psychological distress and reduced wellbeing ($p < 0.05$). Psychological distress was more elevated for those with high difficulties adjusting to COVID-19 and high levels of thwarted belongingness ($p < 0.005$). Similarly, as COVID-19 related work and social adjustment difficulties increased, wellbeing reduced. This was more pronounced in those who felt lower levels of loneliness ($p < 0.0001$). Other interactions between COVID-19 impacts were observed with gender and

poorer diet for psychological distress and cigarette use, age and gender for wellbeing ($p < 0.05$).

Limitations

The study was cross-sectional, preventing causal interpretation of the relationships.

Conclusion

Modifiable factors, age and gender had significant impacts on psychological distress and wellbeing. Public health and policy approaches to improving social, economic and lifestyle factors may mitigate the negative mental health effects of the pandemic and its restrictions.

350. McCarthy K. M. The importation and establishment of community transmission of SARS-CoV-2 during the first eight weeks of the South African COVID-19 epidemic / K. M. McCarthy, S. Tempia, T. Kufa [et al.] // EClinicalMedicine. – 2021. – Vol. 39. – P. 101072. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021003527>

Background

We describe the epidemiology of COVID-19 in South Africa following importation and during implementation of stringent lockdown measures.

Methods

Using national surveillance data including demographics, laboratory test data, clinical presentation, risk exposures (travel history, contacts and occupation) and outcomes of persons undergoing COVID-19 testing or hospitalised with COVID-19 at sentinel surveillance sites, we generated and interpreted descriptive statistics, epidemic curves, and initial reproductive numbers (R_t).

Findings

From 4 March to 30 April 2020, 271,670 SARS-CoV-2 PCR tests were performed (462 tests/100,000 persons). Of these, 7,892 (2.9%) persons tested positive (median age 37 years (interquartile range 28–49 years), 4,568 (58%) male, cumulative incidence of 13.4 cases/100,000 persons). Hospitalization records were found for 1,271 patients (692 females (54%)) of whom 186 (14.6%) died. Amongst 2,819 cases with data, 489/2819 (17.3%) travelled internationally within 14 days prior to diagnosis, mostly during March 2020 (466 (95%)). Cases diagnosed in April compared with March were younger (median age, 37 vs. 40 years), less likely female (38% vs. 53%) and resident in a more populous province (98% vs. 91%). The national initial R_t was 2.08 (95% confidence interval (CI): 1.71–2.51).

Interpretation

The first eight weeks following COVID-19 importation were characterised by early predominance of imported cases and relatively low mortality and transmission rates. Despite stringent lockdown measures, the second month following importation was characterised by community transmission and increasing disease burden in more populous provinces.

351. McGurnaghan S. J. Risks of and risk factors for COVID-19 disease in people with diabetes: a cohort study of the total population of Scotland / S. J. McGurnaghan, A. Weir, J. Bishop [et al.] // The Lancet Diabetes & Endocrinology. – 2021. – Vol. 9, № 2. – P. 82–93. – URL: <https://www.sciencedirect.com/science/article/pii/S2213858720304058>

Summary

Background

We aimed to ascertain the cumulative risk of fatal or critical care unit-treated COVID-19 in people with diabetes and compare it with that of people without diabetes, and to investigate risk factors for and build a cross-validated predictive model of fatal or critical care unit-treated COVID-19 among people with diabetes.

Methods

In this cohort study, we captured the data encompassing the first wave of the pandemic in Scotland, from March 1, 2020, when the first case was identified, to July 31, 2020, when infection rates had dropped sufficiently that shielding measures were officially terminated. The participants were the total population of Scotland, including all people with diabetes who were alive 3 weeks before the start of the pandemic in Scotland (estimated Feb 7, 2020). We ascertained how many people developed fatal or critical care unit-treated COVID-19 in this period from the Electronic Communication of Surveillance in Scotland database (on virology), the RAPID database of daily hospitalisations, the Scottish Morbidity Records-01 of hospital discharges, the National Records of Scotland death registrations data, and the Scottish Intensive Care Society and Audit Group database (on critical care). Among people with fatal or critical care unit-treated COVID-19, diabetes status was ascertained by linkage to the national diabetes register, Scottish Care Information Diabetes. We compared the cumulative incidence of fatal or critical care unit-treated COVID-19 in people with and without diabetes using logistic regression. For people with diabetes, we obtained data on potential risk factors for fatal or critical care unit-treated COVID-19 from the national diabetes register and other linked health administrative databases. We tested the association of these factors with fatal or critical care unit-treated COVID-19 in people with diabetes, and constructed a prediction model using stepwise regression and 20-fold cross-validation.

352. Mediavilla R. Role of access to personal protective equipment, treatment prioritization decisions, and changes in job functions on health workers' mental health outcomes during the initial outbreak of the COVID-19

Background

During the initial COVID-19 outbreak, organizational changes were required to ensure adequate staffing in healthcare facilities. The extent to which organizational changes impacted the mental wellbeing of healthcare workers (HCWs) remains unexplored. Here we analyzed the association between three work-related stressors (reported access to protective equipment, change in job functions, and patient prioritization decision-making) and mental health outcomes (depression symptoms, psychological distress, suicidal thoughts, and fear of infection) in a large sample of Spanish HCWs during the initial COVID-19 outbreak.

Methods

We conducted a cross-sectional study including HCWs from three regions of Spain between April 24th and June 22nd, 2020. An online survey measured sociodemographic characteristics, work-related stressors, fear of infection, and mental health outcomes (depression [PHQ-9], psychological distress [GHQ-12], death wishes [C-SSRS]). We conducted mixed-effects regression models to adjust all associations for relevant individual- and region-level sources of confounding.

Results

We recruited 2,370 HCWs. Twenty-seven percent screened positive for depression and 74% for psychological distress. Seven percent reported death wishes. Respondents were more afraid of infecting their loved ones than of getting infected themselves. All work-related stressors were associated with depression symptoms and psychological distress in adjusted models.

Limitations

Non-probabilistic sampling, potential reverse causation.

Conclusions

Modifiable work-related stressors are associated with worse mental health among HCWs. Our results suggest that workplace prevention strategies for HCWs should provide sufficient protective equipment, minimize changes in job functions, favor the implementation of criteria for patient triage and on-call bioethics committees, and facilitate access to stepped-care, evidence-based mental health treatment.

353. Ménard T. Leveraging analytics to assure quality during the Covid-19 pandemic - The COVACTA clinical study example / T. Ménard, R. Bowling, P. Mehta [et al.] // Contemporary Clinical Trials Communications. –

The world has seen a shift in the ways of working during the Covid-19 pandemic. Routine activities performed at the clinical investigator sites (e.g. on-site audits) that are a part of Quality Assurance (QA) have not been feasible at this time. Analytics has played a huge role in contributing to our continued efforts of ensuring quality during the conduct of a clinical trial. Decisions driven through data, now more than ever, heavily contribute to the efficiency of QA activities. In this report, we share the approach we took to conduct QA activities for the COVACTA study (to treat Covid-19 pneumonia) by leveraging analytics.

354. Menassa M. Healthy longevity in the time of COVID-19: a conceptual framework / M. Menassa, E. M. C. Vriend, O. H. Franco // *The Lancet Healthy Longevity*. – 2021. – Vol. 2, № 5. – P. e243–e244. – URL: <https://www.sciencedirect.com/science/article/pii/S266675682100026X>

In the past 30 years, there has been a global increase in longevity. Life expectancy at birth has risen by 8.4 years, mostly due to socioeconomic developments and improvements in health-care provision and access.¹ The COVID-19 pandemic has had a considerable effect on health and survival, which risks reversing the progress made towards increasing longevity and achieving the Sustainable Development Goals (SDGs) for health, in particular goal 3—to “ensure healthy lives and promote wellbeing for all at all ages”. By January, 2021, more than 100 million cases of COVID-19 and more than 2 million COVID-19 deaths worldwide had been confirmed, mostly among people with comorbidities and those older than 65 years. Researchers have predicted that epidemiological changes caused by the pandemic will affect several global indicators such as years of life lost, life expectancy,² and global markets. Estimates from the Office of National Statistics in England and Wales done in November, 2020, indicate a decrease in life expectancy at birth of 0.9 years for women and 1.2 years for men compared with 2019.³ However, these calculations were done earlier in the pandemic and updated estimates will be required as the full impact of the pandemic becomes apparent over time.

SARS-CoV-2 is a multisystemic virus that affects multiple organs, which in addition to acute complications and mortality, could also cause long-term sequelae compromising quality of life.⁴ Long-awaited COVID-19 vaccines emerged at the end of 2020, but concurrently, so did new variants of the virus. The evolving situation has now raised questions about the equitable deployment of vaccines, their effectiveness against existing and future variants, risks of re-infection, and their ability to activate a protective immune response in the most vulnerable, older populations.⁵ Therefore, a multidisciplinary and comprehensive approach is essential to palliate, restrict, and mitigate the deleterious effect of the pandemic and the health and ageing experience of the population.

355. Mengistie T. A. Higher Education Students' Learning in COVID-19 Pandemic Period: The Ethiopian Context / T. A. Mengistie // *Research in Globalization*. – 2021. – Vol. 3. – P. 100059. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000241>

This article analyzes the stand taken by Ethiopia's higher education institutions when providing students' learning during the COVID-19 period while institutions are closed in order to contain the virus. These institutions have a recent history of low research and technological advancement globally. The effects of the COVID-19 are wide ranging and endangering students' learning. The study investigates how public universities are attempting to deliver learning remotely in order to support students as well as exploring challenges and opportunities following the institutions' efforts to minimize the risks of the pandemic. The result shows that, when compared with universities in other countries, neither the government nor the universities took concerted measures to sustain undergraduate students learning. Undergraduate, graduate and Ph.D. learning in universities was interrupted until May 2020 and many questioned the quality, graduate and PhD students' learning as continued online. The inequality between undergraduate students will be sustained and widened if this situation continues, universities must develop and apply concerted efforts to better use remote learning. In Ethiopia, the current pandemic challenges higher education institutions' response to the crisis. Large sections of students have the least technology support, without government and universities support we may create a lost generation in the COVID-19 pandemic period. Therefore, the pandemic must be used as a turning point for Ethiopian universities to bring long-lasting changes.

356. Melesse D. Y. The management of patients with coronavirus disease 2019 in intensive care unit (ICU) in low income countries: A review article / D. Y. Melesse, W. B. Chekol // *Clinical Nutrition Open Science*. – 2021. – Vol. 37. – P. 60–72. – URL: <https://www.sciencedirect.com/science/article/pii/S2667268521000255>

Background

The novel coronavirus, severe acute respiratory syndrome-CoV-2 (SARS-CoV2)- causing coronavirus disease 19 (COVID-19), outbreak as a world health problem and was declared as a pandemic disease by the world health organization (WHO) in March 2020. Many serious findings have been observed among victims with severe acute respiratory syndrome-CoV-2.

Methods

This review was conducted according to the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) protocol. Search engines like PubMed and PMC through HINARI, Cochrane database, Google Scholar were

used to get information about the current evidences on management of coronavirus disease 2019 (COVID-19) in intensive care unit (ICU).

Discussion

Mortality with COVID 19 is associated with geriatric population, the presence comorbidities like hypertension, diabetes mellitus, cardiovascular disease, chronic lung disease, and cancer, acute respiratory failure, higher d-dimer and C-reactive protein concentrations, lower lymphocyte counts, and secondary infections.

Conclusion

The international recommendations on nutrition in the ICU should be followed. Some specific issues about the nutrition of the COVID-19 patients in the ICU should be emphasized. Universal infection prevention precautions (hand hygiene and use of personal protection equipment (PPE)) are invaluable during nursing of COVID 19 patients at ICU.

357. Menezes S. M. Endogenous IFN β expression predicts outcome in critical patients with COVID-19 / S. M. Menezes, M. Braz, V. Llorens-Rico [et al.] // The Lancet Microbe. – 2021. – Vol. 2, № 6. – P. e235–236. – URL: <https://www.sciencedirect.com/science/article/pii/S266652472100063X>

Although the subject of intensive preclinical and clinical research, controversy on the protective versus deleterious effects of endogenous and therapeutic IFN on COVID-19 remains. Some apparently conflicting results are most likely due to the intricacy of IFN subtypes (ie, type I: interferon alfa and interferon beta, type III: interferon lambda), timing and mode of administration (ie, nebulised or subcutaneous), and clinical groups that are targeted (ie, patients with asymptomatic, mild, moderate, or severe or critical COVID-19).

358. Menon A. A Case of COVID-19 and Pneumocystis jirovecii Co-infection / A. Menon, D. D. Berg, E. J. Brea [et al.] // American Journal of Respiratory and Critical Care Medicine. – 2020. – Vol. 202, № 1. – P. 136–138. – URL: <https://www.atsjournals.org/doi/full/10.1164/rccm.202003-0766LE>

Lymphocytopenia has been identified as a common laboratory finding in patients

with SARS-CoV-2 infection, particularly among those with more severe presentations; however, there are limited data on which specific lymphocyte populations may be affected or the clinical sequelae. In this report, we describe the case of a woman with hypoxemic respiratory failure found to have co-infection with SARS-CoV-2 and *Pneumocystis jirovecii*, a pathogen commonly seen in patients with defects in T cell immunity.

359. Merwe P. Assessing the economic impact of COVID-19 on the private wildlife industry of South Africa / P. van der Merwe, A. Saayman, C. Jacobs // *Global Ecology and Conservation*. – 2021. – Vol. 28. – P. e01633. – URL: <https://www.sciencedirect.com/science/article/pii/S2351989421001839>

The world of travel and tourism have perhaps changed forever as a result of COVID-19; considered the worst global pandemic to affect the world, post World War II. The spread of the Coronavirus diseases was considerably attributed to the travel and tourism industry, and with the attempt to curb the spread of the virus, the industry experienced calamitous effects and suffered staggering financial losses. The same accounts for wildlife tourism (Southern Africa's largest product) – bringing the hunting and ecotourism sector of South Africa to a complete standstill. The pandemic accompanied concerning and devastating effects, not only from a financial point of view, but also in terms of the conservation of these sectors within the industry. This paper presents a comprehensive analysis using the data obtained from the members of Wildlife Ranching South Africa (WRSA) to quantify the actual and potential financial losses in the private wildlife industry due to cancellations of hunters and ecotourists, live game sales and finally, game meat sales in the industry. From the results, the estimated financial impact of COVID-19 on the private wildlife industry is R6.694 billion (ZAR). The study made the following three contributions: Firstly, it determined the economic impact of COVID-19 on the private wildlife industry. Secondly, it provides the industry with a tangible document that can be used in securing funding and assistance from government and other non-profit organisations. Thirdly, it shows the importance of this industry to the South African economy and employment, although only applicable to private-owned reserves

360. Meuwissena M. P. M. Impact of Covid-19 on farming systems in Europe through the lens of resilience thinking / M. P. M. Meuwissena, P. H. Feindt, T. Slijper [et al.] // *Agricultural Systems*. – 2021. – Vol. 191. – P. 103152. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21001050>

Context

Resilience is the ability to deal with shocks and stresses, including the unknown and previously unimaginable, such as the Covid-19 crisis.

Objective

This paper assesses (i) how different farming systems were exposed to the crisis, (ii) which resilience capacities were revealed and (iii) how resilience was enabled or constrained by the farming systems' social and institutional environment.

Methods

The 11 farming systems included have been analysed since 2017. This allows a comparison of pre-Covid-19 findings and the Covid-19 crisis. Pre-Covid findings are from the SURE-Farm systematic sustainability and resilience assessment. For Covid-19 a special data collection was carried out during the early stage of lockdowns.

Results and conclusions

Our case studies found limited impact of Covid-19 on the production and delivery of food and other agricultural products. This was due to either little exposure or the agile activation of robustness capacities of the farming systems in combination with an enabling institutional environment. Revealed capacities were mainly based on already existing connectedness among farmers and more broadly in value chains. Across cases, the experience of the crisis triggered reflexivity about the operation of the farming systems. Recurring topics were the need for shorter chains, more fairness towards farmers, and less dependence on migrant workers. However, actors in the farming systems and the enabling environment generally focused on the immediate issues and gave little real consideration to long-term implications and challenges. Hence, adaptive or transformative capacities were much less on display than coping capacities. The comparison with pre-Covid findings mostly showed similarities. If challenges, such as shortage of labour, already loomed before, they persisted during the crisis. Furthermore, the eminent role of resilience attributes was confirmed. In cases with high connectedness and diversity we found that these system characteristics contributed significantly to dealing with the crisis. Also the focus on coping capacities was already visible before the crisis. We are not sure yet whether the focus on short-term robustness just reflects the higher visibility and urgency of shocks compared to slow processes that undermine or threaten important system functions, or whether they betray an imbalance in resilience capacities at the expense of adaptability and transformability.

361. Mikal J. P. Social media as a modern Emergency Broadcast System: A longitudinal qualitative study of social media during COVID-19 and its impacts on social connection and social distancing compliance / J. P. Mikal, R. Wurtz, S. W. Grande // Computers in Human Behavior Reports. – 2021. – Vol. 4. – P. 100137. – URL: <https://www.sciencedirect.com/science/article/pii/S2451958821000853>

In the wake of COVID-19 social distancing recommendations, social media assumed a central - if unofficial - role in ensuring that individuals remained informed and connected throughout the pandemic. Yet while research shows that social media can be an effective platform for connecting individuals socially and fostering social support exchanges, both the platforms and the support exchanged therein have been mired in considerable controversies regarding their use as a tool for positive social engagement. The goal of this study is to qualitatively evaluate longitudinal changes to social media engagement during social distancing

recommendations and orders to shelter-in-place. To do this, we collected longitudinal, qualitative survey data from a group of adults over the eight weeks during which most states had issued orders to shelter-in-place. We analyze data for evidence of social connection, stress reduction, and support exchange, and evaluate the impact of online social ties on staying informed and on compliance with CDC recommendations and shelter-in-place orders. Results showed a clear longitudinal evolution of users' online social engagement. Early use was characterized by agentic purposeful engagement, information sharing, and community resource mobilization. However, over time these patterns gave way to more passive use characterized by listlessness, contentiousness and misinformation as the pandemic wore on in weeks. As social media comes to occupy an increasingly important role in the exchange of information (and misinformation) this study has important implications for the health of users and the role of social media in future disasters, including how social media impacts both stress and health related behaviors.

362. Milia V. L. COVID-19 Outbreak in a Large Hemodialysis Center in Lombardy, Italy / V. L. Milia, G. Bacchini, M. C. Bigi [et al.] // *Kidney International Reports*. – 2020. – Vol. 5, № 7. – P. 1095–1099. – URL: <https://www.sciencedirect.com/science/article/pii/S2468024920312808>

On December 31, 2019, China reported the first cases of pneumonia of unknown cause that would later be identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).^{1, 2, 3} SARS-CoV-2 rapidly spread, resulting in a pandemic, and as of April 10, 2020, there were almost 1.6 million confirmed cases reported worldwide, with approximately 97,200 deaths. The United States is currently the country with the highest number of infections, 466,396, with 16,703 deaths. Italy, with 143,626 confirmed cases since the beginning of the epidemic, has the highest number of deaths, 18,279. In particular, Lombardy (a region in northern Italy with a population of 10,000,000) has been the Italian region most affected by SARS-Cov-2: since the beginning of the epidemic 54,802 people have contracted the virus, and, of these, 10,022 people have died.⁴

Patients undergoing hemodialysis (HD) treatment and health care staff may be at high risk of coronavirus disease 2019 (COVID-19) both because of the difficulty in applying isolation and social distancing, and the immunosuppressed state and frailty of patients.⁵

There are few data available from China^{5,6} on the prevalence of SARS-CoV-2 infection in HD patients and no data on HD patients from other countries.

We report the experience of a large HD center in Lombardy, Italy, during the SARS-CoV-2 epidemic in March 2020.

363. Milicevic O. PM2.5 as a major predictor of COVID-19 basic reproduction number in the USA / O. Milicevic, I. Salom, A. Rodic [et al.] //

Many studies have proposed a relationship between COVID-19 transmissibility and ambient pollution levels. However, a major limitation in establishing such associations is to adequately account for complex disease dynamics, influenced by e.g. significant differences in control measures and testing policies. Another difficulty is appropriately controlling the effects of other potentially important factors, due to both their mutual correlations and a limited dataset. To overcome these difficulties, we will here use the basic reproduction number (R_0) that we estimate for USA states using non-linear dynamics methods. To account for a large number of predictors (many of which are mutually strongly correlated), combined with a limited dataset, we employ machine-learning methods. Specifically, to reduce dimensionality without complicating the variable interpretation, we employ Principal Component Analysis on subsets of mutually related (and correlated) predictors. Methods that allow feature (predictor) selection, and ranking their importance, are then used, including both linear regressions with regularization and feature selection (Lasso and Elastic Net) and non-parametric methods based on ensembles of weak-learners (Random Forest and Gradient Boost). Through these substantially different approaches, we robustly obtain that PM_{2.5} is a major predictor of R_0 in USA states, with corrections from factors such as other pollutants, prosperity measures, population density, chronic disease levels, and possibly racial composition. As a rough magnitude estimate, we obtain that a relative change in R_0 , with variations in pollution levels observed in the USA, is typically ~30%, which further underscores the importance of pollution in COVID-19 transmissibility.

364. Minckas N. Preterm care during the COVID-19 pandemic: A comparative risk analysis of neonatal deaths averted by kangaroo mother care versus mortality due to SARS-CoV-2 infection / N. Minckas, M. M. Medvedev, J. E. Lawn // EClinicalMedicine. – 2021. – Vol. 33. – P. 100733. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537021000134>

Background

COVID-19 is disrupting health services for mothers and newborns, particularly in low- and middle-income countries (LMIC). Preterm newborns are particularly vulnerable. We undertook analyses of the benefits of kangaroo mother care (KMC) on survival among neonates weighing ≤ 2000 g compared with the risk of SARS-CoV-2 acquired from infected mothers/caregivers.

Methods

We modelled two scenarios over 12 months. Scenario 1 compared the survival benefits of KMC with universal coverage (99%) and mortality risk due to COVID-19. Scenario 2 estimated incremental deaths from reduced coverage and

complete disruption of KMC. Projections were based on the most recent data for 127 LMICs (~90% of global births), with results aggregated into five regions.

Findings

Our worst-case scenario (100% transmission) could result in 1,950 neonatal deaths from COVID-19. Conversely, 125,680 neonatal lives could be saved with universal KMC coverage. Hence, the benefit of KMC is 65-fold higher than the mortality risk of COVID-19. If recent evidence of 10% transmission was applied, the ratio would be 630-fold. We estimated a 50% reduction in KMC coverage could result in 12,570 incremental deaths and full disruption could result in 25,140 incremental deaths, representing a 2.3–4.6% increase in neonatal mortality across the 127 countries.

Interpretation

The survival benefit of KMC far outweighs the small risk of death due to COVID-19. Preterm newborns are at risk, especially in LMICs where the consequences of disruptions are substantial. Policymakers and healthcare professionals need to protect services and ensure clearer messaging to keep mothers and newborns together, even if the mother is SARS-CoV-2-positive.

365. Miró Ò. Comparison of the demographic characteristics and comorbidities of patients with COVID-19 who died in Spanish hospitals based on whether they were or were not admitted to an intensive care unit / Ò. Miró, A. Alquézar-Arbé, P. Llorens // Medicina Intensiva. – 2020. – Vol. 45, №1. – P. 14–26.

URL:

<https://www.sciencedirect.com/science/article/abs/pii/S2173572720302095>

Objective

To describe and compare the demographic characteristics and comorbidities of patients with COVID-19 who died in Spanish hospitals during the 2020 pandemic based on whether they were or were not admitted to an intensive care unit (ICU) prior to death.

Methods

We performed a secondary analysis of COVID-19 patients who died during hospitalization included by 62 Spanish emergency departments in the SIESTA cohort. We collected the demographic characteristics and comorbidities, determined both individually and estimated globally by the Charlson index (ChI). Independent factors related to ICU admission were identified and different analyses of sensitivity were performed to contrast the consistency of the findings of the principal analysis.

366. Mishra M. Effectiveness of diabetes education including insulin injection technique and dose adjustment through telemedicine in hospitalized patients with COVID-19 / M. Mishra, T. Bano, S. K. Mishra [et al.] // Diabetes & Metabolic Syndrome: Clinical Research & Reviews. – 2021. – Vol. 15, № 4. –

Aims:

To study the feasibility of diabetes education through telemedicine in patients with diabetes mellitus (DM) hospitalized for coronavirus disease 2019 (COVID-19) management.

Methods:

This was a prospective study of 100 patients with DM who were admitted in a COVID isolation ward for management of COVID-19. Patients managed with multiple subcutaneous insulin injections were eligible. During teleconsultation, diabetes education including insulin injection technique was given by a diabetes educator via a phone call (audio and video) during hospitalization. They were also re-assessed after 2 weeks of discharge from the hospital via teleconsultation or in-person.

Results:

Out of 100 patients, 72.0% had prior history of diabetes while 28.0% were newly diagnosed. The median age of our cohort was 56 years and median duration of diabetes was 7.0 years. Telemedicine as a mode of consult for diabetes education was accepted by 96.0% of patients during hospitalization. At 2 weeks' follow-up, 77.0% patients were following insulin instructions correctly and were satisfied with this mode of consultation.

Conclusion:

Diabetes education using telemedicine as a technology is feasible, acceptable, and effective in the management of most patients with DM. Telemedicine appears to be an effective way to replace routine visits in special situations.

367. Mishra Y. Diabetes, COVID 19 and mucormycosis: Clinical spectrum and outcome in a tertiary care medical center in Western India / Y. Mishra, M. Prashar, D. Sharma [et al.] // *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. – 2021. – Vol. 15, № 4. – P. 102196. – URL: <https://www.sciencedirect.com/science/article/pii/S1871402121002162>

Aims

Diabetes Mellitus predisposes patients to invasive fungal infections. There has been a recent surge of Mucormycosis with COVID 19 infection particularly in patients with diabetes. This study aims to study the clinical spectrum of CAM (COVID -associated Mucormycosis) with diabetes and subsequent outcomes.

Material and methods

This was a descriptive study conducted at a single COVID Care Centre in India in patients with COVID Associated Mucormycosis from April 12, 2021 to May 31, 2021.

Results

Among 953 hospitalized patients with COVID 19 infection, 32 patients had CAM with an incidence of 3.36%. In patients with CAM, 87.5% had Diabetes Mellitus as the most common co-morbidity. The majority of the patients had poor glycemic control with a mean HbA1c of 9.06%. Out of the total study population, 93% had prior exposure to high dose corticosteroids. During the study period, 12.5% patients of CAM did not survive.

Conclusion

Mucormycosis is an angioinvasive fungal infection with high mortality. The disease has surged in COVID 19 pandemic due to uncontrolled diabetes and improper corticosteroid use.

368. Mitchell K. M. The potential effect of COVID-19-related disruptions on HIV incidence and HIV-related mortality among men who have sex with men in the USA: a modelling study / K. M. Mitchell, D. Dimitrov, R. Silhol [et al.] // The Lancet HIV. – 2021. – Vol. 8, № 4. – P. e206–e215. – URL: <https://www.sciencedirect.com/science/article/pii/S2352301821000229>

Background

During the COVID-19 pandemic, men who have sex with men (MSM) in the USA have reported similar or fewer sexual partners and reduced HIV testing and care access compared with before the pandemic. Pre-exposure prophylaxis (PrEP) use has also declined. We aimed to quantify the potential effect of COVID-19 on HIV incidence and HIV-related mortality among US MSM.

Methods

We used a calibrated, deterministic, compartmental HIV transmission model for MSM in Baltimore (MD, USA) and available data on COVID-19-related disruptions to HIV services to predict effects of reductions in sexual partners (0%, 25%, 50%), condom use (5%), HIV testing (20%), viral suppression (10%), PrEP initiations (72%), PrEP adherence (9%), and antiretroviral therapy (ART) initiations (50%). In our main analysis, we modelled disruptions due to COVID-19 starting Jan 1, 2020, and lasting 6 months. We estimated the median change in cumulative new HIV infections and HIV-related deaths among MSM over 1 and 5 years, compared with a base case scenario without COVID-19-related disruptions.

Findings

A 25% reduction in sexual partners for 6 months among MSM in Baltimore, without HIV service changes, could reduce new HIV infections by median 12.2% (95% credible interval 11.7 to 12.8) over 1 year and median 3.0% (2.6 to 3.4) over

5 years. In the absence of changes in sexual behaviour, the 6-month estimated reductions in condom use, HIV testing, viral suppression, PrEP initiations, PrEP adherence, and ART initiations combined are predicted to increase new HIV infections by median 10.5% (5.8 to 16.5) over 1 year, and by median 3.5% (2.1 to 5.4) over 5 years. Disruptions to ART initiations and viral suppression are estimated to substantially increase HIV-related deaths (ART initiations by median 1.7% [0.8 to 3.2], viral suppression by median 9.5% [5.2 to 15.9]) over 1 year, with smaller proportional increases over 5 years. The other individual disruptions (to HIV testing, PrEP and condom use, PrEP initiation, and partner numbers) were estimated to have little effect on HIV-related deaths (<1% change over 1 or 5 years). A 25% reduction in sexual partnerships is estimated to offset the effect of the combined service disruptions on new HIV infections (change over 1 year: median -3.9% [-7.4 to 1.0]; over 5 years: median 0.0% [-0.9 to 1.4]), but not on HIV deaths (change over 1 year: 11.0% [6.2 to 17.7]; over 5 years: 2.6% [1.5 to 4.3]).

Interpretation

Maintaining access to ART and adherence support is of the utmost importance to maintain viral suppression and minimise excess HIV-related mortality due to COVID-19 restrictions in the USA, even if disruptions to services are accompanied by reductions in sexual partnerships.

369. Mitchell K. M. In-hospital cardiac arrest in patients with coronavirus 2019 / O. J. L. Mitchell, E. Yuriditsky, N. J. Johnson [et al.] // Resuscitation. – 2021. – Vol. 160. – P. 72–78. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0300957221000204>

Background

Coronavirus Disease 2019 (COVID-19) has caused over 1 200 000 deaths worldwide as of November 2020. However, little is known about the clinical outcomes among hospitalized patients with active COVID-19 after in-hospital cardiac arrest (IHCA).

Aim

We aimed to characterize outcomes from IHCA in patients with COVID-19 and to identify patient- and hospital-level variables associated with 30-day survival.

Methods

We conducted a multicentre retrospective cohort study across 11 academic medical centres in the U.S. Adult patients who received cardiopulmonary resuscitation and/or defibrillation for IHCA between March 1, 2020 and May 31, 2020 who had a documented positive test for Severe Acute Respiratory Syndrome

Coronavirus 2 were included. The primary outcome was 30-day survival after IHCA.

Results

There were 260 IHCAs among COVID-19 patients during the study period. The median age was 69 years (interquartile range 60–77), 71.5% were male, 49.6% were White, 16.9% were Black, and 16.2% were Hispanic. The most common presenting rhythms were pulseless electrical activity (45.0%) and asystole (44.6%). ROSC occurred in 58 patients (22.3%), 31 (11.9%) survived to hospital discharge, and 32 (12.3%) survived to 30 days. Rates of ROSC and 30-day survival in the two hospitals with the highest volume of IHCA over the study period compared to the remaining hospitals were considerably lower (10.8% vs. 64.3% and 5.9% vs. 35.7% respectively, $p < 0.001$ for both).

Conclusions

We found rates of ROSC and 30-day survival of 22.3% and 12.3% respectively. There were large variations in centre-level outcomes, which may explain the poor survival in prior studies.

370. Miyake S. Evaluation of a combination protocol of CT-first triage and active telemedicine methods by a selected team tackling COVID-19: An experimental research study / S. Miyake, T. Higurashi, H. Kato [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 9. – P. 1212–1217. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121002355>

Background

Many health care workers around the world tackled with COVID-19, however sadly, the infection of many medical care workers were reported. To reduce the risk of infection, we launched selected team (Team COVID) of non-specialists and brought in active telemedicine method and computed tomography (CT)-first protocol. We describe our actual practice and the health status of medical doctors dealing with COVID-19 patients.

Methods

Between April 17, 2020 and May 24, 2020, 10 doctors worked with COVID-19 patients as part of Team COVID. The Team COVID doctors used a CT-first triage protocol for outpatients and telemedicine for inpatients and outpatients. We evaluated paired serum-specific antibodies for SARS-CoV-2 at the initial and end of the study duration and PCR results for SARS-CoV-2 at the end of the study duration. Furthermore, 36-item short-form of the Medical Outcome Study Questionnaire (SF-36) at the beginning and end of the study period were evaluated.

Results

Ten doctors worked as Team COVID: seven internal medicine doctors and three surgeons. During the study period, Team COVID treated 165 individuals in

the outpatient clinic and isolated hospitalized patients for 315 person-days. There were no positive results of serum-specific antibody testing and PCR testing for SARS-CoV-2 in Team COVID doctors. Furthermore, the SF-36 showed no deterioration in physical and mental QOL status. No in-hospital infection occurred during the study period.

Conclusions

The Team COVID fulfilled the treatment using the active telemedicine and CT-first triage protocol without in hospital infection and excess stress. The combination strategy seems acceptable for both the protection and stress relief among the medical staff.

371. Mondal P. Sociodemographic predictors of COVID-19 vaccine acceptance: a nationwide US-based survey study / P. Mondal, A. Sinharoy, L. Su // Public Health. – 2021. – Vol. 198. – P. 252–259. – URL: <https://www.sciencedirect.com/science/article/pii/S0033350621002985>

Objectives

Acceptance of COVID-19 vaccination is attributable to sociodemographic factors and their complex interactions. Attitudes towards COVID-19 vaccines in the United States are changing frequently, especially since the launch of the vaccines and as the United States faces a third wave of the pandemic. Our primary objective was to determine the relative influence of sociodemographic predictors on COVID-19 vaccine acceptance. The secondary objectives were to understand the reasons behind vaccine refusal and compare COVID-19 vaccine acceptance with influenza vaccine uptake.

Study design

This was a nationwide US-based survey study.

Methods

A REDCap survey link was distributed using various online platforms. The primary study outcome was COVID-19 vaccine acceptance (yes/no). Sociodemographic factors, such as age, ethnicity, gender, education, family income, healthcare worker profession, residence regions, local healthcare facility and ‘vaccine launch’ period (pre vs post), were included as potential predictors. The differences in vaccine acceptance rates among sociodemographic subgroups were estimated by Chi-squared tests, whereas logistic regression and neural networks computed the prediction models and determined the predictors of relative significance.

Results

Among 2978 eligible respondents, 81.1% of participants were likely to receive the vaccine. All the predictors demonstrated significant associations with vaccine acceptance, except vaccine launch period. Regression analyses eliminated

gender and vaccine launch period from the model, and the machine learning model reproduced the regression result. Both models precisely predicted individual vaccine acceptance and recognised education, ethnicity and age as the most important predictors. Fear of adverse effects and concern with efficacy were the principal reasons for vaccine refusal.

Conclusions

Sociodemographic predictors, such as education, ethnicity and age, significantly influenced COVID-19 vaccine acceptance, and concerns of side-effects and efficacy led to increased vaccine hesitancy.

372. Montealegre-Gómez G. Colchicine: A potential therapeutic tool against COVID-19. Experience of 5 patients / G. Montealegre-Gómez, E. Garavito, A. Gómez-López [et al.] // Reumatología Clínica. – 2021. – Vol. 17, №7. – P. 371–375. – URL: <https://www.sciencedirect.com/science/article/pii/S2173574321001337>

COVID-19 is a newly emerged disease that has become a global public health challenge. Due to a lack of knowledge about the virus, a significant number of potential targets for using a particular drug have been proposed. Five cases with a clinical history of biopolymers in the gluteal region that developed iatrogenic allogenosis (IA) are presented here. The 5 cases were put under colchicine treatment for IA crisis and had non-specific symptoms (headache, cough without dyspnea, and arthralgias) with a positive SARS-CoV-2 test. Their close contacts had mild to severe symptoms and three of them died. In the SARS-CoV-2 infection different inflammatory pathways are altered where colchicine reduces cytokine levels as well as the activation of macrophages, neutrophils, and the inflammasome. The possible mechanisms that colchicine may use to prevent acute respiratory distress syndrome (ARDS) in patients with COVID-19 infection are also reviewed in this article.

Resumen

COVID-19 es una enfermedad de aparición reciente, que se ha convertido en un reto global de salud pública. Debido a la falta de conocimiento acerca del virus, se ha propuesto un número significativo de objetivos potenciales para utilizar un fármaco en particular. Presentamos 5 casos con historia clínica de biopolímeros en la región glútea, que desarrollaron alogenosis iatrogénica (AI). A los 5 casos se les administró tratamiento de colchicina debido a la crisis de AI, no teniendo síntomas específicos (cefalea, tos sin disnea y arthralgias), con resultado positivo en el test de SARS-CoV-2. Sus contactos cercanos tenían síntomas de leves a graves, y 3 de ellos fallecieron. En la infección por SARS-CoV-2 se alteran diferentes rutas inflamatorias, en las que la colchicina reduce los niveles de citocinas y la activación de macrófagos, neutrófilos e inflamasoma. Revisamos también, en este artículo, los posibles mecanismos que puede utilizar colchicina para prevenir el síndrome de distrés respiratorio agudo (SDRA) en pacientes con COVID-19.

373. Monteith L. L. Understanding women's risk for suicide during the COVID-19 pandemic: A call to action / L. L. Monteith, R. Holliday, C. A. Hoffmire [et al.] // Psychiatry Research. – 2021. – Vol. 295. – P. 113621. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0165178120332820>

Dear Editor,

Prior to the Coronavirus Disease 2019 (COVID-19) pandemic, suicide rates among women in the United States were already increasing significantly. Although researchers have yet to conclude whether rates of suicide have increased since the pandemic began, many suicidologists have theorized that suicide rates will increase during or following the pandemic (Reger et al., 2020). As researchers begin to examine this important question, we urge them to consider the role of gender – specifically, to examine whether there are gender differences in rates and trends of suicidal self-directed violence following the start of the pandemic; and whether different factors drive or protect against this risk for women in particular.

Researchers have generally found that women are more likely to report experiencing suicidal ideation and attempts, whereas men are more likely to die by suicide – often referred to as the gender paradox. Although it remains unknown whether this will extend to experiences during and following the pandemic, the pandemic has disproportionately affected women in ways that could exacerbate their risk for suicidal ideation, suicide attempts, and suicide. Since the pandemic began, women have experienced job loss and underemployment with greater propensity (Connor et al., 2020). Women also comprise the majority of healthcare workers within the U.S. and thus are also at heightened risk for occupational exposure (Connor et al., 2020). Additionally, due to school closures during the pandemic, women have disproportionately experienced caregiver burden (Connor et al., 2020). In addition to these economic, occupational, and familial stressors, there has been growing concern regarding increased violence against women during quarantine and other physical distancing efforts (Sánchez et al., 2020). Efforts to physically distance have not only increased reports of violence, but have also decreased opportunities for detection and mitigation of such distressing and potentially traumatic events. Whereas social support can be instrumental in offsetting the impact of stressful life events on mental health and suicide risk, the pandemic has left many feeling lonely and socially isolated (Rains et al., 2020).

Likely stemming from these multiple stressors, women have reported higher levels of stress than men and have been more likely to report psychological distress and symptoms of depression, anxiety, and posttraumatic stress disorder during the pandemic (Xiong et al., 2020). In normal circumstances, these mental health symptoms – which are also risk factors for suicide – can precipitate seeking out mental healthcare, thereby providing opportunities for healthcare providers to detect and manage such risk. Unfortunately, access to mental healthcare has been more limited during the pandemic. Individuals have described difficulties

obtaining mental healthcare, delayed healthcare, and disruptions to ongoing mental health services (Rains et al., 2020). Women's access to reproductive healthcare has also been limited (Conner et al., 2020). This is particularly salient to women's suicide risk given the intersection between reproductive health and mental health.

Considering the amalgamation of these experiences, it is crucial to understand how these experiences affect women's risk for suicidal self-directed violence. Examining pandemic-related risk and protective factors separately by gender will provide clarity in illuminating ways in which suicide risk can be effectively mitigated during and following the pandemic. In addition, as researchers develop, adapt, and implement interventions to prevent suicide during this pandemic, as well as future pandemics, we encourage them to consider planning gender-sensitive efforts. Both suicide- and interventional research have historically lacked a focus on gender differences, impeding efforts to develop maximally effective treatments. By focusing on such aspects early on, rather than succumbing to gender blindness (Conner et al., 2020), researchers can ensure that the research they conduct is optimally poised to understand and address suicide risk and prevention among women during current and future pandemics.

374. Moore H. L. Rebuilding the post-Covid-19 economy through an industrial strategy that secures livelihoods / H. L. Moore, H. Collins // Social Sciences & Humanities Open. – 2021. – Vol. 3, № 1. – P. 100113. – URL: <https://www.sciencedirect.com/science/article/pii/S2590291121000097>

The Covid-19 crisis has further exacerbated the insecurity of livelihoods in the UK. This commentary reflects on what resources the UK has to fulfil the calls to 'build back better,' to transform the economy to prioritise health and wellbeing over economic growth. We provide critical commentary on the current industrial strategy while recognising that industrial strategy can be a tool to unite public, private and third sectors in the shared goal for prosperous communities around the UK. Driven from the perspective of citizen's understanding of prosperity and what it means to live a good life, we argue for a new local industrial strategy that places secure livelihoods at its centre. This means enhancing the capacities and capabilities of people and places to face 21st century global challenges locally.

375. More N. Current challenges in identification of clinical characteristics and detection of COVID-19: A comprehensive review / N. More, D. Ranglani, S. Kharche [et al.] // Measurement: Sensors. – 2021. – Vol. 16. – P. 100052. – URL: <https://www.sciencedirect.com/science/article/pii/S2665917421000143>

World Health Organization (WHO) declares the COVID-19 outbreak as a pandemic. The newly emerging infection has caused around one million deaths worldwide and still counting. There is no specific treatment for the disease, and it can only contain by breaking the spread. So that early and rapid diagnosis of the infection is the only way to control the outbreak. The COVID-19 virus affects the

human respiratory system and subsequently infects other vital organs. In consideration of the diagnosis, the present review focuses on the critical diagnostic approaches for COVID-19, including RT-PCR, Chest-CT scan, some biosensor-based systems, etc. Moreover, this review is a specific bird's eye view on recent developments on the point of care devices and related technologies. Additionally, it presented a small glimpse of the pathophysiology and structural aspects of COVID-19. Therefore, the current review can motivate and help the reader to develop cutting-edge diagnostic technologies for the early and rapid detection of the COVID-19.

376. Morelli P. Why was the ECB's reaction to Covid-19 crisis faster than after the 2008 financial crash? / P. Morelli, E. Seghezza // Journal of Policy Modeling. – 2021. – Vol. 43, № 1. – P. 1–14. – URL: <https://www.sciencedirect.com/science/article/pii/S0161893821000016>

At the time of the financial crises of 2008 and 2010–11 the ECB reacted with an extremely cautious gradualism. This behaviour is attributable to the slower learning process that characterizes a central bank of a monetary union composed of countries with fiscal sovereignty compared to other central banks. In sharp contrast to the previous crises, the ECB reacted promptly to the COVID-19 crisis. This change in behaviour is explained here by the learning process about the effects on monetary policy transmission of the increased financial fragmentation of the eurozone over the last decade.

377. Mosolova E. Stress, anxiety, depression and burnout in frontline healthcare workers during two peaks of COVID-19 pandemic in Russia / E. Mosolova, D. Sosin, S. Mosolov // Psychiatry Research. – 2021. – Vol. 306. – P. 114226. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121005229>

Purpose

In this study we aimed to assess the range of psychopathological symptoms (anxiety, stress, depression, burnout) and risk factors in frontline HCWs during spring and autumn outbreaks of the new coronavirus infection in Russian Federation.

Methods

We conducted two independent, cross-sectional hospital-based online surveys. Data of 2195 HCWs were collected between May 19th and May 26th 2020 and between October 10th and October 17th 2020. Stress, anxiety, depression, burnout and perceived stress were assessed using the Russian versions of SAVE-9 and GAD-7, PHQ-9, MBI and PSS-10 scales. Logistic regression analysis was performed to determine the influence of different variables.

Results

The study revealed the rates of anxiety, stress, depression, emotional exhaustion and depersonalization and perceived stress as 32.3%, 31.1%, 45.5%, 74.2%, 37.7%, 67.8%, respectively. Moreover, 2.4% of HCWs reported suicidal thoughts. The rate of anxiety was higher in October 2020 compared with May 2020. Revealed risk factors included: female gender, younger age, being a physician, working for over a week, living outside of Moscow or Saint Petersburg, being vaccinated against COVID-19.

Conclusion

These results demonstrate the need for urgent supportive programs for HCWs fighting COVID-19 that fall into higher risk factors groups and its increasing importance over time.

378. Moussa Y. E. H. Stability analysis and simulation of the novel Coronavirus mathematical model via the Caputo fractional-order derivative: A case study of Algeria / Y. E. H. Moussa, A. Boudaoui, S. Ullah [et al.]// Results in Physics. – 2021. – Vol. 26. – P. 104324. – URL: <https://www.sciencedirect.com/science/article/pii/S2211379721004538>

The novel coronavirus infectious disease (or COVID-19) almost spread widely around the world and causes a huge panic in the human population. To explore the complex dynamics of this novel infection, several mathematical epidemic models have been adopted and simulated using the statistical data of COVID-19 in various regions. In this paper, we present a new nonlinear fractional order model in the Caputo sense to analyze and simulate the dynamics of this viral disease with a case study of Algeria. Initially, after the model formulation, we utilize the well-known least square approach to estimate the model parameters from the reported COVID-19 cases in Algeria for a selected period of time. We perform the existence and uniqueness of the model solution which are proved via the Picard-Lindelöf method. We further compute the basic reproduction numbers and equilibrium points, then we explore the local and global stability of both the disease-free equilibrium point and the endemic equilibrium point. Finally, numerical results and graphical simulation are given to demonstrate the impact of various model parameters and fractional order on the disease dynamics and control.

379. Mukuka A. Students' experiences with remote learning during the COVID-19 school closure: implications for mathematics education / A. Mukuka, O. Shumba, H. M. Mulenga // Heliyon. – 2021. – Vol. 7, № 7. – P. e07523. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021016261>

This paper reports the findings of a descriptive survey research that explored secondary school students' experiences with mathematics remote learning during the Corona Virus Disease 2019 (COVID-19) school closure. The study involved

367 students of ages 13 to 21 selected from six secondary schools in Kitwe district of Zambia using the cluster random sampling method. Using a mixed-methods research approach, quantitative and qualitative data were merged to provide a comprehensive analysis of the main findings in the context of the existing literature, the government's response to COVID-19 school closure, and the challenges associated with remote learning during that time. Research findings show that more than 56% of the respondents did not have sufficient access to Information and Communication Technologies (ICT), electricity, and internet services. Most of these respondents also held a belief that mathematics is a subject that is best learned with face-to-face interactions between the teacher and students, and among students. These results suggest a need for the education systems in Zambia and other similar contexts to put up infrastructure that supports the blended and online learning models during and after the COVID-19 pandemic.

380. Munastiwi E. Unprepared management decreases education performance in kindergartens during Covid-19 pandemic / E. Munastiwi, S. Puryono // Heliyon. – 2021. – Vol. 7, № 5. – P. e07138. – URL: <https://www.sciencedirect.com/science/article/pii/S240584402101241X>

The Covid-19 pandemic has disrupted the education sector, including kindergartens. Kindergarten principals and teachers make extra effort to maintain their education performance. This research aims to identify problems of the “learning from home” policy in kindergarten education and formulate possible solutions to overcome them. It involved 15 respondents from different regions in Indonesia. Data were collected through several methods, including face-to-face interviews, phone interviews, and online interviews through messaging services. The research result showed that many kindergarten management boards encountered difficulties in fulfilling planned education schedules and had the low achievement of objective targets. The problems existed in teachers, parents, and mainly students. Most teachers faced problems in creating interactive education materials and conducting an evaluation. Parents had hard times in assisting their children due to their busy activities and low pedagogical competence. Children had hard times due to limited resources for online learning. This research suggests solutions such as improving the mastery of information and communication technology (ICT), especially for teachers, parents, and children. However, the education system's long-term reform is needed to prepare for facing the possible catastrophe that affects the education system. It may include integrating online learning in the traditional education system and the development of supporting infrastructure and facilities.

381. Mundra N. Business Sustainability in Post COVID-19 Era by Integrated LSS-AM Model in Manufacturing: A Structural Equation Modeling / N. Mundra, R. P. Mishra // Procedia CIRP. – 2021. – Vol. 98. – P. 535–540. – URL: <https://www.sciencedirect.com/science/article/pii/S2212827121001773>

The Manufacturing sector has suffered to a great extent due to global pandemic COVID-19. This pandemic is forcing the manufacturing industries to look forward to a long term and sustainable business plan, which ensures sustainability in three different aspects i.e. Social, Economic, and Environment. This demands a never before need of higher value to the customer in lesser resources. Implementation of innovative approaches of integrated manufacturing practices i.e. Lean Six Sigma (LSS) and Agile Manufacturing (AM) are need of the hour for long-term business sustainability which can be done by ensuring waste elimination and by adjusting the dynamic changes in the demands and requirements simultaneously without compromising in quality. However, the strategic linkage between LSS and AM practices with the three pillars of sustainability has yet not been described in the literature. In this study an integrated model which consists of six constructs i.e. Managerial practices (C1), Organizational culture practices (C2), Technological practices (C3), Economical Aspects (C4), Social Aspects (C5) and Environmental Aspects (C6) was developed. The purpose of the paper is to scrutinize the relationships between the integrated LSS and AM practices and three aspects of sustainability through Structural Equation Modeling (SEM) technique.. The results of this study depict that there is a correlation exists between integrated LSS –AM practices and sustainability pillars that leads to the improvement of firms’ business competitiveness. This is one of the premier attempts to develop integrated LSS-AM practices structural model with the sustainability aspects.

382. Muñoz-Rodríguez J. R. Characteristics and Risk Factors Associated With Mortality in a Multicenter Spanish Cohort of Patients With COVID-19 Pneumonia / J. R. Muñoz-Rodríguez, F. J. Gómez-Romero, J. ManuelPérez-Ortiz [et al.] // Archivos de Bronconeumología. – 2021. – Vol. 57, № 2. – P. 34–41. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0300289621000958>

Introduction

Spain is one of the countries with the highest number of COVID-19 patients. Unfortunately, few data for regions are available.

Objectives

This study aimed to describe the characteristics and independent risk factors associated with COVID-19 mortality in Castilla-La Mancha, Spain.

Methods

Cohort and multicenter study in all 14 public hospitals of the Castilla-La Mancha Health Service. Baseline characteristics, preexisting comorbidities, symptoms, clinical features and treatments were included. Multivariable logistic regression was used to evaluate factors associated with death and Kaplan–Meier test to examine survival probability. Statistical significance was considered with p

< 0.05 (95% CI). SPSS (version 24.0 for Windows) and R 4.0.2 (R Statistics) software were used.

383. Musonia L. Polymyositis and covid-19: A morbid association (a case report) / L. Musonia, H. Ezzouine, O. Ettouki [et al.] // *Annals of Medicine and Surgery*. – 2021. – Vol. 68. – P. 102598. – URL: <https://www.sciencedirect.com/science/article/pii/S2049080121005483>

The COVID-19 pandemic and its impact on health systems had a significant effect on the management of inflammatory diseases in the long term and myopathies could be signs of COVID-19, making it difficult to diagnose the cause and effect relationship.

An unvaccinated 62-year-old female patient followed for polymyositis was tested positive for COVID-19 on polymerase chain reaction (PCR) of nasopharyngeal swab revealed by dyspnea and rhinorrhea with fever and pulmonary involvement of 75%. She had an enlarged left ventricle with complete left branch block, inaugural diabetes mellitus with ketosis, kidney dysfunction, and inflammatory syndrome. Despite the early initiation of invasive ventilation in combination with the national protocol against covid-19, the patient died on day 4 of care. The best management should anticipate comorbidities and the evolutionary profile would guide the continuation of the treatment. Polymyositis like other rheumatic diseases was associated with a very high risk of developing a severe form of COVID-19. The combination of elder age and comorbidities led to a severe form of COVID-19 and therefore to a poor prognosis. The article aimed to show the severity of the association of covid-19 with polymyositis at the comorbid stage.

384. Muthuraman Y. A review of the COVID-19 pandemic and its interaction with environmental media / Y. Muthuraman, I. Lakshminarayanan // *Environmental Challenges*. – 2021. – Vol. 3. – P. 100040. – URL: <https://www.sciencedirect.com/science/article/pii/S2667010021000196>

Viruses are biologically active parasites that only exist inside a host they are submicroscopic level. The novel coronavirus disease, or COVID-19, is generally caused by the SARS-CoV-2 virus and is comparable to severe acute respiratory syndrome (SARS). As a result of globalization, natural alterations or changes in the SARS-CoV-2 have created significant risks to human health over time. These viruses can live and survive in different ways in the atmosphere unless they reach another host body. At this stage, we will discuss the details of the transmission and detection of this deadly SARS-CoV-2 virus via certain environmental media, such as the atmosphere, water, air, sewage water, soil, temperature, relative humidity, and bioaerosol, to better understand the diffusion, survival, infection potential and diagnosis of COVID-19.

385. Nabolsi M. Nursing Faculty Experience With Online Distance Education During COVID-19 Crisis: A Qualitative Study / M. Nabolsi, F. Abu-Moghli, I. Khalaf [et al.] // Journal of Professional Nursing. – 2021. – Vol. 37, № 5. – P. 828–835. – URL: <https://www.sciencedirect.com/science/article/pii/S8755722321000831>

Background

COVID-19 pandemic influenced education and forced universities to shift from face-to-face teaching to remote online teaching. This sudden shift in educational pedagogy provoked several challenges to educators.

Purpose

The purpose of this study is to explore the first experience of nursing faculty members with online distant education (ODE) within the context of COVID-19 national curfew.

Methods

A qualitative descriptive design guided by a phenomenological approach was used utilizing purposive sampling for exploring the experiences of fifteen nursing faculty members by two focus group discussions through Zoom.

Results

Qualitative analysis, using Colaizzi's method revealed four major themes including: (1) resolving immediate reaction toward abrupt compulsory online teaching; fulfilling teaching responsibilities; managing the challenges of ODE, (2) struggling with available resources and capabilities; (3) ODE defeated geographic and time boundaries, and interrupted personal time management: yet a new learning experience; insufficiency of ODE; and (4) achieving clinical competencies and learning outcomes.

Conclusions

This study provides evidence on the importance of preparing and training faculty to embrace and sustain the mastery of ODE to ensure the success of ODE. It also emphasizes the institutional and infrastructure readiness to enhance the transition from traditional teaching and learning to ODE.

386. Naidich J. J. Recovery of outpatient imaging utilization during the first wave of the COVID-19 pandemic / J. J. Naidich, A. Boltyenkov, J. J. Wang [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 277–282. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121003296>

Objective

During the COVID-19 pandemic, Radiology practices experienced marked reductions in outpatient imaging volumes. Our purpose was to evaluate the timing, rate, and degree of recovery of outpatient imaging during the first wave of the

pandemic. We also sought to ascertain the relationship of outpatient imaging recovery to the incidence of COVID-19 cases.

Methods

Retrospective study of outpatient imaging volumes in a large healthcare system was performed from January 1, 2019-August 25, 2020. Dataset was split to compare Pre-COVID (weeks 1–9), Peak-COVID (weeks 10–15) and Recovery-COVID (weeks 16–34) periods. Chi-square and Independent-samples t-tests compared weekly outpatient imaging volumes in 2020 and 2019. Regression analyses assessed the rate of decline and recovery in Peak-COVID and Recovery-COVID periods, respectively.

Results

Total outpatient imaging volume in 2020 (weeks 1–34) was 327,738 exams, compared to 440,314 in 2019. The 2020 mean weekly imaging volumes were significantly decreased in Peak-COVID ($p = 0.0148$) and Recovery-COVID ($p = 0.0003$) periods. Mean weekly decline rate was -2580 exams/week and recovery rate was $+617$ exams/week. The 2020 Post-COVID (weeks 10–34) period had an average decrease of 36.5% ($4813.4/13,178.6$) imaging exams/week and total estimated decrease of 120,335 exams. Significant inverse correlation (-0.8338 , $p < 0.0001$) was seen between positive-tested COVID-19 cases and imaging utilization with 1-week lag during Post-COVID (weeks 10–34) period.

Conclusion

Recovery of outpatient imaging volume during the first wave of COVID-19 pandemic showed a gradual return to pre-pandemic levels over the course of 3–4 months. The rate of imaging utilization was inversely associated with new positive-tested COVID-19 cases with a 1-week lag.

387. Namikawa H. Physical health complaints among healthcare workers engaged in the care of critically ill COVID-19 patients: A single tertiary-care center prospective study from Japan / H. Namikawa, Y. Tochino, A. Okada [et al.] // Journal of Infection and Public Health. – 2021. – Vol. 14, № 19. – P. 1263–1267. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121002422>

Background

Healthcare workers (HCWs) who manage patients with the novel coronavirus disease 2019 (COVID-19) are at an increased risk and fear of contracting the infection themselves. Hospitals must reduce both the physical and mental burden of HCWs on the front lines and ensure their safety. No prospective study has focused on the physical health complaints among HCWs engaged in the care of critically ill COVID-19 patients. This study aimed to evaluate the prevalence of various physical symptoms experienced by HCWs following their

exposure to COVID-19 patients and investigate the association between occupation and the manifestation of physical symptoms among HCWs at a tertiary hospital in Japan during the current ongoing COVID-19 pandemic.

Methods

A twice-weekly questionnaire targeting HCWs who care for COVID-19 patients was performed at Osaka City University Hospital from April 30 to May 31, 2020. The demographic characteristics of the participants, frequency of exposure to at-risk care, and physical complaints were evaluated.

388. Nanda M. Review of COVID-19 epidemiology and public health response in Europe in 2020 / M. Nanda, Aashima, R. Sharma // Clinical Epidemiology and Global Health. – 2021. – Vol. 12. – P. 100882. – URL: <https://www.sciencedirect.com/science/article/pii/S2213398421001901>

Objective

This study focuses on the epidemiology of COVID-19 in Europe and investigates public health response in severely hit countries.

Methods

European Centre for Disease Prevention and Control, Oxford COVID-19 Government Response Tracker and Health System Response Monitor were referred. The relationship between stringency index and COVID-19 cases, and between speed of stringency implementation and growth of cases was examined using linear regression.

Results

The case-fatality ratio (CFR) of Europe (2.35%) was higher than the global CFR (2.2%). United Kingdom, Russia, France, Italy, Spain, and Germany together, accounted for 61.15% of cases and 65.62% of deaths in Europe. Significant relationship was observed between growth of COVID-19 cases and late substantive stringency imposed by countries. Population aged 65 and above ($r = 0.9037$, $p < 0.01$) and male population ($r = 0.8701$, $p < 0.01$) were significantly and positively correlated with COVID-19 deaths. The public health system of even big European countries encountered roadblocks, such as shortages of healthcare resources and deferral of non-COVID-19 treatments while dealing with the unprecedented pandemic.

Conclusion

Even big and richest European countries delayed the implementation of non-pharmaceutical interventions which led to rapid virus transmission. The pandemic has posed a reminder to make the public health system more resilient, as epidemics and pandemics of this nature will continue to threaten in future as well.

389. Nchanji E. B. Immediate impacts of COVID-19 pandemic on bean value chain in selected countries in sub-Saharan Africa / E. B. Nchanji, C. K. Lutomia, R. Chirwa [et al.] // Agricultural Systems. – 2021. – Vol. 188. – P. 103034. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X20308957>

Africa's agriculture and food systems were already grappling with challenges such as climate change and weather variability, pests and disease, and regional conflicts. With rising new cases of COVID 19 propelling various African governments to enforce strict restrictions of varying degrees to curb the spread. Thus, the pandemic posed unprecedented shocks on agriculture and food supply chains in Sub Saharan Africa. In this study, we use survey data collected from nine countries in Central, Eastern, and Southern, Africa to understand the immediate impact of COVID-19 on production, distribution, and consumption of common beans, and possible food security implications. Descriptive analysis of data collected from bean farmers, aggregators, processors, bean regional coordinators, and mechanization dealers reveal that COVID-19 and government restrictions had impacted the availability and cost of farm inputs and labour, distribution, and consumption of beans in Eastern and Southern Africa. The immediate impacts were dire in Southern Africa with Central Africa slightly impacted. The production and distribution challenges negatively impacted on frequency and patterns of food consumption in households in Africa. Thus, the pandemic poses a greater risk to food security and poverty in the region. Governments could play a significant role in supporting the needs of smallholder farmers, traders and other actors through provision of subsidized agricultural inputs.

390. Neise T. Rapid responding to the COVID-19 crisis: Assessing the resilience in the German restaurant and bar industry / T. Neise, P. Verfürth, M. Franz [et al.] // International Journal of Hospitality Management. – 2021. – Vol. 96. – P. 102960. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921001031>

The COVID-19 pandemic has fundamentally impacted the restaurant and bar industry. Simultaneously, this industry is already undergoing structural change. Using the concept of organisational resilience, we analyse the impact of the COVID-19 crisis on owner's assessment of resilience in the German restaurant and bar industry. Findings from an online survey with 623 owners and managers show that ex-ante business problems, and financing by loans or credit, reduce the likelihood of owners perceiving their business as resilient; while, delivery and takeaway service, ownership of property and higher age of owners, increase the likelihood of enterprise resilience. The paper contributes to understanding how restaurants and bars absorb and cope with the COVID-19 crisis. Furthermore, we make recommendation for future research on the recovery and adaptability of the business sector.

391. Neto R. P. Impact of COVID-19 Pandemic on the Sexual Function of Health Professionals From an Epicenter in Brazil / R. P. Neto, B. C. G. Nascimento, G. C. dos Anjos Silva [et al.] // Sexual Medicine. – 2021. – Vol. 9, № 5. – P. 100408. – URL: <https://www.sciencedirect.com/science/article/pii/S205011612100088X>

Introduction

The pandemic caused by the COVID-19 resulted in worldwide social isolation and leading to significant personal distress, particularly among health professionals on the front lines. Those factors' relevance and their impact on sexual function in this population have not yet been established.

Aim

To evaluate the impact of the pandemic on sexual function in healthcare professionals and medical students at a reference center in the treatment of COVID-19 in Brazil.

Methods

A cross-sectional analysis with online questionnaires about sexual function was sent to health professionals and medical students from the HC-FMUSP medical complex. The questionnaire evaluated Total Sexual and Masturbatory Frequency prior and during the pandemic, libido and sexual satisfaction changes with a detailed inquire about demographics and personal factors. An objective assessment of sexual function was also made using the validated sexual quotient questionnaires.

Main Outcome Measures

Differences in intercourse frequency, libido, and overall sexual satisfaction, in a sample of healthcare professionals particularly vulnerable to the pandemic effects.

Results

A total of 1,314 responses were available with a mean age of 37 years. Worsening of sexual satisfaction was reported by 44.5% of the participants, with the following associated factors: Lower libido, missing Nightlife, Higher Masturbatory Frequency, and isolation from the partner. Remaning sexually actively and having higher sexual frequency appear to decrease the chance of worsening sexual function. Worsening of Libido was reported by 37% and had several associated factors, including missing of Nightlife, older age, isolation from the partner among others. Being male and sexually active was associated with a smaller chance of reporting lower libido.

Conclusion

We were able to observe a sharp drop in Libido and General Sexual Satisfaction. Although an increase in pornography consumption and masturbatory frequency did occur, these factors were not associated with greater sexual satisfaction. The impact of COVID-19 on this population's sexual health is not to be underestimated and should be further studied in the follow-up of the pandemic. Neto RP, Nascimento BCG, Carvalho dos Anjos Silva G, et al. Impact of COVID-19 Pandemic on the Sexual Function of Health Professionals From an Epicenter in Brazil. *Sex Med* 2021;9:100408

392. Niguét J. P. Neurophysiological findings and their prognostic value in critical COVID-19 patients: An observational study / J. P. Niguét, R. Tortuyaux, B. Garcia [et al.] // *Clinical Neurophysiology*. – 2021. – Vol. 132, № 5. – P. 1009–1017. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1388245721000705>

Objective

To describe EEG patterns of critical Coronavirus Disease 2019 (COVID-19) patients with suspicion of encephalopathy and test their association with clinical outcome.

Methods

EEG after discontinuation of sedation in all patients, and somesthetic evoked potentials and brainstem auditive evoked potentials when EEG did not show reactivity, were performed. Clinical outcome was assessed at day 7 and 14 after neurophysiological explorations.

Results

33 patients were included for analysis. We found slowed background activity in 85% of cases, unreactive activity in 42% of cases, low-voltage activity in 21% of cases and rhythmic or periodic delta waves in 61% of cases. EEG epileptic events were never recorded. Clinical outcome at day 14 was associated with unreactive background activity and tended to be associated with rhythmic or periodic delta waves and with low-voltage activity. Results of multimodal evoked potentials were in favor of a preservation of central nervous system somatosensory and auditory functions.

393. Noori A. Q. The impact of COVID-19 pandemic on students' learning in higher education in Afghanistan / A. Q. Noori // *Heliyon*. – 2021. – Vol. 7, № 10. – P. e08113. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021022167>

COVID-19 pandemic has been a global serious issue that adversely impacted humans' life. This study aimed to investigate the impact of the COVID-19 pandemic on students' learning in higher education in Afghanistan. A mixed method research design was employed in conducting the study. The quantitative data were gathered using an online survey questionnaire from 592 randomly

selected students and 6 semi-structured interviews were conducted to collect qualitative data. Statistical Package for Social Sciences (SPSS) was used to analyse the quantitative data and the qualitative data were coded and analysed thematically. The quantitative finding showed that the students did not experience a constant online teaching and learning during the COVID-19 pandemic. It also revealed that the COVID-19 pandemic devastatingly affected students' learning in higher education in Afghanistan. In addition, the qualitative finding revealed that the students had problems with Internet and technological facilities in their learning and they suggested that the Ministry of Higher Education should design and introduce a practical online platform which will be free and accessible with a poor Internet connection because some of the students live in areas where the Internet speed is very slow. The finding of the study will help educational managers and higher education leaders to review and adopt policies for teaching and learning in emergency cases. It will also help lecturers to design a proper plan and improve their instruction.

394. Norouzi N. When pandemics impact economies and climate change: Exploring the impacts of COVID-19 on oil and electricity demand in China / N. Norouzi, G. Z. de Rubens, S. Choupanpiesheh [et al.] // *Energy Research & Social Science*. – 2020. – Vol. 68. – P. 101654. – URL: <https://www.sciencedirect.com/science/article/pii/S2214629620302292>

Despite all the scientific and technological developments in the past one hundred years, biologic issues such as pandemics are a constant threat to society. While one of the aspects of a pandemic is the loss of human life, the outbreak has multi-dimensional impacts across regional and global societies. In this paper, a comparative regressive and neural network model is developed to analyze the impacts of COVID-19 (coronavirus) on the electricity and petroleum demand in China. The environmental analysis shows that the epidemic severeness significantly affects the electricity and the petroleum demand, both directly and indirectly. The outputs of the model stated that the elasticity of petroleum and electricity demand toward the population of the infected people is -0.1% and -0.65% , respectively. The mentioned results show that pandemic status has a significant impact on energy demand, and also its impacts can be tracked into every corner of human society.

395. Nottmeyer N. Influence of temperature, and of relative and absolute humidity on COVID-19 incidence in England - A multi-city time-series study / Luise N. Nottmeyer, F. Sera // *Environmental Research*. – 2021. – Vol. 196. – P. 110977. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0013935121002711>

Background

SARS-CoV-2 caused the COVID-19 pandemic in 2020. The virus is likely to show seasonal dynamics in European climates as other respiratory viruses and

coronaviruses do. Analysing the association with meteorological factors might be helpful to anticipate how cases will develop with changing seasons.

Methods

Routinely measured ambient daily mean temperature, absolute humidity, and relative humidity were the explanatory variables of this analysis. Test-positive COVID-19 cases represented the outcome variable. The analysis included 54 English cities. A two-stage meta-regression was conducted. At the first stage, we used a quasi-Poisson generalized linear model including distributed lag non-linear elements. Thereby, we investigate the explanatory variables' non-linear effects as well as the non-linear effects across lags.

Results

This study found a non-linear association of COVID-19 cases with temperature. At 11.9°C there was 1.62-times (95%-CI: 1.44; 1.81) the risk of cases compared to the temperature-level with the smallest risk (21.8°C). Absolute humidity exhibited a 1.61-times (95%-CI: 1.41; 1.83) elevated risk at 6.6 g/m³ compared to the centering at 15.1 g/m³. When adjusting for temperature RH shows a 1.41-fold increase in risk of COVID-19 incidence (95%-CI: 1.09; 1.81) at 60.7% in respect to 87.6%.

Conclusion

The analysis suggests that in England meteorological variables likely influence COVID-19 case development. These results reinforce the importance of non-pharmaceutical interventions (e.g., social distancing and mask use) during all seasons, especially with cold and dry weather conditions.

396. Nourazari S. Decreased hospital admissions through emergency departments during the COVID-19 pandemic / S. Nourazari, S. R. Davis, R. Granovsky [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 42, № 1. – P. 203–210. – URL: <https://www.sciencedirect.com/science/article/pii/S073567572031038X>

Study objective: Emergency Department (ED) visits decreased significantly in the United States during the COVID19 pandemic. A troubling proportion of this decrease was among patients who typically would have been admitted to the hospital, suggesting substantial deferment of care. We sought to describe and characterize the impact of COVID-19 on hospital admissions through EDs, with a specific focus on diagnosis group, age, gender, and insurance coverage. Methods: We conducted a retrospective, observational study of aggregated third-party, anonymized ED patient data.

397. Núñez-Gil I. J. Health Outcome Predictive Evaluation for COVID 19 international registry (HOPE COVID-19), rationale and design / I. J. Núñez-Gil, V. Estrada, C. Fernández-Pérez [et al.] // Contemporary Clinical

The disease produced by the new coronavirus known as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), named COVID-19 (Coronavirus Disease-2019) has recently been classified as a pandemic by the World Health Organization (WHO). However, scarce clinical data is available and generally limited to the Chinese population due to the first cases were identified in Wuhan (Hubei, China).

This article describes the rationale and design of the HOPE COVID-19 (Health Outcome Predictive Evaluation for COVID 19) registry (ClinicalTrials.gov Identifier: NCT04334291). With an ambispective cohort design, eligible patients are those discharged, deceased or alive, from any hospital center with a confirmed diagnosis or a COVID-19 high suspicion. With a current recruitment of more than 7000 cases, in 46 hospitals in 8 countries, since it is not possible to estimate the sample size based on literature reports, the investigators will try to get the maximum numbers of patients possible. The study primary objective is all cause mortality and aims to characterize the clinical profile of patients infected in order to develop a prognostic clinical score allowing, rapid logistic decision making. As secondary objectives, the analysis of other clinical events, the risk-adjusted influence of treatments and previous comorbidities of patients infected with the disease will be performed.

The results of HOPE COVID-19 will contribute to a better understanding of this condition. We aim to describe the management of this condition as well as the outcomes in relation to the therapy chosen, in order to gain insight into improving patient care in the coming months.

398. Núñez-Gil I. J. Renin-angiotensin system inhibitors effect before and during hospitalization in COVID-19 outcomes: Final analysis of the international HOPE COVID-19 (Health Outcome Predictive Evaluation for COVID-19) registry / I. J. Núñez-Gil, I. Olier, G. Feltes [et al.] // American Heart Journal. – 2021. – Vol. 237. – P. 104–115. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0002870321000892>

The use of Renin-Angiotensin system inhibitors (RASi) in patients with coronavirus disease 2019 (COVID-19) has been questioned because both share a target receptor site.

Methods

HOPE-COVID-19 (NCT04334291) is an international investigator-initiated registry. Patients are eligible when discharged after an in-hospital stay with COVID-19, dead or alive. Here, we analyze the impact of previous and continued

in-hospital treatment with RASi in all-cause mortality and the development of in-stay complications.

Results

We included 6503 patients, over 18 years, from Spain and Italy with data on their RASi status. Of those, 36.8% were receiving any RASi before admission. RASi patients were older, more frequently male, with more comorbidities and frailer. Their probability of death and ICU admission was higher. However, after adjustment, these differences disappeared. Regarding RASi in-hospital use, those who continued the treatment were younger, with balanced comorbidities but with less severe COVID19. Raw mortality and secondary events were less frequent in RASi. After adjustment, patients receiving RASi still presented significantly better outcomes, with less mortality, ICU admissions, respiratory insufficiency, need for mechanical ventilation or prone, sepsis, SIRS and renal failure ($p < 0.05$ for all). However, we did not find differences regarding the hospital use of RASi and the development of heart failure.

Conclusion

RASi historic use, at admission, is not related to an adjusted worse prognosis in hospitalized COVID-19 patients, although it points out a high-risk population. In this setting, the in-hospital prescription of RASi is associated with improved survival and fewer short-term complications.

399. Odayar J. The epidemiology and pathogenesis of SARS-CoV-2 infection in pregnancy: More questions than answer / J. Odayar, L. Myer, T. R. Malaba // EClinicalMedicine. – 2020. – Vol. 26. – P. 100534. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302789>

With the spread of the global COVID-19 pandemic, insights into the epidemiology and pathophysiology of SARS-CoV-2 are expanding rapidly. In the emerging body of research on this novel coronavirus, pregnant women – who are more susceptible to infections compared to non-pregnant women [1] – have received relatively little attention. The normal physiological adaptations of pregnancy, particularly of the immune and cardiopulmonary systems, can predispose women to the respiratory complications of other infections such as influenza. Limited data from previous coronavirus outbreaks suggest potentially higher mortality among pregnant women with severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) compared to non-pregnant women [2]. Outcomes in pregnant women with SARS-CoV-2 infection appear less severe compared to SARS and MERS [3] though there is some suggestion that the incidence of adverse pregnancy outcomes, particularly preterm birth (PTB), may be increased in women with SARS-CoV-2 [4].

400. Oh D.-Y. Trends in respiratory virus circulation following COVID-19-targeted nonpharmaceutical interventions in Germany, January - September 2020: Analysis of national surveillance data / D.-Y. Oh, S. Buda,

Background

During the initial COVID-19 response, Germany's Federal Government implemented several nonpharmaceutical interventions (NPIs) that were instrumental in suppressing early exponential spread of SARS-CoV-2. NPI effect on the transmission of other respiratory viruses has not been examined at the national level thus far.

Methods

Upper respiratory tract specimens from 3580 patients with acute respiratory infection (ARI), collected within the nationwide German ARI Sentinel, underwent RT-PCR diagnostics for multiple respiratory viruses. The observation period (weeks 1-38 of 2020) included the time before, during and after a far-reaching contact ban. Detection rates for different viruses were compared to 2017-2019 sentinel data (15350 samples; week 1-38, 11823 samples).

Findings

The March 2020 contact ban, which was followed by a mask mandate, was associated with an unprecedented and sustained decline of multiple respiratory viruses. Among these, rhinovirus was the single agent that resurged to levels equalling those of previous years. Rhinovirus rebound was first observed in children, after schools and daycares had reopened. By contrast, other nonenveloped viruses (i.e. gastroenteritis viruses reported at the national level) suppressed after the shutdown did not rebound.

Interpretation

Contact restrictions with a subsequent mask mandate in spring may substantially reduce respiratory virus circulation. This reduction appears sustained for most viruses, indicating that the activity of influenza and other respiratory viruses during the subsequent winter season might be low, whereas rhinovirus resurgence, potentially driven by transmission in educational institutions in a setting of waning population immunity, might signal predominance of rhinovirus-related ARIs.

401. Oh J. National Response to COVID-19 in the Republic of Korea and Lessons Learned for Other Countries / J. Oh, J. K. Lee, H. L. Ratcliffe [et al.] // Health Systems & Reform. – 2020. – Vol. 6, № 1. – P. UNSP e1753464. – URL: <https://www.tandfonline.com/doi/full/10.1080/23288604.2020.1753464>

In the first two months of the COVID-19 pandemic, the Republic of Korea (South Korea) had the second highest number of cases globally yet was able to dramatically lower the incidence of new cases and sustain a low mortality rate,

making it a promising example of strong national response. We describe the main strategies undertaken and selected facilitators and challenges in order to identify transferable lessons for other countries working to control the spread and impact of COVID-19.

402. Oksanen A. COVID-19 crisis and digital stressors at work: A longitudinal study on the Finnish working population / A. Oksanen, R. Oksa, N. Savela [et al.] // *Computers in Human Behavior*. – 2021. – Vol. 122. – P. 106853. – URL: <https://www.sciencedirect.com/science/article/pii/S074756322100176X>

The global crisis caused by the outbreak of a novel coronavirus and the associated disease (COVID-19) has changed working conditions due to social-distancing policies. Many workers started to use new technologies at work, including social media applications. In this longitudinal study, we investigated the potential stress effects of social media communication (SMC) at work. Based on our integrative theoretical model, we expected that SMC at work would burden some workers, but those who were accustomed to SMC at work would be better off when the crisis started. We collected a nationally representative sample of Finnish workers before (N = 1308) and during (N = 1081) the COVID-19 crisis. Outcome measures included technostress and work exhaustion. Multilevel linear mixed-effects regression models investigated formal and informal SMC at work. Covariates included cyberbullying at work, social media usage, personality, occupational status, and sociodemographic factors. Results showed that formal SMC increased and predicted higher technostress. However, technostress and work exhaustion decreased among workers already accustomed to using SMC at work before the crisis. The results indicate a disparity in workers' resilience during remote work and highlight a need for organizational level support.

403. Olivotto S. Acute encephalitis in pediatric multisystem inflammatory syndrome associated with COVID-19 / S. Olivotto, E. Basso, R. Lavatelli [et al.] // *European Journal of Paediatric Neurology*. – 2021. – Vol. 34. – P. 84–90. – URL: <https://www.sciencedirect.com/science/article/pii/S109037982100146X>

Objective

To characterize neurological involvement in multisystem inflammatory syndrome in children (MIS-C) related to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

Methods

Retrospective analysis of the clinical, electroencephalographic, CSF and neuroradiological parameters recorded in seven children (3 males, aged 3–10 years) affected by MIS-C with acute neurological involvement.

Results

All cases presented acute encephalopathy with drowsiness, irritability, mood deflection and diffuse EEG slowing with periodic posterior complexes. Focal neurological signs, normal brain MRI and CSF, were present in four patients; these patients received intravenous methylprednisolone at 30 mg/kg/day for 3 days. In all cases, the clinical picture rapidly improved in the first three days, and all neurological symptoms and EEG abnormalities disappeared within 10 and 30 days respectively. The severity and duration of the EEG abnormalities was proportional to the extent of the neurological involvement.

Conclusions

Patients with MIS-C may present acute encephalitis characterized by rapid-onset encephalopathy and EEG abnormalities (slow wave activity and/or epileptic abnormalities), in some cases associated with focal neurological signs that disappear with immunomodulatory therapy. The detection through neurological evaluation of sentinel neurological signs and distinctive EEG patterns documentable at disease onset will allow timely diagnosis and treatment of these cases.

404. Omar D. I. Attitudes and intentions towards COVID-19 vaccines and associated factors among Egyptian adults / D. I. Omar, B. M. Hani // Journal of Infection and Public Health. – 2021. – Vol. 14, № 10. – P. 1481–1488. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121001854>

Background

Herd immunity through vaccination is the target of public health interventions against COVID-19, but vaccine refusal or hesitancy is one of the global threats that make achievement of community immunity very difficult. The aim of this study was to determine negative attitudes and intentions and their predictors towards COVID-19 vaccines.

Methods

This was cross sectional survey, that targeted 1011 Egyptians aged 18 years and above, from 24 governorates, during the period from 7 January 2021, to 30 March 2021. Using a convenient sampling technique, the data were collected through an online self-administered, structured questionnaire, which was composed of two main sections, that involved sociodemographic and health related factors, intentions, and attitudes towards COVID-19 vaccines.

Results

The mean age of participants was 29.35 ± 10.78 years, (16.6 %) of them had COVID-19. (54%) of respondents, reported COVID-19 vaccine hesitancy and 21% of them reported vaccine non-acceptance while (27.1%) of participants preferred receiving Pfizer vaccine. (51.8%) of the respondents expressed strong worries

about unforeseen effects of the vaccine which was associated with younger age groups, married, females, absence of history of allergy to food or drugs, perceived susceptibility to COVID 19 and never having flu vaccination. Vaccine hesitancy was associated with female sex, urban residence, university/post graduate, married respondents, those never had flu vaccine, and those did not have confidence in the ability of health system to control the epidemic. Female sex, urban residence and having concerns about unforeseen effects were predictors for vaccine hesitancy and vaccine non-acceptance.

Conclusion

The observed high level of worries about unforeseen effects of COVID-19 vaccines and widespread vaccine hesitancy amongst Egyptians and its predictors should be considered during implementation of public health intervention campaigns to change negative attitudes and improve acceptance and uptake of COVID-19 vaccines in Egypt.

405. Omrani H. COVID-19 in Europe: Dataset at a sub-national level / H. Omrani, M. Modroiu, J. Lenzi // *Data in Brief.* – 2021. – Vol. 35. – P. 106939. – URL: <https://www.sciencedirect.com/science/article/pii/S2352340921002237>

The COVID-19 pandemic has hit humanity, straining health care systems, economies, and governments worldwide. In one of the responses to the pandemic, a big global effort has been mounted to collect, analyze, and make data publicly available. However, many of the existing COVID-19 public datasets are (i) aggregated at country level, and (ii) tend not to bring the COVID-19-specific data coupled with socio-demographic, economic, public policy, health, pollution and environmental factors, all of which may be key elements to study the transmission of the SARS-CoV-2 and its severity. To aid the evaluation of the determinants and impact of the COVID-19 pandemic at a large scale, we present here a new dataset with socio-demographic, economic, public policy, health, pollution and environmental factors for the European Union at the small regions level (NUTS3). The database is freely accessible at <http://dx.doi.org/10.17632/2ghxnrkr9p.4>. This dataset can help to monitor the COVID-19 mortality and infections at the sub-national level and enable analysis that may inform future policymaking.

406. Onwumere J. COVID-19 and UK family carers: policy implications / J. Onwumere, C. Creswell, G. Livingston [et al.] // *The Lancet Psychiatry.* – 2021. – Vol. 8, № 10. – P. 929–936. – URL: <https://www.sciencedirect.com/science/article/pii/S2215036621002066>

Summary

Informal (unpaid) carers are an integral part of all societies and the health and social care systems in the UK depend on them. Despite the valuable contributions and key worker status of informal carers, their lived experiences,

wellbeing, and needs have been neglected during the COVID-19 pandemic. In this Health Policy, we bring together a broad range of clinicians, researchers, and people with lived experience as informal carers to share their thoughts on the impact of the COVID-19 pandemic on UK carers, many of whom have felt abandoned as services closed. We focus on the carers of children and young people and adults and older adults with mental health diagnoses, and carers of people with intellectual disability or neurodevelopmental conditions across different care settings over the lifespan. We provide policy recommendations with the aim of improving outcomes for all carers.

407. O'Shea A. Who is more likely to ignore experts' advice related to COVID-19? / B. A. O'Shea, M. Ueda // Preventive Medicine Reports. – 2021. – Vol. 23. – P. 101470. – URL: <https://www.sciencedirect.com/science/article/pii/S2211335521001601>

Failing to adhere to COVID-19 experts' advice could have devastating consequences for individuals and communities. Here we determine which demographic factors can impact trust in COVID-19 experts. Participants consisted of more than 1875 online volunteers, primarily from the U.S. Survey data were collected before and after the first peak of the COVID-19 outbreak in the U.S. (28th of March–15th of May 2020). We consistently find that participants with a lower perceived socio-economic status, social conservatives, individualists, and participants who are less worried about COVID-19 are significantly more likely to support individuals who ignore the government's, scientists', medical professionals' COVID-19 advice. Regarding race, Black participants consistently (and Hispanics to a lesser degree) were more likely to support individuals who ignore the three expert groups relative to Whites. All these findings generalized to weaker trust towards public policy decision experts. Asian and other racial groups' trust was consistently lower than Whites, but primarily numerically, not statistically. Age and gender showed weak or inconsistent results respectively. We provide an enhanced understanding of the demographic factors that can result in individuals/groups ignoring COVID-19 experts. Lack of compliance could increase the transmission risks of the virus. Therefore, non-partisan campaigns that target individuals/groups who distrust COVID-19 experts will likely reduce COVID-19 related deaths. Increasing expert representatives' racial diversity may also increase trust among racial minorities.

408. Özden A. T. Analyzing the service quality priorities in cargo transportation before and during the Covid-19 outbreak / A. T. Özden, E. Celik // Transport Policy. – 2021. – Vol. 108. – P. 34–46. – URL: <https://www.sciencedirect.com/science/article/pii/S0967070X21001281>

The aim of this study is to find out the most critical service quality priorities in cargo transportation before the Covid-19 and during the Covid-19 outbreak by applying the Fuzzy Importance-Performance-Impact Analysis (FIPIA) method. At

the same time, it is also aimed to decide the best resource allocation in cargo services and to show the differences between both periods. This is the first study using the FIPIA method in determining the service quality priorities of consumers using cargo service. A total of 723 participants responded to the questionnaire consisting of 341 participants before the Covid-19 and 382 participants during the Covid-19 period. This study also examined whether there is a relationship between the sectors most frequently used in cargo service in both periods and service quality priorities and found the differences in consumers' sectors most frequently. According to data found in the study, the application of promotion and courteousness, and politeness of the personnel had the highest value in all service quality priorities before the Covid-19 outbreak. According to results, “evaluation of customer complaints in a short time” and “fast delivery” had the highest value in all service quality priorities after the Covid-19 outbreak. Evaluation of customer complaints in a short time and fast delivery had high importance values while performance and impact had relatively low importance, presenting a need to concentrate on these three-service qualities.

409. Ottinger M. E. Virtual medical student education and recruitment during the COVID-19 pandemic / M. E. Ottinger, L. J. Farley, J. P. Harding // *Seminars in Vascular Surgery*. – 2021. – Vol. 34, № 3. – P. 132–138. – URL: <https://www.sciencedirect.com/science/article/pii/S0895796721000417>

Due to the immediate need for social distancing, as well as widespread disruption in clinical practices, brought on by the novel severe acute respiratory syndrome coronavirus 2 (COVID-19) pandemic, medical student education rapidly shifted to a virtual format, which resulted in a variety of innovative and remotely accessible practices to address new restrictions on face-to-face education. Educators approached curriculum design seeking to replicate as much of the in-person experience as possible, and were faced with overcoming the challenges of replacing the innately hands-on nature of surgery with virtual operative and skills experiences. Restrictions on in-person visiting electives expedited the role of virtual education as a notable opportunity for medical student education and recruitment, with a variety of approaches to engaging undergraduate medical learners, including the use of live-streaming operative cases, virtual didactic curricula, and a rise in podcasts; web-based conferences; and virtual journal clubs. In addition to education, virtual outreach to medical students has become an essential tool in trainee recruitment and selection, and ongoing application of novel educational platforms will allow for new opportunities in multi-institutional collaboration and exchange with a multitude of benefits to future vascular surgery trainees. Our aim was to outline the resources and practices used to virtually teach and recruit medical students and the benefits of virtual rotations to the program and students.

410. Oyedotun T. D. Sudden change of pedagogy in education driven by COVID-19: Perspectives and evaluation from a developing country /

T. D. Oyedotun // *Seminars in Vascular Surgery*. – 2021. – Vol. 2. – P. 100029. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X20300186>

The COVID-19 pandemic has forced sudden transformation in many sectors of the global community, turning the world upside down. Everything has been impacted, not excluding the education sector, which has experienced some unforeseen changes in many parts of the world. The sudden transition to online pedagogy as a result of COVID-19 in developing countries has exposed some inequalities and challenges, as well as benefits. These challenges and inequalities have now become the new realities in the educational sector of developing countries. Suggestions are provided here so that the challenges presented by the new approach can be mitigated while we come to terms with the disruptions introduced by COVID-19 to our education sector.

411. Padhan R. The economics of COVID-19 pandemic: A survey / R. Padhan, K. P. Prabheesh // *Economic Analysis and Policy*. – 2021. – Vol. 70. – P. 220–237. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0313592621000321>

Through a survey of the literature on the economics of the coronavirus (COVID-19) pandemic, this study explores the effects of the pandemic and proposes potential policy directions to mitigate its effects. Our survey reveals that adverse economic effects have been observed due to the COVID-19 pandemic in addition to fatalities. Furthermore, the survey indicates the need for greater coordination at national and international levels. This study concludes by suggesting coordination among monetary, macroprudential, and fiscal policies (trio) to mitigate the adverse economic effects of COVID-19. Finally, this study explores potential directions for future research.

412. Pal K. B. Education system of Nepal: impacts and future perspectives of COVID-19 pandemic / K. B. Pal, B. B. Basnet, R. R. Pant [et al.] // *Heliyon*. – 2021. – Vol. 7, № 9. – P. e08014. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021021174>

The academic sectors are badly affected by the COVID-19 pandemic globally. The studies regarding the implications of COVID-19 in education in Nepal were minimal, thus, this paper aims to highlight the impacts of the pandemic on the education sector of Nepal. It is revealed that the Nepalese academia has been facing problems due to lack of adequate and appropriate sustainable infrastructure for the online system, including skilled human resources. In addition, limited internet facilities in remote and rural areas were the other challenging tasks for virtual academic activities. Therefore, the concerned stakeholders should provide necessary services and appropriate strategies for virtual means of the education system to compensate the repercussion caused by the pandemic. This study could be helpful to identify the critical needs emerged due to the pandemic at

present and in future and also contribute to adopt appropriate policy for the revival of educational institutions.

413. Pamidimukkala A. Impact of Covid-19 on field and office workforce in construction industry / A. Pamidimukkala, S. Kermanshachi // Project Leadership and Society. – 2021. – Vol. 2. – P. 100018. – URL: <https://www.sciencedirect.com/science/article/pii/S2666721521000120>

The COVID-19 outbreak is the greatest global health crisis in many years. It has had a dramatic effect on workforces and workplaces all around the world, as it has spawned a massive change in the working atmosphere and raised the level of employees' concerns about their mental health and physical wellbeing. The construction industry has been significantly affected by the COVID-19 pandemic and has been challenged to improve the safety and wellbeing of its workforce. The objectives of this study are to identify the health and safety issues that construction workers have encountered during the pandemic and to recommend management strategies to combat them. A thorough literature search on recently published literature, industry experiences, reports, and other related documents was performed to collect and categorize the required data. Seventeen COVID-19 challenges were identified and classified into five categories, and the results revealed that the lack of a safe environment in the workplace, heavy workloads, home situations, and concerns about job stability often contribute to anxiety, depression, and even suicide. Eleven strategies were identified to overcome these challenges, and the results demonstrated that redefining worksite safety by placing signs, ensuring a safe distance between workers, providing sanitizers and washing stations in the fields, and utilizing effective technologies would enhance project productivity while keeping workers safe. The findings of this study will help the project managers and authorities in the construction industry understand the challenges of the pandemic and adopt effective strategies that will improve the health and safety of their workforce.

414. Pandey P. A novel fractional mathematical model of COVID-19 epidemic considering quarantine and latent time / P. Pandey, Y.-M. Chu, J. F. Gómez-Aguilar [et al.] // Results in Physics. – 2021. – Vol. 26. – P. 104286. – URL: <https://www.sciencedirect.com/science/article/pii/S2211379721004204>

In this paper, we investigate the fractional epidemic mathematical model and dynamics of COVID-19. The Wuhan city of China is considered as the origin of the corona virus. The novel corona virus is continuously spread its range of effectiveness in nearly all corners of the world. Here we analyze that under what parameters and conditions it is possible to slow the speed of spreading of corona virus. We formulate a transmission dynamical model where it is assumed that some portion of the people generates the infections, which is affected by the quarantine and latent time. We study the effect of various parameters of corona virus through the fractional mathematical model. The Laguerre collocation technique is used to

deal with the concerned mathematical model numerically. In order to deal with the dynamics of the novel corona virus we collect the experimental data from 15th–21st April, 2020 of Maharashtra state, India. We analyze the effect of various parameters on the numerical solutions by graphical comparison for fractional order as well as integer order. The pictorial presentation of the variation of different parameters used in model are depicted for upper and lower solution both.

415. Panpradist N. Corrigendum to ‘Simpler and faster Covid-19 testing: Strategies to streamline SARS-CoV-2 molecular assays’ / N. Panpradist, W. Qin, P. S. Ruth [et al.] // EBioMedicine. – 2021. – Vol. 64. – P. 103236. – URL: <https://www.sciencedirect.com/science/article/pii/S2352396421000293>

The authors wish to correct an error in the Research in Context section of the manuscript, which incorrectly stated that the Abbott IDNow® test uses reverse transcription recombinase polymerase amplification (RT-RPA) chemistry and cited an article describing a different test. The corrected statement is “A new point-of-care test, Abbott IDNow®, utilizes isothermal nucleic acid amplification technology and can provide positive results as fast as 13 min (1 patient specimen/machine run). However, high false negative rates were observed in several studies [1,2].” The original reference 2 is omitted since it applied to a different test. The authors regret any confusion caused, and appreciate the opportunity to correct this mistake.

416. Panpradist N. Simpler and faster Covid-19 testing: Strategies to streamline SARS-CoV-2 molecular assays / N. Panpradist, Q. Wang, P. S. Ruth [et al.] // EBioMedicine. – 2021. – Vol. 66. – P. 103296. – URL: <https://www.sciencedirect.com/science/article/pii/S235239642100089X>

Background

Detection of SARS-CoV-2 infections is important for treatment, isolation of infected and exposed individuals, and contact tracing. RT-qPCR is the “gold-standard” method to sensitively detect SARS-CoV-2 RNA, but most laboratory-developed RT-qPCR assays involve complex steps. Here, we aimed to simplify RT-qPCR assays by streamlining reaction setup, eliminating RNA extraction, and proposing reduced-cost detection workflows that avoid the need for expensive qPCR instruments.

Method

A low-cost RT-PCR based “kit” was developed for faster turnaround than the CDC developed protocol. We demonstrated three detection workflows: two that can be deployed in laboratories conducting assays of variable complexity, and one that could be simple enough for point-of-care. Analytical sensitivity was assessed using SARS-CoV-2 RNA spiked in simulated nasal matrix. Clinical performance was evaluated using contrived human nasal matrix (n = 41) and

clinical nasal specimens collected from individuals with respiratory symptoms (n = 110).

Finding

The analytical sensitivity of the lyophilised RT-PCR was 10 copies/reaction using purified SARS-CoV-2 RNA, and 20 copies/reaction when using direct lysate in simulated nasal matrix. Evaluation of assay performance on contrived human matrix showed 96.7–100% specificity and 100% sensitivity at ≥ 20 RNA copies. A head-to-head comparison with the standard CDC protocol on clinical specimens showed 83.8–94.6% sensitivity and 96.8–100% specificity. We found 3.6% indeterminate samples (undetected human control), lower than 8.1% with the standard protocol.

Interpretation

This preliminary work should support laboratories or commercial entities to develop and expand access to Covid-19 testing. Software guidance development for this assay is ongoing to enable implementation in other settings.

417. Paolucci S. EBV DNA increase in COVID-19 patients with impaired lymphocyte subpopulation count / S. Paolucci, I. Cassaniti, F. Baldanti [et al.] // International Journal of Infectious Diseases. – 2021. – Vol. 104. – P. 315–319. URL: <https://www.sciencedirect.com/science/article/pii/S1201971220325753>

Objectives

The immunologic profile and opportunistic viral DNA increase were monitored in Italian patients with COVID-19 in order to identify markers of disease severity.

Methods

A total of 104 patients infected with SARS-CoV-2 were evaluated in the study. Of them, 42/104 (40.4%) were hospitalized in an intensive care unit (ICU) and 62/104 (59.6%) in a sub-intensive care unit (SICU). Human cytomegalovirus (HCMV) and Epstein-Barr virus (EBV), Parvovirus B19 and Human Herpesvirus 6 virus reactivations were determined by real-time PCR, and lymphocyte subpopulation counts were determined by flow cytometry.

Results

Among opportunistic viruses, only EBV was consistently detected. EBV DNA was observed in 40/42 (95.2%) of the ICU patients and in 51/61 (83.6%) of the SICU patients. Comparing the two groups of patients, the EBV DNA median level among ICU patients was significantly higher than that observed in SICU patients. In parallel, a significant reduction of CD8 T cell and NK count in ICU patients as compared with SICU patients was observed ($p < 0.05$). In contrast, B cell count was significantly increased in ICU patients ($p = 0.0172$).

Conclusions

A correlation between reduced CD8+ T cells and NK counts, EBV DNA levels and COVID-19 severity was observed. Other opportunistic viral infections were not observed. The relationship between EBV load and COVID-19 severity should be further evaluated in longitudinal studies.

418. Parida B. R. Impact of COVID-19 induced lockdown on land surface temperature, aerosol, and urban heat in Europe and North America / B. R. Parida, S. Bar, D. Kaskaoutis [et al.] // Sustainable Cities and Society. – 2021. – Vol. 75. – P. 103336. – URL: <https://www.sciencedirect.com/science/article/pii/S2210670721006120>

The outbreak of SARS CoV-2 (COVID-19) has posed a serious threat to human beings, society, and economic activities all over the world. Worldwide rigorous containment measures for limiting the spread of the virus have several beneficial environmental implications due to decreased anthropogenic emissions and air pollutants, which provide a unique opportunity to understand and quantify the human impact on atmospheric environment. In the present study, the associated changes in Land Surface Temperature (LST), aerosol, and atmospheric water vapor content were investigated over highly COVID-19 impacted areas, namely, Europe and North America. The key findings revealed a large-scale negative standardized LST anomaly during nighttime across Europe (-0.11 °C to -2.6 °C), USA (-0.70 °C) and Canada (-0.27 °C) in March–May of the pandemic year 2020 compared to the mean of 2015–2019, which can be partly ascribed to the lockdown effect. The reduced LST was corroborated with the negative anomaly of air temperature measured at meteorological stations (i.e. -0.46 °C to -0.96 °C). A larger decrease in nighttime LST was also seen in urban areas (by ~ 1 – 2 °C) compared to rural landscapes, which suggests a weakness of the urban heat island effect during the lockdown period due to large decrease in absorbing aerosols and air pollutants. On the contrary, daytime LST increased over most parts of Europe due to less attenuation of solar radiation by atmospheric aerosols. Synoptic meteorological variability and several surface-related factors may mask these changes and significantly affect the variations in LST, aerosols and water vapor content. The changes in LST may be a temporary phenomenon during the lockdown but provides an excellent opportunity to investigate the effects of various forcing controlling factors in urban microclimate and a strong evidence base for potential environmental benefits through urban planning and policy implementation.

419. Patel A. Safety and Efficacy of Tocilizumab in the Treatment of Severe Acute Respiratory Syndrome Coronavirus-2 Pneumonia: A Retrospective Cohort Study / A. Patel, K. Shah, M. Dharsandiya [et al.] // Indian Journal of Medical Microbiology. – 2020. – Vol. 38, № 1. – P. 116–122. – URL: <https://www.sciencedirect.com/science/article/pii/S0255085720314444>

Background: Cytokine release storm (CRS) in severe acute respiratory syndrome coronavirus-2 (SARS CoV-2) is thought to be the cause for organ damage and death which is independent of the actual viral burden. Tocilizumab (TCZ), an interleukin-6 receptor antagonist, is approved for the treatment of CRS. We describe the efficacy and safety of TCZ in SARS CoV-2 pneumonia. **Methods:** This retrospective study was conducted at a tertiary care hospital from April 20 2020 to May 21 2020. The primary endpoint was the cumulative incidence of a composite of either need for admission to the intensive care unit (ICU) with invasive mechanical ventilation or death. Safety outcomes included an increase in liver transaminases and/or evidence of infection. **Results:** A total of 20 patients received TCZ during the study period. The median age was 54 years (95% confidence interval [CI] 47–63). About 85% of the patients were male. Nearly 70% of the patients had at least one comorbidity. About 55% required ICU admission. The median duration of ICU stay was 11 days (95% CI: 3–13 days). The cumulative incidence of the requirement for mechanical ventilation, clinical improvement and mortality was 11% (95% CI: 0.03%–1%), 74% (95% CI 37%–89%) and 25% (95% CI: 11%–63%), respectively. There was no difference in outcomes according to age, gender or computed tomography severity score. Asymptomatic transaminitis was the most common drug reaction (55%), and one patient developed bacteraemia. **Conclusions:** TCZ is likely a safe and effective modality of treatment for improving clinical and laboratory parameters of SARS CoV-2 patients with a reduction in ICU stay and ventilatory care need.

420. Patel M. S. COVID-19 and the moral imagination / M. S. Patel, C. B. Phillips // The Lancet. – 2021. – Vol. 397, № 10275. – P. 648–650. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621001513>

As Arundhati Roy has highlighted, “Historically, pandemics have forced humans to break with the past and imagine their world anew. This one [COVID-19] is no different. It is a portal, a gateway between one world and the next. We can choose to walk through it, dragging the carcasses of our prejudice...and dead ideas...Or we can walk through lightly, with little luggage, ready to imagine another world. And ready to fight for it.”¹ Pandemics spread along fault lines created by the way we live—inequities in wealth, health, social protection, and access to basic services.^{2, 3} Through concerted efforts the knowledge and technologies to respond to COVID-19 are being amassed. Whether we are up to the challenge of avoiding the next global crisis is another question.

The COVID-19 pandemic has been described by Reinhard Mechler and colleagues⁴ as a manifestation of “compound, systemic and existential” risks, resulting from multiple inter-related determinants, threatening coping capacities and jeopardising livelihoods for whole societies. Epidemics, along with other interconnected systemic risks, such as hunger, food insecurity, economic meltdowns, climate-related disasters, and large-scale involuntary migration, are likely to increase in frequency and severity in the future.^{4, 5, 6}

421. Pelham III W. E. Early Adolescent Substance Use Before and During the COVID-19 Pandemic: A Longitudinal Survey in the ABCD Study Cohort / W. E. Pelham III, S. F. Tapert, M. R. Gonzalez [et al.] // *Journal of Adolescent Health*. – 2021. – Vol. 69, № 3. – P. 390–397. – URL: <https://www.sciencedirect.com/science/article/pii/S1054139X21003268>

Purpose

Evaluate changes in early adolescent substance use during the coronavirus disease 2019 (COVID-19) pandemic using a prospective, longitudinal, nationwide cohort.

Methods

Participants were enrolled in the Adolescent Brain Cognitive Development Study. A total of 7,842 youth (mean age = 12.4 years, range = 10.5–14.6) at 21 study sites across the U.S. completed a three-wave assessment of substance use between May and August 2020. Youth reported whether they had used alcohol, nicotine, cannabis, or other substances in the past 30 days. Data were linked to prepandemic surveys that the same youth had completed in the years 2018–2020, before the advent of the COVID-19 pandemic.

Results

Past-30-day substance use remained stable in the 6 months since stay-at-home orders were first issued in U.S. states/counties; was primarily episodic (1–2 days in the past month); and was typically limited to a single substance. Using pretest/posttest and age-period designs, we found that compared to before the pandemic, fewer youth were using alcohol and more youth were using nicotine or misusing prescription drugs. During the pandemic, youth were more likely to use substances when they were more stressed by pandemic-related uncertainty; their family experienced material hardship; their parents used alcohol or drugs; or they experienced greater depression or anxiety. Neither engagement in social distancing nor worry about COVID-19 infection was associated with substance use. Several risk factors were stronger among older (vs. younger) adolescents.

Conclusions

Among youth in early adolescence, advent of the COVID-19 pandemic was associated with decreased use of alcohol and increased use of nicotine and misuse of prescription drugs.

422. Pereira G. F. M. Brazil sustains HIV response during the COVID-19 pandemic / Gerson F. M. Pereira // *The Lancet HIV*. – 2021. – Vol. 8, № 2. – P. e65. – URL: <https://www.sciencedirect.com/science/article/pii/S2352301821000035>

Brazil is proud of its internationally recognised HIV programme, which was not discontinued or threatened because of the COVID-19 pandemic, as described in a Feature published in the December, 2020, issue of *The Lancet HIV*.¹ Brazil has strongly criticised the Rights in a Pandemic report by UNAIDS because of inconsistent data and statistics.

Over the past 2 years, The Brazilian Ministry of Health has improved the bureaucratic structure that supports the national HIV programme. In May, 2019, considering the burden of the tuberculosis and HIV co-infection, the Department of Diseases of Chronic Conditions and Sexually Transmitted Infections was created that oversees the HIV, tuberculosis, and Hansen's disease national programmes. This new department has more human and financial resources available to respond to the diseases: the annual budget increased from R\$1 719 214 056 in 2018 to R\$2 446 639 943 in 2019 and to R\$2 673 212 503 in 2020.

423. Pereira T. COVID-19: COVID-19 psychological impact: The role of perfectionism / A. T. Pereira, C. Cabaços, A. Araújo // *Personality and Individual Differences*. – 2021. – Vol.184. – P.111160. – URL: <https://www.sciencedirect.com/science/article/pii/S0191886921005390>

Psychological reactions to pandemics and their constraints depend heavily on personality. Although perfectionism is consistently associated to depression, anxiety and stress, its role in the pandemics' psychological impact has not been yet empirically studied. Our aim was to analyze the role of perfectionism in psychological distress during the pandemic of COVID-19, testing whether it is mediated by fear of COVID-19 and repetitive negative thinking/RNT. Participants (N = 413 adults; 269.2% women) were recruited from September until December 2020, via social networks. They completed self-report validated questionnaires to evaluate perfectionism dimensions (self-critical, rigid and narcissistic perfectionism), fear of COVID-19, RNT and psychological distress (sum of anxiety, depression and stress symptoms). As women had significantly higher levels of self-critical perfectionism, RNT, fear of COVID-19 and psychological distress, gender was controlled in mediation analysis. The three perfectionism dimensions correlated with RNT, fear of COVID-19 and psychological distress. The effect of self-critical perfectionism on psychological distress was partially mediated by fear of COVID-19 and RNT whereas the effect of rigid and narcissistic perfectionism was fully mediated. Perfectionism influences emotional and cognitive responses to the COVID-19 and therefore should be considered both in the prevention and psychological consequences of the pandemic.

424. Perondi B. Setting up hospital care provision to patients with COVID-19: lessons learnt at a 2400-bed academic tertiary center in São Paulo, Brazil / B. Perondi, A. Miethke-Morais, A. C.Montal [et al.] // *The Brazilian Journal of Infectious Diseases*. – 2021. – Vol. 24, № 6. – P. 570–574. – URL: <https://www.sciencedirect.com/science/article/pii/S1413867020301458>

As of August 30, 2020, Brazil ranked second among countries with the highest number of COVID-19 cases, with the city of São Paulo as the national epidemic epicenter. Local public healthcare institutions were challenged to respond to a fast-growing hospital demand, reengineering care provision to optimize clinical outcomes and minimize intra-hospital coronavirus infection. In this paper we describe how the largest public hospital complex in Latin America faced this unprecedented burden, managing severe COVID-19 cases while sustaining specialized care to patients with other conditions. In our strategic plan a 900-bed hospital was exclusively designated for COVID-19 care and continuity of care to those not infected with coronavirus ensured in other inpatient facilities. After 152 days, 4241 patients with severe COVID-19 were hospitalized, 70% of whom have already been discharged, whereas the remaining Institutes of the complex successfully maintained high complexity inpatient and urgent/emergency care to non-COVID-19 patients.

425. Perrin A. Resilience of French organic dairy cattle farms and supply chains to the Covid-19 pandemic / A. Perrin, G. Martin // Agricultural Systems. – 2021. – Vol. 190. – P. 103082. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21000354>

Context

Identifying and developing resilient farming and food systems has emerged as a top priority during the Covid-19 pandemic. Many academics suggest that farming and food systems should move towards agroecological models to achieve better resilience. However, there was limited evidence to support this statement during the Covid-19 pandemic.

Objective

Our objectives were to report evidence for the resilience of French organic dairy cattle farms and supply chains to the Covid-19 pandemic and to discuss the features of those farms and supply chains that promoted resilience.

Methods

We combined online surveys with farmers, semi-structured interviews with supply chain actors and a review of the gray and technical literature, and whenever possible, we compared this qualitative data against quantitative industry data. We also asked farmers to rank 19 pre-identified risks according to their likelihood and potential impacts.

Results and conclusions

We showed the pandemic had zero to moderate impacts on most farms. Among respondents, 38 farmers reported no impacts, another 43 experienced minor impacts on aspects such as their income and workload while only 5 faced major impacts, such as the closure of sales outlets. Most farms were family farms

and were not greatly affected by worker availability issues. Moreover, the vast majority of these farms were nearly autonomous for livestock feeding and none reported input supply shortages or related impacts on farm functioning and productivity. The pandemic had moderate impacts on supply chains. Despite staff reductions, supply chains continued producing sufficient amounts of dairy products to meet consumer demand. To do so, they narrowed the scope of products manufactured to concentrate on a basic mix: milk, cream, butter and plain yogurt. Logistics were also adapted by hiring retired drivers to keep up with milk collection and reorganizing the delivery of products by shunting usual sub-level platforms that were saturated. Consequently, even after this pandemic, farmers remained more concerned with climate change-related risks on their farms than by sanitary risks. Several resilience factors were identified that promoted buffer and adaptive capacity at the farm level and that favored adaptive capacity at the supply chain level.

Significance

These findings confirm the relevance of agroecological models in achieving resilience in farming and food systems against shocks such as the Covid-19 pandemic. This preliminary work carried out at the end of the first lock-down period needs to be pursued in order to understand the impacts of the Covid-19 pandemic over longer time horizons.

426. Pincheira-Brown P. Forecasting COVID-19 infections with the semi-unrestricted Generalized Growth Model / P. Pincheira-Brown, A. Bentancor // Epidemics. – 2021. – Vol. 37. – P.100486. – URL: <https://www.sciencedirect.com/science/article/pii/S1755436521000384>

Recently, the Generalized Growth Model (GGM) has played a prominent role as an effective tool to predict the spread of pandemics exhibiting subexponential growth. A key feature of this model is a damping parameter

that is bounded to the interval. By allowing this parameter to take negative values, we show that the GGM can also be useful to predict the spread of COVID-19 in countries that are at middle stages of the pandemic. Using both in-sample and out-of-sample evaluations, we show that a semi-unrestricted version of the model outperforms the traditional GGM in a number of countries when predicting the number of infected people at short horizons. Reductions in Root Mean Squared Prediction Errors (RMSPE) are shown to be substantial. Our results indicate that our semi-unrestricted version of the GGM should be added to the traditional set of phenomenological models used to generate forecasts during early to middle stages of epidemic outbreaks.

427. Pizam A. The aftermath of the corona virus pandemic / A. Pizam // International Journal of Hospitality Management. – 2021. – Vol. 95. – P. 102909. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921000529>

Once in a few centuries there is a watershed event on planet earth that changes the course of human history. I believe that the COVID-19 virus was such a cataclysmic event that will change the course of human history in numerous ways. Before expressing my vision of these changes and their long lasting impacts on the world's economy in general and the hospitality industry in particular, I would like to shortly summarize the tragic impacts that this virus had on humanity. At the time that this editorial was written there were 113 million cases of infections, worldwide, that resulted in 2.5 million deaths. The top three countries in infections and deaths were the USA with 28.4 million infections and 506,000 deaths, India with 11 million infections and 157,000 deaths and Brazil with 10.3 million infections and 250,000 deaths (BBC, 2021). To put this in the proper perspective, the total number of worldwide deaths due to the COVID-19 virus [113 million] exceeded by 43 million the total number of deaths in both world wars [70 million] (Diffen, 2021). Though there are no worldwide statistics on the economic losses due to the COVID-19 virus, it is safe to assume that the number of jobs lost worldwide, is more than 100 million. The Center for Infectious Disease Research and Policy (CIDRAP) estimates USA alone lost more than 23 million jobs by the middle of 2020. (CIDRAP, 2021). The top five occupations that have suffered the biggest job losses in the USA due to COVID-19 virus, were: (1) Leisure and Hospitality jobs – 1.3 million employees, resulting in 16.7 % unemployment; (2) Support jobs for Mining, Oil and Gas Extraction – 58,000 employees, resulting in 8.4 % unemployment; (4) Construction jobs – 441,000 employees, resulting in 9.6 % unemployment and (5) Motion Picture and Music industry jobs – 110,000 employees, resulting in 6.4 % unemployment (AARP, 2021). Thus, as can be seen from the above, the hospitality, leisure, travel and tourism industries have suffered a catastrophic and devastating impact that may take years to recover from.

In my humble opinion, when the recovery occurs, it will not be back to the “old normal” but to a leaner and more efficient “new normal.” My specific predictions of this “new normal” are based on the hard lessons that we learned from the COVID-19 pandemic. Some of these lessons apply to humanity as a whole and the world economy in general, and others are specific to the hospitality and tourism industries.

428. Perina P. D. M. Early assessment of the first wave of the COVID-19 pandemic on cancer screening services: The International Cancer Screening Network COVID-19 survey / D. M. P. Perina, K. M. Elfström, J.-L. Bulliard [et al.] // Preventive Medicine. – 2021. – Vol. 151. – P. 106642. – URL: <https://www.sciencedirect.com/science/article/pii/S0091743521002267>

Screening can decrease the burden of breast, cervical, and colorectal cancers. The COVID-19 pandemic led many countries to suspend cancer screening services as part of their response to the pandemic. The International Cancer Screening Network (ICSN) carried out an online survey to assess the effects of the first wave of the COVID-19 pandemic on cancer screening. A 33-item survey was distributed

to 834 email addresses to gather information about settings and assess decision-making processes that led to cancer screening suspension. Information about communication, impact on resources, and patient follow-up was collected. Quantitative data was analyzed as frequencies overall and by setting, while a comment section under each survey item captured nuanced details. Responses were recategorized into 66 settings, representing 35 countries. Most settings suspended cancer screening services (n = 60, 90.9%) in March 2020 (n = 45, 68.2%), guided by a government decision (n = 51, 77.3%). Few settings made the decision whether to suspend services based on a preparedness plan (n = 17, 25.8%). In most settings, professionals were reassigned (n = 41, 62.1%) and infrastructure repurposed (n = 35, 53.0%). The first wave of the COVID-19 pandemic has had profound effects on cancer screening worldwide, including the suspension of services in almost all settings. Most settings were unprepared to deal with the scale of the pandemic but demonstrated flexibility in the response. These results contribute to inform, through experiences and lessons learned, the next steps for the global cancer screening community to further evaluate the impact of COVID-19 and prepare for future disruptions.

429. Peto T. COVID-19: Rapid antigen detection for SARS-CoV-2 by lateral flow assay: A national systematic evaluation of sensitivity and specificity for mass-testing / T. Peto // EClinicalMedicine. – 2021. – Vol. 36. – P. 100924. URL: <https://www.sciencedirect.com/science/article/pii/S2589537021002042>

Background

Lateral flow device (LFD) viral antigen immunoassays have been developed around the world as diagnostic tests for SARS-CoV-2 infection. They have been proposed to deliver an infrastructure-light, cost-economical solution giving results within half an hour.

Methods

LFDs were initially reviewed by a Department of Health and Social Care team, part of the UK government, from which 64 were selected for further evaluation from 1st August to 15th December 2020. Standardised laboratory evaluations, and for those that met the published criteria, field testing in the Falcon-C19 research study and UK pilots were performed (UK COVID-19 testing centres, hospital, schools, armed forces).

Findings

4/64 LFDs so far have desirable performance characteristics (orient Gene, Deepblue, Abbott and Innova SARS-CoV-2 Antigen Rapid Qualitative Test). All these LFDs have a viral antigen detection of >90% at 100,000 RNA copies/ml. 8951 Innova LFD tests were performed with a kit failure rate of 5.6% (502/8951, 95% CI: 5.1–6.1), false positive rate of 0.32% (22/6954, 95% CI: 0.20–0.48). Viral

antigen detection/sensitivity across the sampling cohort when performed by laboratory scientists was 78.8% (156/198, 95% CI 72.4–84.3).

Interpretation

Our results suggest LFDs have promising performance characteristics for mass population testing and can be used to identify infectious positive individuals. The Innova LFD shows good viral antigen detection/sensitivity with excellent specificity, although kit failure rates and the impact of training are potential issues. These results support the expanded evaluation of LFDs, and assessment of greater access to testing on COVID-19 transmission.

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Department of Health and Social Care. University of Oxford. Public Health England Porton Down, Manchester University NHS Foundation Trust, National Institute of Health Research.

430. Pham H. Readiness for digital transformation of higher education in the Covid-19 context: The dataset of Vietnam's students / H. Pham, Q.-N. Tran, G.-L. La [et al.] // Journal of Adolescent Health. – 2021. – Vol. 39. – P. 107482. – URL: <https://www.sciencedirect.com/science/article/pii/S2352340921007630>

With the development of digital technology, Vietnam's education has been undergoing significant changes. This is considered one of the eight important fields of the National Digital Transformation, so it needs to take advantage of opportunities to be able to train high-quality human resources according to international standards. Beside, the Covid-19 pandemic has quickly put pressure on the previously predicted trends in education such as the “Future University”. This paper shows the data of an investigation on the factors affecting the readiness of Vietnamese students for digital transformation in the above context. The data is built based on the TAM model and sociological investigation method to collect multidimensional information from many perspectives of different individuals to have a basis for assessing the level of influence. The survey includes the main questions corresponding to the independent variables in the model: Self-study ability, Attitude, Perceived Usefulness, Perceived Ease of Use, and Covid-19. The authors distributed the questionnaire online and collected 913 valid responses.

431. Pirasteh-Anosheh H. Haloculture: A system to mitigate the negative impacts of pandemics on the environment, society and economy, emphasizing COVID-19 / H. Pirasteh-Anosheh, A. Parnian, D. Spasiano [et al.] // Environmental Research. – 2021. – Vol. 198. – P. 111228. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935121005223>

COVID-19 (coronavirus disease) is a global pandemic that started in China in 2019 and has negatively affected all economic sectors of the world, including

agriculture. However, according to estimates in different countries, agriculture has suffered less than other sectors such as construction, industry and tourism, so agricultural development can be a good option to compensate for the economic damage caused to other sectors. The quality of available water and soil resources for agricultural development is not only limited, but is also decreasing incrementally, so the use of saline and unconventional soil and water resources is inevitable. Biosaline agriculture or haloculture is a system in which highly saline water and soil resources are used sustainably for the economic production of agricultural crops. It seems that in the current situation of the world (with COVID-19's impact on agriculture on the one hand and the quantitative and qualitative decline of freshwater and soil on the other), haloculture with a re-reading of territorial capabilities has good potential to provide a part of human food supply. In this review article, the potential of haloculture to offset the adverse impacts of the pandemic is analyzed from five perspectives: increasing the area under cultivation, using unconventional water, stabilizing dust centers, increasing the body's immune resistance, and reducing losses in agribusiness due to the coronavirus. Overall, haloculture is an essential system, which COVID-19 has accelerated in the agricultural sector.

432. Pollock B. D. Deployment of an Interdisciplinary Predictive Analytics Task Force to Inform Hospital Operational Decision-Making During the COVID-19 / B. D. Pollock, R. E. Carter, S. C. Dowdy [et al.] // Mayo Clinic Proceedings. – 2021. – Vol. 96, № 3. – P. 690–698. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0025619620314828>

In March 2020, our institution developed an interdisciplinary predictive analytics task force to provide coronavirus disease 2019 (COVID-19) hospital census forecasting to help clinical leaders understand the potential impacts on hospital operations. As the situation unfolded into a pandemic, our task force provided predictive insights through a structured set of visualizations and key messages that have helped the practice to anticipate and react to changing operational needs and opportunities. The framework shared here for the deployment of a COVID-19 predictive analytics task force could be adapted for effective implementation at other institutions to provide evidence-based messaging for operational decision-making. For hospitals without such a structure, immediate consideration may be warranted in light of the devastating COVID-19 third-wave which has arrived for winter 2020–2021.

433. Posel D. Moving during times of crisis: Migration, living arrangements and COVID-19 in South Africa / D. Posel, D. Casale // Scientific African. – 2021. – Vol. 13. – P. e00926. – URL: <https://www.sciencedirect.com/science/article/pii/S2468227621002301>

We explore flexibility in living arrangements during times of crisis by investigating adult mobility at various stages of the COVID-19 related initial lockdown in South Africa. Living arrangements are not static, and they may

change considerably in response to economic and health shocks. The South African context is particularly interesting to investigate because studies suggest that many households remain “stretched” between rural and urban nodes, and kin networks have been identified as an important source of support during times of hardship. We use descriptive methods to analyze mobility in anticipation of the “hard” (level 5) lockdown, when almost all economic and on-site teaching activity was suspended, and the subsequent easing to lockdown level 4. The data come from the largest South African non-medical rapid mobile survey conducted during COVID-19, which employed telephone interviews to survey a representative sample of 7074 adults drawn using a stratified sampling design. We find that during the first few months of the COVID-19 lockdown in 2020, approximately 16 percent of adults in South Africa had moved into a different household. Most adults (82%) only moved once; those who moved twice were the most likely to have employment to return to, suggesting that these movers include circular labour migrants. The study highlights the “double-rootedness” of adults, who remain attached to another “family” home, and it points to the importance of living arrangements as a livelihood strategy when employment is lost.

434. Pourmoghaddas Z. Longitudinally extensive transverse myelitis as a sign of multisystem inflammatory syndrome following COVID-19 infection: A pediatric case report / Z. Pourmoghaddas, A. Sadeghizadeh, S. Z. Tara [et al.] // Journal of Neuroimmunology. – 2021. – Vol. 360. – P. 577704. – URL: <https://www.sciencedirect.com/science/article/pii/S0165572821002319>

COVID-19 infection can cause inflammatory reactions that could involve several organs. In the pediatric population, Multi-System Inflammatory Syndrome in Children (MIS-C) has been reported as one of the consequences of COVID-19. We report a unique pediatric COVID-19 patient with MIS-C, associated with paralysis of the extremities. MRI showed abnormal signal in the cervical spinal cord compatible with transverse myelitis. Methylprednisolone and IVIG were administered, without significant symptom improvement. As a next step, Infliximab was tried for her, and she responded remarkably well to this treatment. Infliximab may be considered as a treatment option in COVID-19 patients with transverse myelitis.

435. Prinz A. L. Long-term exposure to fine particulate matter air pollution: An ecological study of its effect on COVID-19 cases and fatality in Germany / A. L. Prinz, D. J. Richter // Environmental Research. – 2021. – Vol. 204, Pt. A. – P. 111948. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935121012433>

Background

COVID-19 is a lung disease, and there is medical evidence that air pollution is one of the external causes of lung diseases. Fine particulate matter is one of the

air pollutants that damages pulmonary tissue. The combination of the coronavirus and fine particulate matter air pollution may exacerbate the coronavirus' effect on human health.

Research question

This paper considers whether the long-term concentration of fine particulate matter of different sizes changes the number of detected coronavirus infections and the number of COVID-19 fatalities in Germany.

Study design

Data from 400 German counties for fine particulate air pollution from 2002 to 2020 are used to measure the long-term impact of air pollution. Kriging interpolation is applied to complement data gaps. With an ecological study, the correlation between average particulate matter air pollution and COVID-19 cases, as well as fatalities, are estimated with OLS regressions. Thereby, socioeconomic and demographic covariates are included.

Main findings

An increase in the average long-term air pollution of 1 $\mu\text{g}/\text{m}^3$ particulate matter PM_{2.5} is correlated with 199.46 (SD = 29.66) more COVID-19 cases per 100,000 inhabitants in Germany. For PM₁₀ the respective increase is 52.38 (SD = 12.99) more cases per 100,000 inhabitants. The number of COVID-19 deaths were also positively correlated with PM_{2.5} and PM₁₀ (6.18, SD = 1.44, respectively 2.11, SD = 0.71, additional COVID-19 deaths per 100,000 inhabitants).

436. Pujol-Lereis V. A. COVID-19 Lockdown Effects on Acute Stroke Care in Latin America / V. A. Pujol-Lereis, A. Flores, M. A. Barboza [et al.] // Journal of Stroke and Cerebrovascular Diseases. – 2021. – Vol. 30, № 9. – P. 105985. – URL: <https://www.sciencedirect.com/science/article/pii/S1052305721003906>

Objectives

COVID-19 pandemic has forced important changes in health care worldwide. Stroke care networks have been affected, especially during peak periods. We assessed the impact of the pandemic and lockdowns in stroke admissions and care in Latin America.

Materials and Methods

A multinational study (7 countries, 18 centers) of patients admitted during the pandemic outbreak (March-June 2020). Comparisons were made with the same period in 2019. Numbers of cases, stroke etiology and severity, acute care and hospitalization outcomes were assessed.

Results

Most countries reported mild decreases in stroke admissions compared to the same period of 2019 (1187 vs. 1166, $p = 0.03$). Among stroke subtypes, there was a reduction in ischemic strokes (IS) admissions (78.3% vs. 73.9%, $p = 0.01$) compared with 2019, especially in IS with NIHSS 0–5 (50.1% vs. 44.9%, $p = 0.03$). A substantial increase in the proportion of stroke admissions beyond 48 h from symptoms onset was observed (13.8% vs. 20.5%, $p < 0.001$). Nevertheless, no differences in total reperfusion treatment rates were observed, with similar door-to-needle, door-to-CT, and door-to-groin times in both periods. Other stroke outcomes, as all-type mortality during hospitalization (4.9% vs. 9.7%, $p < 0.001$), length of stay (IQR 1–5 days vs. 0–9 days, $p < 0.001$), and likelihood to be discharged home (91.6% vs. 83.0%, $p < 0.001$), were compromised during COVID-19 lockdown period.

Conclusions

In this Latin America survey, there was a mild decrease in admissions of IS during the COVID-19 lockdown period, with a significant delay in time to consultations and worse hospitalization outcomes.

437. Pullano G. Evaluating the effect of demographic factors, socioeconomic factors, and risk aversion on mobility during the COVID-19 epidemic in France under lockdown: a population-based study / G. Pullano, E. Valdano, N. Scarpa [et al.] // The Lancet Digital Health. – 2020. – Vol. 2, № 12. – P. e638–e649. – URL: <https://www.sciencedirect.com/science/article/pii/S2589750020302430>

Summary

Background

On March 17, 2020, French authorities implemented a nationwide lockdown to respond to the COVID-19 epidemic and curb the surge of patients requiring critical care. Assessing the effect of lockdown on individual displacements is essential to quantify achievable mobility reductions and identify the factors driving the changes in social dynamics that affected viral diffusion. We aimed to use mobile phone data to study how mobility in France changed before and during lockdown, breaking down our findings by trip distance, user age and residency, and time of day, and analysing regional data and spatial heterogeneities.

Methods

For this population-based study, we used temporally resolved travel flows among 1436 administrative areas of mainland France reconstructed from mobile phone trajectories. Data were stratified by age class (younger than 18 years, 18–64 years, and 65 years or older). We distinguished between residents and non-residents and used population data and regional socioeconomic indicators from the French National Statistical Institute. We measured mobility changes before and during lockdown at both local and country scales using a case-crossover

framework. We analysed all trips combined and trips longer than 100 km (termed long trips), and separated trips by daytime or night-time, weekdays or weekends, and rush hours.

Findings

Lockdown caused a 65% reduction in the countrywide number of displacements (from about 57 million to about 20 million trips per day) and was particularly effective in reducing work-related short-range mobility, especially during rush hour, and long trips. Geographical heterogeneities showed anomalous increases in long-range movements even before lockdown announcement that were tightly localised in space. During lockdown, mobility drops were unevenly distributed across regions (eg, Île-de-France, the region of Paris, went from 585 000 to 117 000 outgoing trips per day). They were strongly associated with active populations, workers employed in sectors highly affected by lockdown, and number of hospitalisations per region, and moderately associated with the socioeconomic level of the regions. Major cities largely shrank their pattern of connectivity, reducing it mainly to short-range commuting (95% of traffic leaving Paris was contained in a 201 km radius before lockdown, which was reduced to 29 km during lockdown).

Interpretation

Lockdown was effective in reducing population mobility across scales. Caution should be taken in the timing of policy announcements and implementation, because anomalous mobility followed policy announcements, which might act as seeding events. Conversely, risk aversion might be beneficial in further decreasing mobility in highly affected regions. We also identified socioeconomic and demographic constraints to the efficacy of restrictions. The unveiled links between geography, demography, and timing of the response to mobility restrictions might help to design interventions that minimise invasiveness while contributing to the current epidemic response.

Funding

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438. Qazi A. Adaption of distance learning to continue the academic year amid COVID-19 lockdown / A. Qazi, J. Qazi, K. Naseer [et al.] // Children and Youth Services Review. – 2021. – Vol. 126. – P. 106038. – URL: <https://www.sciencedirect.com/science/article/pii/S0190740921001171>

This work investigates the use of distance learning in saving students' academic year amid COVID-19 lockdown. It assesses the adoption of distance learning using various online application tools that have gained widespread attention during the coronavirus infectious disease 2019 (COVID-19) pandemic. Distance learning thrives as a legitimate alternative to classroom instructions, as major cities around the globe are locked down amid the COVID-19 pandemic. To

save the academic year, educational institutions have reacted to the situation impulsively and adopted distance learning platforms using online resources. This study surveyed random undergraduate students to identify the impact of trust in formal and informal information sources, awareness and the readiness to adopt distance learning. In this study, we have hypothesized that adopting distance learning is an outcome of situational awareness and readiness, which is achieved by the trust in the information sources related to distance learning. The findings indicate that trust in information sources such as institute and media information or interpersonal communication related to distance learning programs is correlated with awareness ($\beta = 0.423$, $t = 12.296$, $p = 0.000$) and contribute to readiness ($\beta = 0.593$, $t = 28.762$, $p = 0.001$). The structural model path coefficient indicates that readiness strongly influences the adoption of distance learning ($\beta = 0.660$, $t = 12.798$, $p = 0.000$) amid the COVID-19 pandemic. Our proposed model recorded a predictive relevance (Q²) of 0.377 for awareness, 0.559 for readiness, and 0.309 for the adoption of distance learning, which explains how well the model and its parameter estimates reconstruct the values. This study concludes with implications for further research in this area.

439. Qi H. Travelers' emotional experiences during the COVID-19 outbreak: The development of a conceptual model / H. Qi, F. S. Li // *Journal of Hospitality and Tourism Management*. – 2021. – Vol. 47. – P. 389–397. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1447677021000632>

This research proposes a general conceptual framework of individuals' emotional experiences during crises by reviewing the existing literature. The framework includes two different stages of information-processing induced emotions. The importance of sensemaking in both two stages is highlighted in the framework. This framework proposes that cognition-oriented and emotion-oriented individuals have different attitudes and behavioral intentions. The research then tests the framework in the context of the COVID-19 outbreak using interviews with travelers to ascertain the specific nature of individuals' emotional experiences in that specific context. The research demonstrates that the general framework can be applied to different contexts, and the framework specific to travelers' emotional experiences during the COVID-19 outbreak may be used to underpin future research in the area of tourism crisis.

440. Qin H. Exploring the dynamic relationships between risk perception and behavior in response to the Coronavirus Disease 2019 (COVID-19) outbreak / H. Qin, C. Sanders, Y. Prasetyo [et al.] // *Social Science & Medicine*. – 2021. – Vol. 285. – P. 114267. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621005992>

The relationships between risk perception and related behavior form a fundamental theme in risk analysis. Despite increasing attentions on the temporal dimension of risk perception and behavior in recent literature, the dynamic relationships between these two constructs remain understudied. Infectious disease

outbreaks, such as the Coronavirus Disease 2019 (COVID-19) pandemic, provide a key setting for analyzing evolving perceptions of and responses to natural or human-induced hazards. The main objectives of this research are: (1) to assess temporal changes in cognitive and affective dimensions of perceived COVID-19 risk as well as related protective behavior; and (2) to explore the dynamic relationships between COVID-19 risk perception and behavioral responses. Timely data on changing risk perception and behavior related to the COVID-19 outbreak were collected through two series of online surveys from four major cities (Seattle, Los Angeles, Chicago, and New York City; N = 736) and the central Midwest region of the United States (N = 1240) respectively during March–August 2020. The analysis revealed that: (1) the cognitive and affective dimensions of perceived COVID-19 risk and preventive behavior all changed over time; (2) there were both within- and across-time correlations between COVID-19 risk perception indicators and preventive actions; and (3) preventive actions showed varied feedback effects on individual aspects of perceived COVID-19 risk over time. Findings from this research support and expand major conceptual approaches to changing relationships between risk perception and behavior, particularly the risk reappraisal hypothesis. The study also has useful implications for health risk management and future research directions.

441. Quitzow R. The COVID-19 crisis deepens the gulf between leaders and laggards in the global energy transition / R. Quitzow, G. Bersalli, L. Eicke // Energy Research & Social Science. – 2021. – Vol. 74. – P. 101981. – URL: <https://www.sciencedirect.com/science/article/pii/S2214629621000748>

In this article, we review the main impacts of the COVID-19 pandemic on the global energy sector and evaluate the implications of related policy responses on prospects for a transition to a climate-friendly energy system. In doing so, we differentiate between different types of countries and different dimensions of energy supply. Firstly, we assess the impacts on leaders and laggards in the transformation of the power sector, in terms of renewable power deployment and the phase-out of coal-fired power generation. Secondly, we consider impacts of the crisis on major exporters of oil and gas resources, focusing on a selection of G20 countries. We find that the impact of the COVID-19 crisis and related policy responses vary across different types of countries but also within large countries, such as the US and China. We conclude that the COVID-19 crisis deepens the gulf between leaders and laggards of the global energy transition and will exacerbate existing imbalances in an uneven energy transition landscape. This threatens the achievement of international climate targets and points to the need for concerted international action aimed at the phase-out of fossil energy resources.

442. Radchikova N. P. Assessment of the COVID-19 pandemic situation: Data from two countries with different security measures taken by authorities (Belarus and Russia) / N. P. Radchikova, M. A. Odintsova [et al.] //

The article presents the data on the evaluation of COVID-19 situation by adult respondents (age from 18 to 76) coming from countries with the common past, language and similar mentality but differing in governmental security measures during pandemic spring outbreak (no precautionary measures in Belarus (N = 267); lockdown and financial support in Russia (N = 397)). The data was collected via online survey platform (Google forms) from 2020.04.11 to 2020.06.04 (during the period of lock-down in Russia). The data contains socio-demographical information (sex, age, country of citizenship), survey answers and the results of standardized psychological tests (to measure dangerous and threatening social world view and hardiness). The survey consists of four blocks: specific impact of the COVID-19 situation on various aspects of respondents' life; estimation of different fears; estimation of various aspects of COVID-19 situation, and estimation of personal resources. All the items require participants to rate them on a 11-point Likert scale from 0 (totally disagree, absolutely no fear or no impact) to 10 (totally agree, the strongest fear or impact). Descriptive statistics as well as the comparison results are given. The data may be used to investigate the influence of lockdown, social distancing, and isolation on psychological well-being as well as the impact of personal resources in psychological well-being in stressful situations.

443. Rafiq M. University libraries response to COVID-19 pandemic: A developing country perspective / M. Rafiq, S. H. Batool, A. F. Ali [et al.] // The Journal of Academic Librarianship. – 2020. – Vol. 47, № 1. – P. 102280. – URL:
<https://www.sciencedirect.com/science/article/pii/S0099133320301713>

The purpose of this study was to explore the university libraries' response during the COVID-19 pandemic and determine their working practices, services patterns, strategies applied, and role played. This study is a qualitative exploration by collecting data through in-depth interviews of purposely selected Heads of seven university libraries. The interview recordings were transcribed, translated, and analyzed thematically. The majority of the university libraries were physically closed for patrons in this pandemic but engaged with the users. Libraries revamped their web pages, reassigned resources, and planned robust online offerings. The university portal and other social media tools were less used communication tools during the pandemic. Library staff worked from home and there was a sense of over burden because of 24/7 connectivity and without any formal working policy addressing the new working routines. University librarians felt that digital divide, lack of digital literacy skills, and slow internet speed were the major barriers in their transition from physical to online mode and less use of library's online resources and web portals. Libraries see their individual and collective roles of societal and educational dimensions during these uncertain times. The study also made recommendations for the betterment of libraries' role in such situations.

444. Rahi M. Mass vaccination against COVID-19 may require replays of the polio vaccination drives / M. Rahi, A. Sharma // EClinicalMedicine. – 2020. – Vol. 25. – P. 100501. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302455>

The Global Polio Eradication Initiative (GPEI) was built on the wisdom gained from smallpox eradication programs. In 1980s, polio used to cause paralysis of >1000 children daily but since then GPEI has achieved >99% reduction in polio. Surges in SARS-CoV-2 infections have catalysed numerous vaccine development projects. However, deployment of an efficacious COVID-19 vaccine will need resolution of several notable issues on which preparatory analysis must be initiated now. Risk groups including the elderly, those with co-morbidities and healthcare workers may be prioritized. Widening the vaccine target groups will increase supply chain burden.

445. Rahman S. Effect of COVID-19 on the livestock sector in Bangladesh and recommendations / S. Rahman, G. C. Das // Journal of Agriculture and Food Research. – 2021. – Vol. 4. – P. 100128. – URL: <https://www.sciencedirect.com/science/article/pii/S2666154321000302>

COVID-19 and its accompanying effects have severely affected an estimated 0.3 million dairy farms and 65–70 thousand commercial poultry farms in Bangladesh. Many of them closed down or halted productions due to the burden of continuous losses. Reports showed that about 12–15 million liters of milk have remained unsold, which has caused a daily loss of 570 million Bangladeshi Taka (6.7 million USD) in the dairy sector only. Furthermore, the poultry sector has also encountered a loss of a minimum of 115 billion Bangladeshi Taka (1.35 billion USD) within just two weeks from March 20 to April 4, 2020. The situation might accelerate the arising food crisis due to the collapse of the livestock sector during the COVID-19 pandemic and turn it into a humanitarian catastrophe. Hence, the government should retaliate through the provision of financial assistance to livestock farmers, and the proclamation of emergency veterinary services on the earliest basis. In addition to that, the government could develop long-term, sustainable strategies and projects through multi-sectoral engagement to ensure further capacity building of farmers and other stakeholders.

446. Rajkumar R. P. The relationship between measures of individualism and collectivism and the impact of COVID-19 across nations / R. P. Rajkumar // Public Health in Practice. – 2020. – Vol. 2. – P. 100143. – URL: <https://www.sciencedirect.com/science/article/pii/S2666535221000689>

Background

The global COVID-19 pandemic has been characterized by marked variations in prevalence, mortality and case fatality across nations. The available

evidence to date suggests that social factors significantly influence these variations. The sociological concepts of individualism and collectivism provide a broad explanatory framework for the study of these factors. There is evidence to suggest that cross-cultural variations in collectivism may have emerged via a process of natural selection, as a protective mechanism against infectious diseases. As a test of this hypothesis, this paper examined the association between indices of individualism and collectivism and the prevalence, mortality and case fatality rates of COVID-19 across nations.

Study design

This study was a population-level association study based on data in the public domain and from prior publications.

Methods

Data on four standard measures of individualism/collectivism were obtained from the original publications. These were correlated with estimates of the nation-wide prevalence, mortality and fatality rates for COVID-19 in 94 countries, obtained from the Johns Hopkins Medical University real-time dashboard.

Results

Individualism was positively correlated with COVID-19 prevalence, mortality and case fatality rates; conversely, measures of collectivism were negatively correlated with these parameters. The strongest association was between scores for individualism and mortality rate, and remained significant after correcting for several potential confounders.

Conclusions

These findings are consistent with the prior hypothesis of a relationship between individualism-collectivism and the impact of infectious disease across populations, and have implications in terms of social strategies aimed at minimizing the impact of COVID-19.

447. Rapp A. Child Maltreatment During the COVID-19 Pandemic: A Systematic Rapid Review / A. Rapp, G. Fall, A. C.Radomsky [et al.] // Pediatric Clinics of North America. – 2021. – Vol. 68, № 5. – P. 991–1009. – URL: <https://www.sciencedirect.com/science/article/pii/S0031395521000833>

It is estimated that each year more than 1 million children worldwide are victims of physical, sexual, or emotional violence. Collectively, this violence has been termed child maltreatment (CM) and defined by the World Health Organization as “the abuse and neglect that occurs to children under 18 years of age.”¹ The impacts of CM are multifaceted, having short- and long-term consequences on a child’s attitudes and behaviors, as well as their mental and physical well-being.^{2, 3, 4, 5, 6} Increases in CM have been well-documented in association with increased parental stress,⁷ during and after recessions and

epidemics, such as the Ebola and AIDS crises.^{8, 9, 10} Continuing to understand the situations that create, perpetuate, and amplify CM are of the utmost importance to then lower the rates of CM and decrease their impact. Thus, the ongoing coronavirus disease 2019 (COVID-19) pandemic and its subsequent impacts have become an area of interest and concern for linkages to CM.

448. Rasul G. Twin challenges of COVID-19 pandemic and climate change for agriculture and food security in South Asia / G. Rasul // Environmental Challenges. – 2021. – Vol. 2. – P. 100027. – URL: <https://www.sciencedirect.com/science/article/pii/S2667010021000068>

The objective of this study was to understand the impacts of COVID-19 crisis in agriculture and food systems in Nepal and assess the effectiveness of measures to deal with this crisis. The study draws policy implications, especially for farming systems resilience and the achievement of SDGs 1 and 2. The findings are based on (i) three panel discussions over six months with policy makers and experts working at grassroots to understand and manage the crisis, (ii) key informants' interviews, and (iii) an extensive literature review. Results revealed that the lockdown and transport restrictions have had severe consequences, raising questions on the achievement of SDGs 1 and 2, especially in the already vulnerable regions dependent on food-aid. This crisis has also exposed the strengths and limitations of both subsistence and commercial farming systems in terms of resiliency, offering important lessons for policy makers. Traditional subsistence farming appears to be somewhat resilient, with a potential to contribute to key pillars of food security, especially access and stability, though with limited contributions to food availability because of low productivity. On the other hand, commercial farming - limited to the periphery of market centres, cities, and emerging towns and in the accessible areas - was more impacted due to the lack of resilient supply networks to reach even the local market. Lower resiliency of commercial farming was also evident because of its growing dependence on inputs (mainly seeds and fertilizer) on distant markets located in foreign countries. The observation of crisis over eight months unleashed by the pandemic clearly revealed that wage labourers, indigenous people, and women from marginalized groups and regions already vulnerable in food security and malnutrition suffered more due to COVID-19 as they lost both external support and the coping mechanisms. The findings have implications for policies to improve both subsistence and commercial farming systems – in particular the former by improving the productivity through quality inputs and by diversifying, promoting and protecting the indigenous food system, while the latter through sustainable intensification by building reliant supply network linking farming with markets and guarantying the supply of inputs.

449. Razzolini M. T. P. SARS-CoV-2 in a stream running through an underprivileged, underserved, urban settlement in São Paulo, Brazil: A 7-month follow-up / M. T. P. Razzolini, M. R. F. Barbosa, R. S. de Araújo //

Environmental Pollution. – 2021. – Vol. 290. – P. 118003. – URL: <https://www.sciencedirect.com/science/article/pii/S0269749121015852>

COVID-19 pandemic has led to concerns on the circulation of SARS-CoV-2 in the environment, its infectivity from the environment and, the relevance of transmission via environmental compartments. During 31 weeks, water samples were collected from a heavily contaminated stream going through an urban, underprivileged community without sewage collection. Our results showed a statistically significant correlation between cases of COVID-19 and SARS in the community, and SARS-CoV-2 concentrations in the water. Based on the model, if the concentrations of SARS-CoV-RNA (N1 and N2 target regions) increase 10 times, there is an expected increase of 104% [95%CI: (62–157%)] and 92% [95%CI: (51–143%)], respectively, in the number of cases of COVID-19 and SARS. We believe that differences in concentration of the virus in the environment reflect the epidemiological status in the community, which may be important information for surveillance and controlling dissemination in areas with vulnerable populations and poor sanitation. None of the samples were found infectious based cultures. Our results may be applicable globally as similar communities exist worldwide.

450. Recalcati S. COVID-19: The experience from Italy / S. Recalcati, R. Gianotti, F. Fantini // Clinics in Dermatology. – 2021. – Vol. 39, № 1. – P. 12–22. – URL: <https://www.sciencedirect.com/science/article/pii/S0738081X20302431>

A wide range of cutaneous signs are attributed to COVID-19 infection. This retrospective study assesses the presence and impact of dermatologic manifestations related to the spread of COVID-19 in Lombardy, the geographic district with the first outbreak in Italy. A cohort of 345 patients with laboratory confirmed COVID-19 was collected from February 1, 2020 to May 31, 2020. Cutaneous signs and dermatologic diagnoses were recorded on admission, and during the course of the disease. Of the 345 patients included in the study, 52 (15%) had new-onset dermatologic conditions related to COVID-19. We observed seven major cutaneous clinical patterns, merged under 3 main groups: Exanthems, vascular lesions, and other cutaneous manifestations. Each subset was detailed with prevalence, age, duration, prognosis, and histology. Cutaneous findings can lead to suspect COVID-19 infection and identify potentially contagious cases with indolent course.

451. Rehman S. U. COVID-19 challenges and its therapeutics / S. U. Rehman, S. U. Rehman, H. H. Yoo // Biomedicine & Pharmacotherapy. – 2021. – Vol. 142. – P. 112015. – URL: <https://www.sciencedirect.com/science/article/pii/S0753332221007988>

COVID-19, an infectious disease, has emerged as one of the leading causes of death worldwide, making it one of the severe public health issues in recent decades. nCoV, the novel SARS coronavirus that causes COVID-19, has brought together scientists in the quest for possible therapeutic and preventive measures. The development of new drugs to manage COVID-19 effectively is a challenging and time-consuming process, thus encouraging extensive investigation of drug repurposing and repositioning candidates. Several medications, including remdesivir, hydroxychloroquine, chloroquine, lopinavir, favipiravir, ribavirin, ritonavir, interferons, azithromycin, capivasertib and bevacizumab, are currently under clinical trials for COVID-19. In addition, several medicinal plants with considerable antiviral activities are potential therapeutic candidates for COVID-19. Statistical data show that the pandemic is yet to slow down, and authorities are placing their hopes on vaccines. Within a short period, four types of vaccines, namely, whole virus, viral vector, protein subunit, and nucleic acid (RNA/DNA), which can confer protection against COVID-19 in different ways, were already in a clinical trial. SARS-CoV-2 variants spread is associated with antibody escape from the virus Spike epitopes, which has grave concerns for viral re-infection and even compromises the effectiveness of the vaccines. Despite these efforts, COVID-19 treatment is still solely based on clinical management through supportive care. We aim to highlight the recent trends in COVID-19, relevant statistics, and clinical findings, as well as potential therapeutics, including in-line treatment methods, preventive measures, and vaccines to combat the prevalence of COVID-19.

452. Reichman M. Adding value in the era of COVID-19: Increasing usage of a patient-centered radiology consultation service / M. Reichman, E. K. Arleo, R. J. Min [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 211–214. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121002734>

Objective

To examine the effects of COVID-19 pandemic on our department's Radiology Consultation Service (RCS) related to breast imaging, and how utilization of the provided services may have differed as compared to prior to the pandemic.

Materials and methods

A retrospective cohort study of patients and health care providers who consulted the RCS, as well as those patients who had a screening mammogram and/or ultrasound between January 1, 2019 and September 1, 2020. Consultations were performed by an RRA, RN and one of 17 breast imaging radiologists assigned to consults on daily. Descriptive statistics were performed to describe the study subject population.

Results

Between January 1, 2020 and July 31, 2020, a total of 1623 consultations were performed, in comparison to the control period from the year prior (January 1, 2019 to July 31, 2019), when a total of 1398 consultations were performed, representing a 16% increase in one year. Between March 1, 2020 and June 30, 2020, a total of 679 consultations were performed, in comparison to the control period from the year prior (March 1, 2019 to June 30, 2019), when 583 consultations were performed, representing a 16.5% increase in a four-month period. 350 out of 679 (36.8%) consultations addressed COVID concerns.

Conclusions

While much of radiology experienced an unprecedented decrease in imaging studies during the initial peak of COVID-19 crisis, the RCS at our institution showed a significant increase in services provided, evolving to address pressing concerns related to COVID-19.

453. Repullo J. R. The medical profession in the face of the reactivation of the COVID-19 pandemic in Spain / J. R. Repullo // Journal of Healthcare Quality Research. – 2020. – Vol. 36, № 1. – P. 1–2. – URL: <https://www.elsevier.es/en-revista-journal-healthcare-quality-research-257-articulo-the-medical-profession-in-face-S260364792030124X>

The second wave of the COVID-19 pandemic confirms the deficiency of its control in Spain; and evidences its impact in the Spanish society, economy, and health. The wave is creating disappointment, damage, demoralisation and tension throughout the Spanish citizenship. The prestige and legitimacy that doctors and other health professionals' held before the pandemia might be followed with some consequences on service of overcoming this deep and complex crisis that we are facing. A common strategy is required, and everyone must contribute to its achievement. However, there are several barriers that should be overwhelmed: knowledge gaps, imperfect institutional frameworks, a tense political climate, and an unstable and inconsistent social awareness and behaviour..

454. Reuge N. Education response to COVID 19 pandemic, a special issue proposed by UNICEF: Editorial review / N. Reuge, R. Jenkins, M. Brossar [et al.] // International Journal of Educational Development. – 2021. – Vol. 87. – P. 102485. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321001383>

This editorial paper presents 11 papers related to the special issue proposed by UNICEF on the Education Response to COVID-19. The COVID-19 pandemic provoked an education emergency of unprecedented scale. At its onset in February 2020, school closures were announced in the worst-hit countries. At the peak of the crisis, 90 per cent of learners worldwide had had their education disrupted. Some learners, especially those from the most marginalised population groups, were put at risk of permanent dropout, provoking long-term and significant negative effects on children's life-long wellbeing and the socio-economic development of their

communities and countries. This special issue, which received contributions from UNICEF staff and various researchers, focuses on the impact of school closures, the effectiveness of remote learning solutions, equity implications, the mitigation of learning loss and notions around re-opening better. Different research perspectives and evidence is gathered to help strengthen policy considerations and future planning. The conclusion emphasizes building on the innovative solutions generated by the response to the crisis to make education systems more resilient, whilst also reinforcing the focus on equity and inclusion so that pre-existing disparities are not exacerbated in the future.

455. Richardson T. G. Evaluating the effects of cardiometabolic exposures on circulating proteins which may contribute to severe SARS-CoV-2 / T. G. Richardson, S. Fang, R. E. Mitchell [et al.] // EBioMedicine. – 2021. – Vol. 64. – P. 103228. – URL: <https://www.sciencedirect.com/science/article/pii/S2352396421000219>

Background

Developing insight into the pathogenesis of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is of critical importance to overcome the global pandemic caused by coronavirus disease 2019 (COVID-19). In this study, we have applied Mendelian randomization (MR) to systematically evaluate the effect of 10 cardiometabolic risk factors and genetic liability to lifetime smoking on 97 circulating host proteins postulated to either interact or contribute to the maladaptive host response of SARS-CoV-2.

Methods

We applied the inverse variance weighted (IVW) approach and several robust MR methods in a two-sample setting to systemically estimate the genetically predicted effect of each risk factor in turn on levels of each circulating protein. Multivariable MR was conducted to simultaneously evaluate the effects of multiple risk factors on the same protein. We also applied MR using cis-regulatory variants at the genomic location responsible for encoding these proteins to estimate whether their circulating levels may influence severe SARS-CoV-2.

Findings

In total, we identified evidence supporting 105 effects between risk factors and circulating proteins which were robust to multiple testing corrections and sensitivity analyses. For example, body mass index provided evidence of an effect on 23 circulating proteins with a variety of functions, such as inflammatory markers C-reactive protein (IVW Beta=0.34 per standard deviation change, 95% CI=0.26 to 0.41, $P = 2.19 \times 10^{-16}$) and interleukin-1 receptor antagonist (IVW Beta=0.23, 95% CI=0.17 to 0.30, $P = 9.04 \times 10^{-12}$). Further analyses using multivariable MR provided evidence that the effect of BMI on lowering immunoglobulin G, an antibody class involved in protection from infection, is substantially mediated by raised triglycerides levels (IVW Beta=-0.18, 95% CI=-

0.25 to -0.12, $P = 2.32 \times 10^{-08}$, proportion mediated=44.1%). The strongest evidence that any of the circulating proteins highlighted by our initial analysis influence severe SARS-CoV-2 was identified for soluble glycoprotein 130 (odds ratio=1.81, 95% CI=1.25 to 2.62, $P = 0.002$), a signal transducer for interleukin-6 type cytokines which are involved in inflammatory response. However, based on current case samples for severe SARS-CoV-2 we were unable to replicate findings in independent samples.

Interpretation

Our findings highlight several key proteins which are influenced by established exposures for disease. Future research to determine whether these circulating proteins mediate environmental effects onto risk of SARS-CoV-2 infection or covid-19 progression are warranted to help elucidate therapeutic strategies for severe covid-19 disease.

Funding

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456. Richmond P. Safety and immunogenicity of S-Trimer (SCB-2019), a protein subunit vaccine candidate for COVID-19 in healthy adults: a phase 1, randomised, double-blind, placebo-controlled trial / P. Richmond, L. Hatchuel, M. Dong [et al.] // The Lancet. – 2021. – Vol. 397, № 10275. – P. 682–694. – URL: <https://www.sciencedirect.com/science/article/pii/S0140673621002415>

Background

As part of the accelerated development of vaccines against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), we report a dose-finding and adjuvant justification study of SCB-2019, a protein subunit vaccine candidate containing a stabilised trimeric form of the spike (S)-protein (S-Trimer) combined with two different adjuvants.

Methods

Our study is a phase 1, randomised, double-blind placebo-controlled trial at a specialised clinical trials centre in Australia. We enrolled healthy adult volunteers in two age groups: younger adults (aged 18–54 years) and older adults (aged 55–75 years). Participants were randomly allocated either vaccine or placebo using a list prepared by the study funder. Participants were to receive two doses of SCB-2019 (either 3 µg, 9 µg, or 30 µg) or a placebo (0.9% NaCl) 21 days apart. SCB-2019 either had no adjuvant (S-Trimer protein alone) or was adjuvanted with AS03 or CpG/Alum. The assigned treatment was administered in opaque syringes to maintain masking of assignments. Reactogenicity was assessed for 7 days after each vaccination. Humoral responses were measured as SCB-2019 binding IgG antibodies and ACE2-competitive blocking IgG antibodies by ELISA and as

neutralising antibodies by wild-type SARS-CoV-2 microneutralisation assay. Cellular responses to pooled S-protein peptides were measured by flow-cytometric intracellular cytokine staining. This trial is registered with ClinicalTrials.gov, NCT04405908; this is an interim analysis and the study is continuing.

Findings

Between June 19 and Sept 23, 2020, 151 volunteers were enrolled; three people withdrew, two for personal reasons and one with an unrelated serious adverse event (pituitary adenoma). 148 participants had at least 4 weeks of follow-up after dose two and were included in this analysis (database lock, Oct 23, 2020). Vaccination was well tolerated, with two grade 3 solicited adverse events (pain in 9 µg AS03-adjuvanted and 9 µg CpG/Alum-adjuvanted groups). Most local adverse events were mild injection-site pain, and local events were more frequent with SCB-2019 formulations containing AS03 adjuvant (44–69%) than with those containing CpG/Alum adjuvant (6–44%) or no adjuvant (3–13%). Systemic adverse events were more frequent in younger adults (38%) than in older adults (17%) after the first dose but increased to similar levels in both age groups after the second dose (30% in older and 34% in younger adults). SCB-2019 with no adjuvant elicited minimal immune responses (three seroconversions by day 50), but SCB-2019 with fixed doses of either AS03 or CpG/Alum adjuvants induced high titres and seroconversion rates of binding and neutralising antibodies in both younger and older adults (anti-SCB-2019 IgG antibody geometric mean titres at day 36 were 1567–4452 with AS03 and 174–2440 with CpG/Alum). Titres in all AS03 dose groups and the CpG/Alum 30 µg group were higher than were those recorded in a panel of convalescent serum samples from patients with COVID-19. Both adjuvanted SCB-2019 formulations elicited T-helper-1-biased CD4+ T-cell responses.

Interpretation

The SCB-2019 vaccine, comprising S-Trimer protein formulated with either AS03 or CpG/Alum adjuvants, elicited robust humoral and cellular immune responses against SARS-CoV-2, with high viral neutralising activity. Both adjuvanted vaccine formulations were well tolerated and are suitable for further clinical development.

457. Rita E. Sustaining COVID-19 pandemic lockdown era air pollution impact through utilization of more renewable energy resources / E. Rita, E. Chizoo, U. S. Cyril // Heliyon. – 2021. – Vol. 7, № 7. – P. e07455. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021015589>

The lock down engendered by COVID-19 pandemic has impacted positively on the environment through reduction of the emissions of green house gases, CO₂, CO and other pollutants into the atmosphere below the pre-COVID-19 levels. There are fears that the gains made in the environment during COVID-19 may be frittered away as nations around the world make serious efforts to boost the

COVID-19 recessed economy through massive investments in the sectors of the economy that are not environmentally friendly. This paper emphasizes on the essence of maintaining the COVID-19 pandemic era environmental impact levels in post COVID-19 era without retarding the efforts towards economic recovery. World health organization (WHO) data from six regions between April and August 2020 was evaluated. Emission levels during the COVID-19 lockdown were reviewed. The global renewable energy potentials were ascertained. The paper suggests that investment in renewable energy resources for various countries' energy needs will help sustain the green and clean environment created by the COVID-19 lockdown even after COVID-19 era lockdown. Also, building large scale and distributed energy storage infrastructure and application of artificial intelligence would ensure security of energy supply and handle unstable nature of solar and wind energy. The COVID-19 lockdown significantly reduced air pollution. The application of biofuels to generate energy and power was found to significantly reduce air pollutant emissions similar to COVID-19 lockdown.

458. Rizvi S. A. Clustering of countries for COVID-19 cases based on disease prevalence, health systems and environmental indicators / S. A. Rizvi, M. U. Muhammad, A. Cheema // Chaos, Solitons & Fractals. – 2021. – Vol. 151. – P. 11240. – URL: <https://www.sciencedirect.com/science/article/pii/S0960077921005944>

The coronavirus has a high basic reproduction number (R_0) and has caused the global COVID-19 pandemic. Governments are implementing lockdowns that are leading to economic fallout in many countries. Policy makers can take better decisions if provided with the indicators connected with the disease spread. This study is aimed to cluster the countries using social, economic, health and environmental related metrics affecting the disease spread so as to implement the policies to control the widespread of disease. Thus, countries with similar factors can take proactive steps to fight against the pandemic. The data is acquired for 79 countries and 18 different feature variables (the factors that are associated with COVID-19 spread) are selected. Pearson Product Moment Correlation Analysis is performed between all the feature variables with cumulative death cases and cumulative confirmed cases individually to get an insight of relation of these factors with the spread of COVID-19. Unsupervised k-means algorithm is used and the feature set includes economic, environmental indicators and disease prevalence along with COVID-19 variables. The learning model is able to group the countries into 4 clusters on the basis of relation with all 18 feature variables. We also present an analysis of correlation between the selected feature variables, and COVID-19 confirmed cases and deaths. Prevalence of underlying diseases shows strong correlation with COVID-19 whereas environmental health indicators are weakly correlated with COVID-19.

459. Rizzetto F. Correlation between lung ultrasound and chest CT patterns with estimation of pulmonary burden in COVID-19 patients /

F. Rizzetto, N. Perillo, D. Artioli [et al.] // European Journal of Radiology. – 2021. – Vol. 383. – P. 109650. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0720048X21001303>

Purpose: The capability of lung ultrasound (LUS) to distinguish the different pulmonary patterns of COVID-19 and quantify the disease burden compared to chest CT is still unclear. Methods: PCR-confirmed COVID-19 patients who underwent both LUS and chest CT at the Emergency Department were retrospectively analysed. In both modalities, twelve peripheral lung zones were identified and given a Severity Score basing on main lesion pattern. On CT scans the well-aerated lung volume (%WALV) was visually estimated. Per-patient and per-zone assessments of LUS classification performance taking CT findings as reference were performed, further revisioning the images in case of discordant results. Correlations between number of disease-positive lung zones, Severity Score and %WALV on both LUS and CT were assessed. The area under receiver operating characteristic curve (AUC) was calculated to determine LUS performance in detecting % WALV ≤ 70 %.

460. Rizzo E. A COVID-19 exemption code to ensure post-recovery care: From the territory a proposal for the Apulia Region government / E. Rizzo, S. Carlà, S. Ruggeri // EClinicalMedicine. – 2020. – Vol. 26. – P. 100516. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302601>

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic has certainly generated several public health challenges, and more await us in the coming months, in addition to a possible second wave in the fall. Its related disease, COVID-19, is a complex pathology with a broad symptomatic spectrum and a not exclusively pulmonary organotropism [1]. The effects of this illness are still not clearly identifiable and the possibility of irreversible damages remains even after a complete dimission. The Italian Society of Pneumology in fact estimates that 30% of COVID-19 patients will have chronic respiratory problems [2].

461. Robinette J. W. Perceived neighborhood cohesion buffers COVID-19 impacts on mental health in a United States sample / J. W. Robinette, G. Bostean, L. M. Glynn [et al.] // Social Science & Medicine. – 2021. – Vol. 285. – P. 114269. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621006018>

Objective

This study examined whether perceived neighborhood cohesion (the extent to which neighbors trust and count on one another) buffers against the mental health effects of the 2020 COVID-19 pandemic.

Methods

The XXX University National COVID-19 and Mental Health Study surveyed US adults (N = 3965; M age = 39 years), measuring depressive symptoms, staying home more during than before the 2020 pandemic, and perceived neighborhood cohesion.

Results

A series of linear regressions indicated that perceiving one's neighborhood as more cohesive was not only associated with fewer depressive symptoms, but also attenuated the relationship between spending more time at home during the pandemic and depressive symptoms. These relationships persisted even after taking into account several individual-level sociodemographic characteristics as well as multiple contextual features, i.e., median household income, population density, and racial/ethnic diversity of the zip codes in which participants resided.

Conclusions

Neighborhood cohesion may be leveraged to mitigate pandemic impacts on depressive symptoms.

462. Rodríguez A. Severe infection due to the SARS-CoV-2 coronavirus: Experience of a tertiary hospital with COVID-19 patients during the 2020 pandemic / A. Rodríguez, G. Moreno, J. Gómez // Medicina Intensiva. – 2020. – Vol. 44, №9. – P. 525–533. – URL: <https://www.medintensiva.org/en-severe-infection-due-sars-cov-2-coronavirus-articulo-S2173572720301739>

Automatic recording was made of demographic variables, severity parameters, laboratory data, assisted ventilation (HFO: high-flow oxygen therapy and IMV: invasive mechanical ventilation), oxygenation (PaO₂, PaO₂/FiO₂) and complications. The patients were divided into three groups: survivors (G1), deceased (G2) and patients remaining under admission (G3). The chi-squared test or Fisher exact test (categorical variables) was used, along with the Mann-Whitney U-test or Wilcoxon test for analyzing the differences between medians. Statistical significance was considered for $p < 0.05$.

463. Rolak S. What Gastroenterologists Should Know About COVID-19 Vaccines / S. Rolak, M. S. Hayney, F. A. Farraye [et al.] // Clinical Gastroenterology and Hepatology. – 2021. – Vol. 19, № 4. – P. 657–661. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1542356521000021>

In late December of 2019, cases of pneumonia caused by betacoronavirus SARS-CoV-2, closely related to SARS-CoV, were reported in the city of Wuhan, China. SARS-CoV-2 has resulted in a worldwide pandemic that continues to surge throughout the United States. Two vaccines for SARS-CoV-2 (the virus that causes COVID-19) are now available under emergency use authorization (EUA). An EUA was issued for the Pfizer-BioNTech COVID-19 vaccine on December 11, 2020, and another EUA was issued for the Moderna COVID-19 vaccine on December 18, 2020. Development of a coronavirus vaccine is not new. Vaccines against SARS-CoV were developed and tested in phase I trials in the 2000s, but development

halted because of the disappearance of the virus.¹ Similarly, vaccines against Middle Eastern respiratory syndrome are under active development, but not at an accelerated pace, because of extremely low prevalence of the virus. The information gained from preclinical studies with SARS-CoV and Middle Eastern respiratory syndrome laid the groundwork to identify the spike protein as a target for development of a vaccine against SARS-CoV-2 at an early stage.

464. Rollins N. A public health approach for deciding policy on infant feeding and mother–infant contact in the context of COVID-19 / N. Rollins, N. Minckas, F. Jehan [et al.] // *The Lancet Global Health*. – 2021. – Vol. 9, № 4. – P. e552–e557. – URL: <https://www.sciencedirect.com/science/article/pii/S2214109X20305386>

Summary

The COVID-19 pandemic has raised concern about the possibility and effects of mother–infant transmission of SARS-CoV-2 through breastfeeding and close contact. The insufficient available evidence has resulted in differing recommendations by health professional associations and national health authorities. We present an approach for deciding public health policy on infant feeding and mother–infant contact in the context of COVID-19, or for future emerging viruses, that balances the risks that are associated with viral infection against child survival, lifelong health, and development, and also maternal health. Using the Lives Saved Tool, we used available data to show how different public health approaches might affect infant mortality. Based on existing evidence, including population and survival estimates, the number of infant deaths in low-income and middle-income countries due to COVID-19 (2020–21) might range between 1800 and 2800. By contrast, if mothers with confirmed SARS-CoV-2 infection are recommended to separate from their newborn babies and avoid or stop breastfeeding, additional deaths among infants would range between 188 000 and 273 000.

465. Romagnolo A. Neurological comorbidities and COVID-19-related case fatality: A cohort study / A. Romagnolo, G. Imbalzano, C. A. Artusi [et al.] // *Journal of the Neurological Sciences*. – 2021. – Vol. 428. – P. 117610. – URL: <https://www.sciencedirect.com/science/article/pii/S0022510X2100304X>

Background

Neurological involvement in Coronavirus disease-2019 (COVID-19) is widely recognized. However, the role of pre-existing neurological comorbidities in modulating COVID-19-related mortality still remains unclear. This cohort study evaluates the COVID-19-related case fatality rate (CFR) of patients with pre-existing neurological diseases.

Methods

We retrospectively evaluated all patients consecutively admitted to our hospital with a diagnosis of COVID-19 between March and April 2020. We used a multivariate regression analysis to estimate the association between pre-existing neurological diseases and COVID-19-related mortality. Then, we compared the CFR and survival curves of two cohorts (patients suffering vs. those not suffering from pre-existing neurological disease), matched through the propensity score (PS). Age and other comorbidities were considered for PS calculation. We applied a 1:1 matching for the entire neurological cohort and, separately, for cerebrovascular, neurodegenerative, and other neurological diseases.

Results

Among 332 patients, 75 (22.6%) were affected by pre-existing neurological disease (n = 29 cerebrovascular, n = 26 neurodegenerative, n = 20 others). From the multivariate regression analysis, they resulted with a significant increase of COVID-19-related mortality (OR:2.559; 95%CI 1.181–5.545; p < 0.017). From the cohort analysis, CFR resulted 2-fold higher in patients with neurological disease (48.0% vs. 24.0%; p = 0.002). CFR was significantly higher in patients with neurodegenerative diseases compared to matched individuals (73.9% vs. 39.1%; p = 0.017), while CFR increase in patients with cerebrovascular diseases did not reach statistical significance (48.3% vs. 41.4%; p = 0.597).

Conclusions

Pre-existing neurological comorbidities, in particular neurodegenerative diseases, increase significantly COVID-19-related case fatality, indicating a clear priority for viral screening, access to care facilities and vaccination in these populations.

466. Rosenblat J. D. Real-world effectiveness of repeated ketamine infusions for treatment resistant depression during the COVID-19 pandemic / J. D. Rosenblat, O. Lipsitz, J. D. D. Vincenzo [et al.] // Psychiatry Research. – 2021. – Vol. 303. – P. 114086. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121003838>

Herein we evaluate the impact of COVID-19 restrictions on antidepressant effectiveness of intravenous (IV) ketamine in adults with treatment-resistant depression (TRD). We conducted a case series analysis of adults with TRD (n = 267) who received four ketamine infusions at an outpatient clinic in Ontario, Canada, during COVID-19 restrictions (from March 2020 - February 2021; n = 107), compared to patients who received treatment in the previous year (March 2019 - February 2020; n = 160). Both groups experienced significant and comparable improvements in depressive symptoms, suicidal ideation, and anxiety with repeated ketamine infusions. Effectiveness of IV ketamine was not attenuated during the COVID-19 period.

467. Rossi N. D. Early use of low dose tocilizumab in patients with COVID-19: A retrospective cohort study with a complete follow-up / N. D. Rossi, C. Scarpazza, C. Filippini [et al.] // *EClinicalMedicine*. – 2020. – Vol. 25. – P. 100459. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302030>

Pneumonia with severe respiratory failure represents the principal cause of death in COVID-19, where hyper-inflammation plays an important role in lung damage. An effective treatment aiming at reducing the inflammation without preventing virus clearance is thus urgently needed. Tocilizumab, an anti-soluble IL-6 receptor monoclonal antibody, has been proposed for treatment of patients with COVID-19.

468. Rothmüller N. Covid-19. Borders, world-making, and fear of others / N. Rothmüller // *Research in Globalization*. – 2021. – Vol. 3. – P. 100036. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000010>

This article investigates borders as fertile sites of human interaction. It examines how movement, collective memory, relationality and what I will call ‘being in limbo’ can facilitate studying the creative world-making potential that exists among humans who find themselves at borders, whether physical or notional, as in being based on imagination or ideas. I am particularly interested in exploring which relationships take place and can be anticipated at borders. The article uses the Covid-19 pandemic as context to investigate where and how notions of borders occurred during this time of crisis. It furthermore asks how borders facilitate humans extending themselves to(wards) each other and taking risks, yet thereby also juxtaposing forms of withdrawal and divisions that borders inevitably suggest. The period of the Covid-19 crisis provides a contemporary example through which to study heterogeneity and hybridity as they emerge from, and are shaped by, cultural, political, embodied, social and linguistic practices as well as every-day choreographies of border making, securing and overcoming. This article concludes that Covid-19 is an ‘intersectional virus.’ At this time, people engage in actions with each other that aim to change the intersectional oppressions that have been rendered visible through the crisis. In order to provide a global and historical reading of contemporary events, this article analyzes an example from 1991 in Europe that relates to border-crossing. The article uses etymology and introduces origins of keywords in order to facilitate an extended reading of these words beyond common usage.

469. Rotulo G. A. The impact of COVID-19 lockdown on infectious diseases epidemiology: The experience of a tertiary Italian Pediatric Emergency Department / G. A. Rotulo, B. Percivale, M. Molteni [et al.] // *The American Journal of Emergency Medicine*. – 2021. – Vol. 43. – P. 115–117. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000681>

The aim of this study was to describe the rate and types of community-acquired respiratory infections observed in a pediatric ED during the SARS-CoV-2 related lockdown in Italy and to compare data with the same period of previous year.

Methods

A retrospective analysis of medical charts of patients arrived at the ED of Gaslini Children's Hospital from 10th March 2020 to 30th April 2019 and the same frame of 2020 were performed. We compared two groups by demographics, duration of fever before ED admission, triage code, number of patients hospitalized after ED evaluation. We calculated proportion and incidence rate for airborne infections, fever, and urinary tract infections (UTI), appendicitis, and gastroenteritis for control.

Results

1362 children arrived at the ED during the lockdown compared to 5628 in the same period of 2019 (-75,8%). No difference was noticed (27.7% vs 28.4%) in the total amount of infectious episodes. A significant reduction in rate of incidence and proportion were observed for upper respiratory tract infections (21,4% vs 28%), otitis (2,6% vs 16,2%), streptococcal infections (0,5% vs 5,2%) and bronchiolitis (2,1% vs 5,7%). Conversely, FUO (27,8 vs 11,1%), infectious mononucleosis (2,6% vs 0,4%), UTI (7,4% vs 2,9%) and appendicitis (6,8% vs 1,1%) significantly increased. Median time from the onset of fever and arrival in ED was significantly lower in 2020 group.

Conclusion

Our results demonstrated a reduction in community-acquired respiratory infections during the lockdown for COVID-19. The increase in rate of FUO and febrile conditions, together with the short time from fever onset and ED visit could be related to the fear for a SARS-CoV-2 infection.

470. Rousseau M.-C. Clinical characteristics of COVID-19 infection in polyhandicapped persons in France / M.-C. Rousseau, M. Hully, M. Milh [et al.] // Archives de Pédiatrie. – 2021. – Vol. 28, № 5. – P. 374–380. – URL: <https://www.sciencedirect.com/science/article/pii/S0929693X21000841>

Aim

Little is known about the clinical profile of COVID-19 infection in polyhandicapped persons. This study aimed to describe the characteristics of this infection among individuals with polyhandicap.

Method

This was a retrospective observational study. Polyhandicap was defined by the combination of motor deficiency, profound mental retardation, and age at onset of cerebral lesion younger than 6 years. A positive COVID-19 status was

considered for patients with a positive COVID-19 laboratory test result, or patients presenting with compatible symptoms and living in an institution or at home with other patients or relatives who had laboratory-confirmed COVID-19 infection. Data collection included sociodemographic data, clinical and paraclinical characteristics, as well as the management and treatment for COVID-19 infection.

Results

We collected 98 cases, with a sex ratio of 0.98 and a mean age of 38.5 years (3 months to 73 years). COVID-19 infection was paucisymptomatic in 46% of patients, 20.6% of patients presented with dyspnea, while the most frequent extra-respiratory symptoms were digestive (26.5%) and neurological changes (24.5%); 18 patients required hospital admission, four adults died. The mean duration of infection was longer for adults than for children, and the proportion of taste and smell disorders was higher in older patients.

Conclusion

These findings suggest that PLH persons often develop paucisymptomatic forms of COVID-19 infection, although they may also experience severe outcomes, including death. Clinicians should be aware that COVID-19 symptoms in PLH persons are often extra-respiratory signs, mostly digestive and neurologic, which may help in the earlier identification of COVID-19 infection in this particular population of patients.

471. Roy S. Identifying key indicators of job loss trends during COVID-19 and beyond / S. Roy, R. Dutta, P. Ghosh // Social Sciences & Humanities Open. – 2021. – Vol. 4, № 1. – P. 100163. – URL: <https://www.sciencedirect.com/science/article/pii/S2590291121000590>

COVID-19, declared by the World Health Organization as a Public Health Emergency of International Concern, has claimed over 2.7 million lives worldwide. In the absence of vaccinations, social distancing and lockdowns emerged as the means to curb infection spread, with the downside of bringing the world economy to a standstill. In this work, we explore the epidemiological, socioeconomic and demographic factors affecting the unemployment rates of United States that may contribute towards policymaking to contain contagion and mortality while balancing the economy in the future. We identify the ethnic groups and job sectors that are affected by the pandemic and demonstrate that Gross Domestic Product (GDP), race, age group, lockdown severity and infected count are the key indicators of post-COVID job loss trends.

472. Roy S. Recreational and philanthropic sectors are the worst-hit US industries in the COVID-19 aftermath / S. Roy, R. Dutta, P. Ghosh // Social Sciences & Humanities Open. – 2021. – Vol. 3, № 1. – P. 100098. – URL: <https://www.sciencedirect.com/science/article/pii/S2590291120300875>

Lockdown measures to curb the spread of COVID-19 has brought the world economy on the brink of a recession. It is imperative that nations formulate administrative policies based on the changing economic landscape. In this work, we apply a statistical approach, called topic modeling, on text documents of job loss notices of 26 US states to identify the specific states and industrial sectors affected economically by this ongoing public health crisis. Our analysis reveals that there is a considerable incongruity in job loss patterns between the pre- and during-COVID timelines in several states and the recreational and philanthropic sectors register high job losses. It further shows that the interplay among several possible socioeconomic factors would lead to job losses in many sectors, while also creating new job opportunities in other sectors such as public service, pharmaceuticals and media, making the job loss trends a key indicator of the world economy. Finally, we compare the low income job loss rates against overall job losses due to COVID-19 in the US counties, and discuss the implications of press reports on reopening businesses and the unemployed workforce being absorbed by other sectors.

473. Royo-Cebrecos C. Mass SARS-CoV-2 serological screening, a population-based study in the Principality of Andorra / C. Royo-Cebrecos, D. Vilanova, J. López [et al.] // The Lancet Regional Health - Europe. – 2021. – Vol. 5. – P. 100119. – URL: <https://www.sciencedirect.com/science/article/pii/S266677622100096X>

Background

Andorra is a small country located in the Pyrenees attracting millions of visitors for tourism, mostly associated with skiing, and nature-related activities. As its neighbouring countries, Spain and France, it has been heavily affected by the COVID-19 pandemic. We estimated SARS-CoV-2 seroprevalence in the entire country by universal serological testing under a lockdown environment.

Methods

A total of 77,543 inhabitants of Andorra were invited to participate in the study. From 4-28 May, 2020, two cross sectional serological surveys were conducted using a rapid serological test (nCOV IgG/IgM) on a finger prick blood sample in 59 drive-through or walk-through checkpoints, all over Andorra. We calculated seroprevalence of antibodies against SARS-CoV-2 and analysed the main sociodemographic factors associated with being seropositive.

Findings

70,494 inhabitants (90.9% of the population) participated in at least one survey. Overall seroprevalence was 11.0%. The most affected age groups were those over 90 years old (15.2%) and 80-89 (13.8%), followed by adults 50-59 (13.6%) and adolescents 10-19 (13.7%). Most seropositive participants, 6,061 (95.1%), were asymptomatic before the surveys. The multivariable analysis showed that the odds of being seropositive was higher among seasonal workers

(OR 2.41; 95% CI 1.07-5.45) or in the population living in La Massana region, a popular ski-related area (OR 2.66; 95% CI 2.44-2.89). A higher seroprevalence was observed in those familiar nuclei with greater numbers of cohabitants: 18% in families with 6 household members or more; 13% in medium size families (3/4/5 people) and 12% in small size (1 to 2 people) nuclei.

Interpretation

The prevalence of antibodies against SARS-CoV-2 in the population of Andorra was high during the first wave of the pandemic. Seasonal workers and inhabitants based in La Massana presented a higher seroprevalence. Mass antibody screening allows to identify infection hotspots and should contribute to the design of tailored interventions to prevent SARS-CoV-2 transmission in Andorra.

Funding

Andorran Ministry of Health, Andorran Health Services.

474. Sacco P. L. Emergence of knowledge communities and information centralization during the COVID-19 pandemic / P. L. Sacco, R. Gallotti, F. Pilati [et al.] // Social Science & Medicine. – 2021. – Vol. 285. – P. 114215. – URL: <https://www.sciencedirect.com/science/article/pii/S0277953621005475>

Background

As COVID-19 spreads worldwide, an infodemic – i.e., an over-abundance of information, reliable or not – spreads across the physical and the digital worlds, triggering behavioral responses which cause public health concern.

Methods

We study 200 million interactions captured from Twitter during the early stage of the pandemic, from January to April 2020, to understand its socio-informational structure on a global scale.

Findings

The COVID-19 global communication network is characterized by knowledge groups, hierarchically organized in sub-groups with well-defined geopolitical and ideological characteristics. Communication is mostly segregated within groups and driven by a small number of subjects: 0.1% of users account for up to 45% and 10% of activities and news shared, respectively, centralizing the information flow.

Interpretation

Contradicting the idea that digital social media favor active participation and co-creation of online content, our results imply that public health policy strategies to counter the effects of the infodemic must not only focus on information content,

but also on the social articulation of its diffusion mechanisms, as a given community tends to be relatively impermeable to news generated by non-aligned sources.

475. Sadiq Z. Systematic review and meta-analysis of chest radiograph (CXR) findings in COVID-19 / Z. Sadiq, S. Rana, Z. Mahfoud [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 229–238. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121002941>

Chest radiography (CXR) is most likely to be the utilized modality for diagnosing COVID-19 and following up on any lung-associated abnormalities. This review provides a meta-analysis of the current literature on CXR imaging findings to determine the most common appearances of lung abnormalities in COVID-19 patients in order to equip medical researchers and healthcare professionals in their efforts to combat this pandemic. Twelve studies met the inclusion criteria and were analyzed. The inclusion criteria consisted of: (1) published in English literature; (2) original research study; (3) sample size of at least 5 patients; (4) reporting clinical characteristics of COVID-19 patients as well as CXR imaging features; and (5) noting the number of patients with each corresponding imaging feature. A total of 1948 patients were included in this study. To perform the meta-analysis, a random-effects model calculated the pooled prevalence and 95% confidence intervals of abnormal CXR imaging findings. Seventy-four percent (74%) (95% CI: 51–92%) of patients with COVID-19 had an abnormal CXR at the initial time of diagnosis or sometime during the disease course. While there was no single feature on CXR that was diagnostic of COVID-19 viral pneumonia, a characteristic set of findings were obvious. The most common abnormalities were consolidation (28%, 95% CI: 8–54%) and ground-glass opacities (29%, 95% CI: 10–53%). The distribution was most frequently bilateral (43%, 95% CI: 27–60%), peripheral (51%, 95% CI: 36–66%), and basal zone (56%, 95% CI: 37–74%) predominant. Contrary to parenchymal abnormalities, pneumothorax (1%, 95% CI: 0–3%) and pleural effusions (6%, 95% CI: 1–16%) were rare.

476. Saha J. Do malnutrition, pre-existing morbidities, and poor household environmental conditions aggravate susceptibility to Coronavirus disease (COVID-19)? A study on under-five children in India / J. Saha, P. Chouhan // Social Science & Medicine. – 2021. – Vol. 128. – P. 105962. – URL: <https://www.sciencedirect.com/science/article/pii/S0190740921000414>

Background

The novel Coronavirus disease 2019 (2019-nCoV) outbreak, caused by severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2), has become the worst serious global risk to humanity in the last century and linked with various risk factors.

Objective

To find out the risk zone associated with Coronavirus disease among children under-five age using malnourished status, pre-existing morbidity conditions, poor household environmental conditions, and also with case fatality rate (CFR) and active case rate (ACR) of COVID-19 in India.

Data sources & methods

Data was collected from the 4th round of the National Family Health Survey (NFHS)-4, 2015–16, and CFR and ACR of COVID-19 related data collected from the Ministry of Health and Family Welfare (MoHFW) on 18th May 2020. Mean, standard deviation, and Z-score statistical methods have been employed to identify the risk factors zone and Hot Spot analysis (Getis-Ord Gi) has been done.

Results

The states and union territories (UTs) which have a high composite vulnerability score (CVS) of COVID-19 among under-five children are in Meghalaya (CVS = 1), Uttar Pradesh (CVS = 0.93), Jharkhand (CVS = 0.86), Bihar (CVS = 0.74), Madhya Pradesh (CVS = 0.74), and Odisha (CVS = 0.55). The states and UTs which have low composite vulnerability score of COVID-19 among under-five children are in Sikkim (CVS = -0.90), Daman & Diu (CVS = -0.76) Lakshadweep (CVS = -0.74), Kerala (CVS = -0.72), Chandigarh (CVS = -0.71). The COVID-19 high-risk zones (hot spot: 99% Confidence interval [CI]) were observed in Madhya Pradesh, Uttar Pradesh, Jharkhand, Bihar, and Meghalaya states of India, which are spatially high clustered and the low-risk zones (cold spot: 95% CI) were observed in Kerala, Mizoram states of India.

Conclusions

Well-built public health measures, including rapidly searching in high focus areas and testing of COVID-19, should be performed in vulnerable regions of COVID-19.

477. Sajid Z. A dynamic risk assessment model to assess the impact of the coronavirus (COVID-19) on the sustainability of the biomass supply chain: A case study of a U.S. biofuel industry / Z. Sajid // Renewable and Sustainable Energy Reviews. – 2021. – Vol. 151. – P. 111574. – URL: <https://www.sciencedirect.com/science/article/pii/S1364032121008510>

The novel coronavirus (COVID-19) is highly detrimental, and its death distribution peculiarity has severely affected people's health and the operations of businesses. COVID-19 has wholly undermined the global economy, including inflicting significant damage to the ever-emerging biomass supply chain; its sustainability is disintegrating due to the coronavirus. The biomass supply chain must be sustainable and robust enough to adapt to the evolving and fluctuating risks of the market due to the coronavirus or any potential future pandemics.

However, no such study has been performed so far. To address this issue, investigating how COVID-19 influences a biomass supply chain is vital. This paper presents a dynamic risk assessment methodological framework to model biomass supply chain risks due to COVID-19. Using a dynamic Bayesian network (DBN) formalism, the impacts of COVID-19 on the performance of biomass supply chain risks have been studied. The proposed model has been applied to the biomass supply chain of a U.S.-based Mahoney Environmental® company in Washington, USA. The case study results show that it would take one year to recover from the maximum damage to the biomass supply chain due to COVID-19, while full recovery would require five years. Results indicate that biomass feedstock gate availability (FGA) is 2%, due to pandemic and lockdown conditions. Due to the availability of vaccination and gradual business reopenings, this availability increases to 92% in the second year. Results also indicate that the price of fossil-based fuel will gradually increase after one year of the pandemic; however, the market prices of fossil-based fuel will not revert to pre-coronavirus conditions even after nine years. K-fold cross-validation is used to validate the DBN. Results of validation indicate a model accuracy of 95%. It is concluded that the pandemic has caused risks to the sustainability of biomass feedstock, and the current study can help develop risk mitigation strategies.

478. Salisbury R. Incidence of symptomatic, image-confirmed venous thromboembolism following hospitalization for COVID-19 with 90-day follow-up / R. Salisbury, V. Iotchkova, S. Jaafar [et al.] // Blood Advances. – 2020. – Vol. 4, № 24. – P. 6230–6239. – URL: <https://www.sciencedirect.com/science/article/pii/S247395292032036X>

Although COVID-19 has been reported to be associated with high rates of venous thromboembolism (VTE), the risk of VTE and bleeding after hospitalization for COVID-19 remains unclear, and the optimal hospital VTE prevention strategy is not known. We collected retrospective observational data on thrombosis and bleeding in 303 consecutive adult patients admitted to the hospital for at least 24 hours for COVID-19. Patients presenting with VTE on admission were excluded. Data were collected until 90 days after admission or known death by using medical records and an established national VTE network. Maximal level of care was ward based in 78% of patients, with 22% requiring higher dependency care (12% noninvasive ventilation, 10% invasive ventilation). Almost all patients (97.0%) received standard thromboprophylaxis or were already receiving therapeutic anticoagulation (17.5%). Symptomatic image-confirmed VTE occurred in 5.9% of patients during index hospitalization, and in 7.2% at 90 days after admission (23.9% in patients requiring higher dependency care); half the events were isolated segmental or subsegmental defects on lung imaging. Bleeding occurred in 13 patients (4.3%) during index hospitalization (1.3% had major bleeding). The majority of bleeds occurred in patients on the general ward, and 6 patients were receiving treatment-dose anticoagulation, highlighting the need for caution in intensifying standard thromboprophylaxis strategies. Of 152 patients

discharged from the hospital without an indication for anticoagulation, 97% did not receive thromboprophylaxis after discharge, and 3% received 7 days of treatment with low molecular weight heparin after discharge. The rate of symptomatic VTE in this group at 42 days after discharge was 2.6%, highlighting the need for large prospective randomized controlled trials of extended thromboprophylaxis after discharge in COVID-19.

479. Salle V. Coronavirus-induced autoimmunity / V. Salle // Clinical Immunology. – 2021. – Vol. 226. – P. 108694. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1521661621000310>

The pandemic of Coronavirus disease 2019 (COVID-19), caused by a new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spotlighted the link between viral infection and autoimmunity. In this review, we focus on coronavirus-induced autoimmunity based on evidence from experimental animal models, SARS-CoV infection with in vitro studies of molecular mimicry and COVID-19 with several clinical reports of autoimmune manifestations of this disease. Further studies will be needed to better characterize the role of SARS-CoV-2 in the development of autoimmunity.

480. Salvati L. Pulmonary vascular improvement in severe COVID-19 patients treated with tocilizumab / L. Salvati, M. Occhipinti, L. Gori [et al.] // Immunology Letters. – 2020. – Vol. 228. – P. 122–128. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0165247820304053>

As of October 2020 management of Coronavirus disease 2019 (COVID-19) is based on supportive care and off-label or compassionate-use therapies. On March 2020 tocilizumab - an anti-IL-6 receptor monoclonal antibody - was suggested as immunomodulatory treatment in severe COVID-19 because hyperinflammatory syndrome occurs in many patients similarly to the cytokine release syndrome that develops after CAR-T cell therapy. In our retrospective observational study, 20 severe COVID-19 patients requiring intensive care were treated with tocilizumab in addition to standard-of-care therapy (SOC) and compared with 13 COVID-19 patients receiving only SOC. Clinical respiratory status, inflammatory markers and vascular radiologic score improved after one week from tocilizumab administration. On the contrary, these parameters were stable or worsened in patients receiving only SOC. Despite major study limitations, improvement of alveolar-arterial oxygen gradient as well as vascular radiologic score after one week may account for improved pulmonary vascular perfusion and could explain the more rapid recovery of COVID-19 patients receiving tocilizumab compared to controls.

481. Salvatore D. The U.S. and the world economy after Covid-19 / D. Salvatore // Journal of Policy Modeling. – 2021. – Vol. 43, № 4. – P. 728–738. – URL: <https://www.sciencedirect.com/science/article/pii/S0161893821000296>

1. Introduction

Recovery and growth after the 2009 recession were generally slow (Salvatore, 2020). Will the same happen after the 2020 recession? It is true that the current recession was deeper than the previous one, but it is also true that more aggressive and immediate macro policies were adopted in support of the economy in the current recession than in the previous one.

This paper examines the reasons that the recovery from the current recession and growth might be rather slow and anemic, as after the previous recession. One reason is that some of the forces responsible for the slow recovery and growth after the 2009 recession still operate today and then (as we shall see) there are other reasons specific to the current recession.

482. Sanabria-Díaz J. M. Did anomalous atmospheric circulation favor the spread of COVID-19 in Europe? / A. Sanchez-Lorenzo, J. Vaquero-Martínez, J. Calbó [et al.] // Environmental Research. – 2021. – Vol. 194. – P. 110626. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935120315231>

The current pandemic of coronavirus disease 2019 (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is having negative health, social and economic consequences worldwide. In Europe, the pandemic started to develop strongly at the end of February and beginning of March 2020. Subsequently, it spread over the continent, with special virulence in northern Italy and inland Spain. In this study we show that an unusual persistent anticyclonic situation prevailing in southwestern Europe during February 2020 (i.e. anomalously strong positive phase of the North Atlantic and Arctic Oscillations) could have resulted in favorable conditions, e.g., in terms of air temperature and humidity among other factors, in Italy and Spain for a quicker spread of the virus compared with the rest of the European countries. It seems plausible that the strong atmospheric stability and associated dry conditions that dominated in these regions may have favored the virus propagation, both outdoors and especially indoors, by short-range droplet and aerosol (airborne) transmission, or/and by changing social contact patterns. Later recent atmospheric circulation conditions in Europe (July 2020) and the U.S. (October 2020) seem to support our hypothesis, although further research is needed in order to evaluate other confounding variables. Interestingly, the atmospheric conditions during the Spanish flu pandemic in 1918 seem to have resembled at some stage with the current COVID-19 pandemic.

483. Sanabria-Díaz J. M. Public strategies to rescue the hospitality industry following the impact of COVID-19: A case study of the European Union / J. M. Sanabria-Díaz, T. Aguiar-Quintana, Y. Araujo-Cabrera // International Journal of Hospitality Management. – 2021. – Vol. 97. – P. 102988. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921001316>

The COVID-19 pandemic has caused a “zero tourism” situation throughout the world with unpredictable consequences. Several authors analyzed the economic impacts of the COVID-19 pandemic during the second trimester of 2020, but none of them have specifically examined European Union countries and the joint actions taken to fight the pandemic. Using a case study methodology, this paper presents a literature review of the most up-to-date studies on the impacts of the COVID-19 global pandemic. Secondly, we specify the different public intervention measures implemented by the European Union in accordance with supranational governance theory and stakeholder theory. Finally, we set out the different COVID-19-related public rescue strategies for the tourism and hospitality sector at the individual level (for tourists), at the business level (for touristic companies) and at the destination level (for the European Union countries), from the perspective of stakeholders. The main contribution of our research is therefore to explore the public strategies to rescue the tourism and hospitality sector in the context of the European Union.

484. Sarkar A. Public health preparedness and responses to the coronavirus disease 2019 (COVID-19) pandemic in South Asia: a situation and policy analysis / A. Sarkar, G. Liu, Y. Jin [et al.] // Global Health Journal. – 2020. – Vol. 4, №4. – P. 121–132. – URL: <https://www.sciencedirect.com/science/article/pii/S2414644720300567>

Like rest of the world, the South Asian region is facing enormous challenges with the coronavirus disease 2019 (COVID-19) pandemic. The socioeconomic context of the eight South Asian countries is averse to any long-term lockdown program, but the region still observed stringent lockdown close to two months. This paper analyzed major measures in public health preparedness and responses in those countries in the pandemic. The research was based on a situation analysis to discuss appropriate plan for epidemic preparedness, strategies for prevention and control measures, and adequate response management mechanism. Based on the data from March 21 to June 26, 2020, it appeared lockdown program along with other control measures were not as effective to arrest the exponential growth of fortnightly COVID-19 cases in Afghanistan, Bangladesh, India, Nepal and Pakistan. However, Bhutan, Maldives and Sri Lanka have been successfully limiting the spread of the disease. The in-depth analysis of prevention and control measures espoused densely populated context of South Asia needs community-led intervention strategy, such as case containment, in order to reverse the growing trend, and adopt the policy of mitigation instead of suppression to formulate COVID-19 action plan. On the other hand, mechanism for response management encompassed a four-tier approach of governance to weave community-led local bodies with state, national and international governance actors for enhancing the countries’ emergency operation system. It is concluded resource-crunch countries in South Asia are unable to cope with the disproportionate demand of capital and skilled health care workforce at the time of the pandemic. Hence, response management needs an approach of governance maximization instead of resource maximization. The epidemiologic management of population coupled with suitable public health prevention and control measures may be a more appropriate strategy

to strike a balance between economy and population health during the time of pandemic.

485. Sahin M. Fibroblast function in COVID-19 / M. Sahin, E. Akkus // Pathology - Research and Practice. – 2021. – Vol. 219. – P. 153353. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0344033821000145>

We read interesting short communication entitled COVID-19: Brief check through the pathologist's eye (autopsy archive) [1].

The deaths from severe acute respiratory syndrome coronavirus, also called COVID-19, are increasing as the number of cases increase. Diffuse alveolar damage seems to be major cause of death in COVID-19 infection.

At the core of tissue remodeling in COVID19 infected alveolar tissue may be fibroblasts. Fibroblasts in the lung interstitium are the common cells, producing extracellular matrix and active during the injury [2].

Normally, the fibroblast can be activated by interaction of alveolar epithelial cells, endothelial cells and inflammatory mediators [3]. Several viruses have been reported to infect fibroblasts [4]. ACE2, which is a binding receptor of the COVID-19 is expressed in fetal human lung fibroblasts [4]. In COVID-19, alveolar sac involvement may be patient specific and alveolar fibroblasts may have higher ACE2 receptor expression in some patients and virus may also infect the fibroblasts. This infection may cause proliferation of fibroblasts and extracellular matrix over production, with local adipogenesis may cause tissue expansion and edema. Also hyalin and collagen may absorb water and form thick hyalin membrane with cell debris. Fibroblasts produce cytokines and cause T cell infiltration which may increase the inflammation. Also thrombus may increase proliferation and function of fibroblasts. This thick wall cause oxygenization defect in severe cases [5].

Secondly; like in HIV, COVID-19 may hijack fibroblasts to cause viremia. Fibroblasts may transinfect the immune cells and make immune cells more prone to virus [6]. So viremia may occur in these patients.

After infection fibroblast function may be defective and activation of urokinase type

plasminogen activator by fibroblast may be disrupted [7]. Also Infected fibroblasts may not able do downregulate plasminogen inhibitor [8]. So infected fibroblasts may be in part responsible from increased risk of thrombus in COVID-19 patients.

Fibroblast dysfunction may also cause spaghetti like messy unhealthy collagen accumulation which may cause virus entrance to deep tissue layers.

Viral hormones may affect diseases [9]. The viral insulin/ insulin-like growth factor–I receptor (IGF-IR)-like peptides may have role on the pathogenesis of lung damage also by binding to IGF-1 receptors on fibroblasts.

Drugs that decrease the expression of ACE2, IGF-1 receptor inhibition and treatment with hyaluronidase may decrease the mortality in severe COVID-19 patients.

486. Sayeb Y. Managing COVID-19 Crisis using C3HIS Ontology / Y. Sayeb, M. J. Henda, B. Ghezala // *Procedia Computer Science*. – 2021. – Vol. 67. – P. 103357. – URL: <https://www.sciencedirect.com/science/article/pii/S1877050921003574>

The paper aims to present the C3HIS Ontology project, a web based solution for Covid-19 Crisis Health Care Information System. In the health care services, employee skills are a major resource and an essential part of everyday practice and a requirement for all health professions. We aim to prove how using individual profiles based on competencies can make a difference between life and death in times. As the performance assessment is driven by actors competencies we have to put human actors in the core of quality processes of health care services management in COVID-19 crisis.

487. Scagnolari C. Differential induction of type I and III interferon genes in the upper respiratory tract of patients with coronavirus disease 2019 (COVID-19) / C. Scagnolari, A. Pierangeli, F. Frasca [et al.] // *Virus Research*. – 2021. – Vol. 295. – P. 198283. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0168170220311904>

The natural course of type I and III interferon (IFN) response in the respiratory tract of COVID-19 patients needs to be better defined. We showed that type I/III IFNs, IFN-regulatory factor 7 (IRF7), and IFN stimulated genes (ISGs), are highly expressed in the oropharyngeal cells of SARS-CoV-2 positive patients compared to healthy controls. Notably, the subgroup of critically-ill patients that required invasive mechanical ventilation had a general decrease in expression of IFN/ISG genes. Heterogeneous patterns of IFN-I/III response in the respiratory tract of COVID-19 patients may be associated to COVID-19 severity.

488. Scarlett H. G. Tourism recovery and the economic impact: A panel assessment / H. G. Scarlett // *Research in Globalization*. – 2021. – Vol. 3. – P. 100044. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000095>

In anticipation of recovery in the tourism industry post COVID-19, this study examines the economic impact of tourism on economic growth and other macroeconomic variables in a panel of 46 countries. Using system-GMM estimation, I find that tourism has a statistically significant positive effect on economic growth. In the linear model, the positive effect on growth is 50 percent higher if tourism receipts relative to GDP is used as the tourism measure, instead of tourist arrivals per capita. When the non-linear specification is considered, it is found that tourism specialization at higher levels dampens the positive effect on growth. However, increased tourist receipts have a positive effect on growth, at all levels. Regardless of the measure of tourism, an increase in tourism augurs well for the services and agriculture value-added shares of GDP as well as the labour prospect in the service and industry sectors and among the vulnerable employed. Increase in the tourism receipts relative to GDP is expected to positively impact the net FDI inflows to GDP ratio. The results suggest that policy makers should be measured in their approach as they navigate their economies post-COVID-19 when the tourism industry is in the recovery phase.

489. Schalkwyk M. C. Public health emergency or opportunity to profit? The two faces of the COVID-19 pandemic / M. C. van Schalkwyk, N. Maani. M. McKee // The Lancet Diabetes & Endocrinology. – 2021. – Vol. 9, № 2. – P. 61–63. – URL: <https://www.sciencedirect.com/science/article/pii/S2213858721000012>

Never let a good crisis go to waste”.¹ The exploitation of disasters by those in powerful positions is not a modern phenomenon. For centuries, multinational corporations have demonstrated a remarkable ability to turn the misfortunes of others into opportunities for lucrative gains. In the 17th century, the English and Dutch East India Companies, among others, were at the forefront of the European colonial expansion, seeking opportunities to exploit cheap labour and natural resources in foreign lands. Later, England's Royal African Company would provide the logistics that made the Atlantic slave trade possible. In the 20th century, World War 1 brought new opportunities. While arms traders were the obvious beneficiaries, tobacco manufacturers were not far behind. When General John J “Black Jack” Pershing, commander of US forces in World War 1, was asked what he needed to win the war, he replied “tobacco, as much as bullets”.² More recently, the Canadian writer Naomi Klein has coined the term “disaster capitalism”, describing how corporations have profited from natural disasters, such as the Indian Ocean tsunami or Hurricane Katrina, as well as military coups, political revolutions, and the US war on terror.³ As Klein documents, the short-term and longer-term interests of corporations and their political allies are often prioritised at time of crisis over the needs of the public, creating further crises and deepening social injustices.³ It was therefore no surprise that the 2020 COVID-19 pandemic would be seen as offering many such opportunities.

490. Scheiwiller S. Strategic responses by European airlines to the Covid-19 pandemic: A soft landing or a turbulent ride? / S. Scheiwiller, L. Zizka // Journal of Air Transport Management. – 2021. – Vol. 95. – P. 102103. – URL: <https://www.sciencedirect.com/science/article/pii/S0969699721000867>

The coronavirus (COVID-19) pandemic has dramatically affected the aviation industry. This paper investigates how 20 European airlines communicated their crisis messages during the pandemic by employing Situational Crisis Communication Theory (SCCT) to airline responses. This qualitative study consisting of a systematic review and content analysis, examined 7237 messages from social media channels and press releases posted between December 1, 2019, and May 25, 2020, when the crisis unfolded worldwide. The results indicate that the airlines primarily emphasized instructing and adjusting crisis communication strategies. Further, Twitter replaced Facebook as the primary communication channel. This study provides insights on how airlines can and should communicate crisis-related messages amidst a severe pandemic. The study concludes with the implications of these findings and recommendations for airline stakeholders moving forward.

491. Schiff J. Covid-19 presenting as a bulging fontanelle / J. Schiff, C. Brennan [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 43. – P. 81–82. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000644>

The 2019 novel coronavirus disease (COVID-19) has become a global pandemic that has struck the United States particularly hard. While it has disproportionately caused severe illness in the elderly and older adult population, many children have also been infected with the virus and some have become critically ill. It is important to recognize COVID-19 may present differently in children; specifically, those under twelve months of age. We report a case of COVID-19 infection in an infant characterized by a bulging anterior fontanelle without any additional symptoms.

492. Schmidt K. COVID-19 – A window of opportunity for the transition toward sustainable mobility? / K. Schmidt, T. Sieverding, H. Wallis [et al.] // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 10. – P. 100374. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221000816>

The mobility sector was one of the sectors most affected by COVID-19 and its political restrictions, with, inter alia a huge drop in mobility behavior due to travel bans, lockdowns, and a reduced need to be mobile. The present study examined the potential of COVID-19 restrictions aiming at containing the spread of the virus to be a window of opportunity for the transition toward sustainable mobility by breaking up strongly habitualized daily and travel mobility behaviors

through changes of behavioral contexts. We conducted an online survey in a sample representative for the German population (N = 3092) to study the consequences of the COVID-19 restrictions on Germans' daily and travel mode choices and on their wishes for future mobility. Furthermore, we examined the moderating effects of Germans' personal norms to protect the climate on changes in their mobility behavior toward sustainable mobility, both within and beyond the corona pandemic. In line with previous research, the present study shows an overall reduction of mobility across almost all modes of transport for daily and travel mobility during time periods of COVID-19 restrictions compared to pre-COVID-19-times, with different transport modes being affected differently. Our findings additionally point out the relevance of personal norms to protect the climate for the transition toward sustainable mobility behavior. Altogether, the present study provides first empirical evidence for the corona pandemic to represent a window of opportunity for the transition toward sustainable mobility. Furthermore, the study also points out relevant directions for further research.

493. Scoulas J. M. College students' perceptions on sense of belonging and inclusion at the academic library during COVID-19 / J. M. Scoulas // The Journal of Academic Librarianship. – 2021. – Vol. 47, № 6. – P. 102460. – URL: <https://www.sciencedirect.com/science/article/pii/S0099133321001518>

This paper demonstrates how university students experienced and perceived inclusion in a public research university library context during COVID-19. Both quantitative (n = 3379) and qualitative data (n = 575) from the 2021 student survey were examined to explore students' library experiences and their perceptions of inclusion. The quantitative data revealed that students using both the physical and online library had the greatest sense of belonging, whereas students who never used any library resources had the least sense of belonging. The qualitative data further revealed that when students used the in-person library space they felt a sense of belonging, as well as feeling accepted and valued; on the other hand, it was hard for them to judge inclusion when they had not been in the library due to COVID-19. This finding suggests how academic libraries need to prepare for the hybrid environment (in-person and online) so that students using online resources and services feel connected to the library.

494. Seery V. Blood neutrophils from children with COVID-19 exhibit both inflammatory and anti-inflammatory markers / V. Seery, S. C. Raiden, S. C. Algeri [et al.] // EBioMedicine. – 2021. – Vol. 67. – P. 103357. – URL: <https://www.sciencedirect.com/science/article/pii/S235239642100150X>

Background

Perhaps reflecting that children with COVID-19 rarely exhibit severe respiratory symptoms and often remain asymptomatic, little attention has been paid to explore the immune response in pediatric COVID-19. Here, we analyzed the phenotype and function of circulating neutrophils from children with COVID-19.

Methods

An observational study including 182 children with COVID-19, 21 children with multisystem inflammatory syndrome (MIS-C), and 40 healthy children was performed in Buenos Aires, Argentina. Neutrophil phenotype was analyzed by flow cytometry in blood samples. Cytokine production, plasma levels of IgG antibodies directed to the spike protein of SARS-CoV-2 and citrullinated histone H3 were measured by ELISA. Cell-free DNA was quantified by fluorometry.

Findings

Compared with healthy controls, neutrophils from children with COVID-19 showed a lower expression of CD11b, CD66b, and L-selectin but a higher expression of the activation markers HLA-DR, CD64 and PECAM-1 and the inhibitory receptors LAIR-1 and PD-L1. No differences in the production of cytokines and NETs were observed. Interestingly, the expression of CD64 in neutrophils and the serum concentration of IgG antibodies directed to the spike protein of SARS-CoV-2 distinguished asymptomatic from mild and moderate COVID-19.

Interpretation

Acute lung injury is a prominent feature of severe COVID-19 in adults. A low expression of adhesion molecules together with a high expression of inhibitory receptors in neutrophils from children with COVID-19 might prevent tissue infiltration by neutrophils preserving lung function.

Funding

This study was supported by the Ministry of Science and Technology (National Agency for Scientific and Technological Promotion, IP-COVID-19-0277 and PMO BID PICT 2018-2548), and University of Buenos Aires from Argentina (20020170100573BA).

495. Sekine T. Robust T Cell Immunity in Convalescent Individuals with Asymptomatic or Mild COVID-19 / T. Sekine, A. Perez-Potti, O. Rivera-Ballesteros // Cell. – 2020. – Vol. 183, №1. – P. 158–168. – URL: <https://www.sciencedirect.com/science/article/pii/S0092867420310084>

SARS-CoV-2-specific memory T cells will likely prove critical for long-term immune protection against COVID-19. Here, we systematically mapped the functional and phenotypic landscape of SARS-CoV-2-specific T cell responses in unexposed individuals, exposed family members, and individuals with acute or convalescent COVID-19. Acute-phase SARS-CoV-2-specific T cells displayed a highly activated cytotoxic phenotype that correlated with various clinical markers of disease severity, whereas convalescent-phase SARS-CoV-2-specific T cells were polyfunctional and displayed a stem-like memory phenotype. Importantly, SARS-CoV-2-specific T cells were detectable in antibody-seronegative exposed family members and convalescent individuals with a history of asymptomatic and mild

COVID-19. Our collective dataset shows that SARS-CoV-2 elicits broadly directed and functionally replete memory T cell responses, suggesting that natural exposure or infection may prevent recurrent episodes of severe COVID-19.

496. Sell H. Continuity of routine immunization programs in Canada during the COVID-19 pandemic / H. Sell, A. Assi, S. M. Driedger // Vaccine. – 2021. – Vol. 39, № 39. – P. 5532–5537. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X2101077X>

Introduction

In Canada, the COVID-19 pandemic has interrupted many routine health services, placed additional strain on the health care system, and resulted in many Canadians being either unable or unwilling to attend routine immunization appointments. We sought to capture and synthesize information about changes to routine immunization programs in response to the pandemic and plans to catch-up any missed immunizations.

Methods

Provincial/territorial (P/T) public health leaders were interviewed via teleconference between August-October 2020 to collect information on the following topics: how routine immunization delivery was affected during and after initial lockdown periods, plans to catch-up missed doses, and major challenges and achievements in continuing routine immunization programs. Data were coded and categorized according to common responses and descriptive analysis was performed.

Results

Interviews occurred with participants from 11 of 13 P/Ts. School immunization programs were reported to be most negatively affected by the pandemic (n = 9). In the early pandemic period, infant, preschool, and maternal/prenatal programs were prioritized, with most P/Ts continuing these services with adaptations for COVID-19. After the initial lockdown period, all routine programs were continuing with adaptations in most P/Ts. Infant, preschool, and school programs were most often targeted for catch-up through measures such as appointment rebooking and making additional clinics and/or providers available. Major challenges included resource limitations (e.g., staff shortages, PPE shortages, limited infrastructure) (n = 11), public health restrictions (n = 8), and public hesitancy to attend appointments (n = 5).

Conclusions

Canadian routine immunization programs faced some disruptions due to the COVID-19 pandemic, particularly the school, adult, and older adult programs. Further research is needed to determine the measurable impact of the pandemic on routine vaccine coverage levels.

497. Selvaraj A. Effect of pandemic based online education on teaching and learning system / A. Selvaraj, R. Vishnu, N. Ka [et al.] // International Journal of Educational Development. – 2021. – Vol. 128. – P. 105962. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321000973>

Coronavirus outbreak mediated pandemic impacted most of the sectors globally. This includes the academic world that consists of millions of enrolled learners and active teachers who previously had regular classes in their institutions, and due to the pandemic, got stuck at the home. To continue the education process, the online class was introduced in most of the countries, including India. In this mode, both teaching and learning happen through electronic devices which are relatively new to the entire teaching-learning community. This study aimed to understand how online classes had fared for the teachers and students in India. Besides, it tried to understand the users' experience and the unique set of challenges that this mode of education brings.

Four separate questionnaires were created for school students, school teachers, college students, and college professors. The questions inquired about various aspects of online classes such as setting up online education at home, knowledge transfer, comfort, evaluation, and future aspects. The questionnaires were circulated electronically as google forms. The responses were received from the teachers (school teachers and college professors considering all courses) and learners (school and college students considering all courses) of various educational institutions across the country. The data was compiled and the results were discussed in two ways, firstly, the perspectives of teaching versus the learning group and secondly, school versus college groups on online versus regular classes. Though online training/distance education is practiced for a long time, the research on the mentioned aspects was limited. This study is the first of its kind which reflects the merits and demerits of the new-normal online education from home in the compiled voice of teachers and learners group in India. The study addresses the participant's compliments and grievances of online education compared to regular classes. This further enlightens how to improve the technologies to make them use more efficiently. Besides, this study gives a proper framework to modify or create educational policies, laws, and schemes to obtain equal access to resources for all.

498. Selvaranjan K. Environmental challenges induced by extensive use of face masks during COVID-19: A review and potential solutions / K. Selvaranjan, S. Navaratnam, P. Rajeev [et al.] // Environmental Challenges. – 2021. – Vol. 3. – P. 100039. – URL: <https://www.sciencedirect.com/science/article/pii/S2667010021000184>

The ongoing COVID-19 disease significantly affects not only human health, it also affects the wealth of country' economy and everyday routine of human life. To control the spread of the virus, face mask is used as primary personal protective equipment (PPE). Thus, the production and usage of face masks significantly

increase as the COVID-19 pandemic still escalating. Further, most of these masks contain plastics or other derivatives of plastics. Therefore, this extensive usage of face masks generates million tons of plastic wastes to the environments in a short span of time. This study aims to investigate the environmental impact induced by face mask wastes and sustainable solution to reduce this waste. An online survey was carried out to identify the types of face mask and number of masks used per week by an individual from 1033 people. Based on this survey and available literature, this study quantifies the amount of plastics waste generated by face masks. However, this survey was limited with certain ages, country and durations (July–August 2020). Thus, the prediction of plastic waste generation, only provide fundamental knowledge about the mask wastes. Results revealed that there is a huge plastic waste remained in land and marine environment in the form of mask waste, which will contribute to micro-plastic pollution. Therefore, this paper also highlights the sustainable approach to the mask production by integrating the use of natural plant fiber in the woven face mask technology to reduce the plastic waste induced by masks. Further, upcycling the mask waste and producing construction materials also discussed.

499. Serrano-Lorenzo P. Plasma LDH: A specific biomarker for lung affection in COVID-19? / P. Serrano-Lorenzo, O. N. Coya, A. López-Jimenez [et al.] // Practical Laboratory Medicine. – 2021. – Vol. 25. – P. e00226. – URL: <https://www.sciencedirect.com/science/article/pii/S2352551721000263>

Objectives

We aimed to determine whether the plasma profile of lactate dehydrogenase (LDH) isoenzymes is altered in patients with COVID-19, and whether this is attributable to a specific release of LDH-3, the main LDH isoenzyme expressed in lungs.

Design

We collected fresh plasma aliquots from 17 patients (LDH range, 281–822 U/L) and seven controls (LDH < 230 U/L). In-gel relative activity of the different LDH isoenzymes was determined by electrophoresis and densitometric analysis.

Results

Despite the expected higher total LDH activity levels in patients ($p < 0.001$), the in-gel relative activities of LDH isoenzymes did not differ between patients and controls (all $p > 0.05$). We found no correlation between total plasma LDH activity and the in-gel relative activities of the different LDH isoenzymes, including LDH-3. Likewise, there was no correlation between LDH-3 and various routine haematological and serum parameters that have been previously reported to be altered in COVID-19 (such as lymphocyte count, albumin, alanine and aspartate aminotransferase, creatinine, C-reactive protein, or ferritin).

Conclusions

Our findings suggest that elevation of plasma LDH activity in patients with COVID-19 is not associated to a specific release of LDH-3 into the bloodstream, and do not support the use of LDH as a specific biomarker for lung affectation in patients with COVID-19.

500. Setiawan E. Evaluating knowledge and skill in surgery clerkship during covid 19 pandemics: A single-center experience in Indonesia / E. Setiawan, B. Sugeng, A. Luailiyah [et al.] // *Annals of Medicine and Surgery.* – 2021. – Vol. 68. – P. 102685. – URL: <https://www.sciencedirect.com/science/article/pii/S204908012100635X>

Backgrounds

Surgery clerkship for medical students has been changed in response to clinical exposure limitation due to this pandemic. This study aim to evaluate knowledge and skill of students in surgery clerkship in covid 19 pandemics.

Methods

Cross-Sectional design comparing surgery clerkship before and during COVID-19. A total of 270 fourth and fifth-year medical students have enrolled in surgery clerkship from June 2019–October 2020 were selected for this study. Each student had completed education and training in the hospital for nine weeks in the rotation.

Results

There is no significant difference in MCQs scores before and during the pandemic. However, a significant difference was found in OSCE scores.

Conclusions

Combining virtual platforms and in-person clinical rotation is an effective surgery clerkship curriculum, particularly in pandemic covid 19. There are no different skill and knowledge results before and during the pandemic analyzed from MCQs and OSCE exam.

501. Shabani M. Evaluation of the prophylactic effect of hydroxychloroquine on people in close-contact with patients with COVID-19 / M. Shabani, M. Totonchi, O. Rezaeimirghaed [et al.] // *Pulmonary Pharmacology & Therapeutics.* – 2021. – Vol. 70. – P. 102069. – URL: <https://www.sciencedirect.com/science/article/pii/S109455392100081X>

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has caused significant mortality worldwide. The disease attacks the lung tissue and may lead to acute respiratory distress syndrome. An in vitro study showed that hydroxychloroquine (HCQ) has a prophylactic effect against COVID-19 due to its anti-inflammatory

effects. The present study aimed to evaluate the prophylactic effect of HCQ on individuals in close contact with patients with COVID-19.

Method

In this quasi-trial study, we prescribed HCQ for 7 days to all people who had close contact with a patient with COVID-19. All contacts underwent a nasal swab in two steps, and those positive for COVID-19 were excluded from the study. After 14 days of follow-up, the clinical and laboratory manifestations of COVID-19 were evaluated.

Results

A total of 113 participants completed the study. The HCQ group comprised 51 (45.13%) contacts, and 62 (54.86%) contacts were allocated to the control group. According to the results of clinical examination and real-time polymerase chain reaction test, 8 (12.90%) contacts in the control group were reported to have contracted COVID-19. In the HCQ group, 7 (13.72%) contacts were confirmed to have contracted COVID-19. There was no relationship between HCQ use and age, sex, underlying disorders, and laboratory data (all $p > 0.05$). In terms of HCQ side effects, five participants experienced gastrointestinal and cutaneous side effects that subsided on discontinuation of HCQ.

Conclusion

The current study showed that HCQ had no prophylactic effect with regard to COVID-19 prevention.

502. Shah E. D. Psychological Health Among Gastroenterologists During the COVID-19 Pandemic: A National Survey / E. D. Shah, M. Pourmorteza, B. J. Elmunzer [et al.] // Clinical Gastroenterology and Hepatology. – 2021. – Vol. 19, № 4. – P. 836–838. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1542356520316335>

The COVID-19 pandemic poses unprecedented and unique challenges to gastroenterologists eager to maintain clinical practice, patients' health, and their own physical/mental well-being. We aimed to estimate the prevalence and critical determinants of psychological distress in gastroenterologists during the COVID-19 pandemic.

503. Shankaranarayanan D. Peritoneal Dialysis for Acute Kidney Injury During the COVID-19 Pandemic in New York City / D. Shankaranarayanan, S. P. Neupane, E. Varma [et al.] // Kidney International Reports. – 2021. – Vol. 5, № 9. – P. 1532–1534. – URL: <https://www.sciencedirect.com/science/article/pii/S2468024920314169>

The coronavirus disease 2019 (COVID-19) pandemic resulted in extraordinary increase in the number of patients requiring renal replacement therapy (RRT), high rate of clotting in continuous RRT (CRRT) circuits, limited

dialysis supplies and shortages of dialysis staff due to illness or quarantine.^{1, 2, 3, 4, 5} This created an opportunity to use peritoneal dialysis (PD) for acute kidney injury (AKI).

Methods

Patients treated with acute PD (AKI-PD) at our New York City hospital from April 1, 2020, to April 30, 2020, were retrospectively analyzed. Overall, 40 patients were screened and 11 were suitable for AKI-PD. AKI was defined as any patient with Acute Kidney Injury/Network (AKIN) stage 1 or greater; all patients in the cohort were AKIN stage 3. The nephrology consultant determined the need and timing for RRT initiation based on usual clinical indications. These patients were then referred to the AKI-PD team composed of an attending nephrologist and surgeon to determine candidacy for AKI-PD. Patients were excluded if they had significant abdominal surgical scars, uncorrected hernias, high likelihood of prone ventilation, active gastrointestinal issues such as ileus or small bowel obstruction, or were on dual antiplatelet therapy with aspirin and clopidogrel. Body mass index greater than 30 kg/m² was a relative contraindication and candidacy discussed on a case-by-case basis. All 11 patients underwent bedside placement of a swan-neck double-cuff Tenckhoff tunneled PD catheter, with additional purse-string suture at the surgeon's discretion. Bedside placement of the catheters by a surgeon and an assistant alone was chosen to limit COVID-19 exposure of additional health care professionals. All patients received a bowel regimen to ensure 1 to 2 bowel movements daily, the choice of laxative was at the discretion of primary treating service.

Results

The median age of the cohort was 65 years (interquartile range [IQR]: 52–76); predominantly (91%) male (Table 1). Median body mass index was 26 kg/m² (IQR: 23–30). Two patients had history of chronic kidney disease. One patient had a history of abdominal surgery. Median Sequential Organ Failure Assessment score was 9 (IQR: 6–10). All patients were on invasive mechanical ventilation and 45% required vasopressors. Acute respiratory distress syndrome, as defined by the Berlin criteria,⁶ was mild in 73% and moderate in 27%. Median baseline creatinine was 1 mg/dl (IQR: 0.9–1.44). Median time from admission to the development of AKI was 1 day (IQR: 0–3). Median peak creatinine was 6.6 mg/dl (IQR 5.6–8.15) and median daily urine output was 230 ml (IQR: 150–392) at initiation of RRT. In 73% of the patients, CRRT or intermittent hemodialysis was used as the initial RRT modality and switched to PD at a later date; time interval between discontinuation of CRRT/hemodialysis and initiating PD was less than 24 hours in these patients. CRRT circuit clotting was the primary reason for switching to PD in 2 patients.

504. Sharma A. Randomized trial drug controlled compendious transcriptome analysis supporting broad and phase specific therapeutic potential of multiple candidates in COVID-19 / A. Sharma // Cytokine. – 2021.

Effective therapies for coronavirus disease 2019 (COVID-19) are urgently needed. Maladaptive hyperinflammation and excessive cytokine release underlie the disease severity, with antiinflammatory and cytokine inhibiting agents expected to exert therapeutic effects. A major present challenge is identification of appropriate phase of the illness for a given intervention to yield optimum outcomes. Considering its established disease biomarker and drug discovery potential, a compendious analysis of existing transcriptomic data is presented here toward addressing this gap. The analysis is based on COVID-19 data related to intensive care unit (ICU) and non-ICU admissions, discharged and deceased patients, ventilation and non-ventilation phases, and high oxygen supplementation. It integrates transcriptomic data related to the effects of, in various cellular treatment models, the COVID-19 randomized clinical trial (RCT) successful drug dexamethasone, and the failed drug, with a potential to harm, hydroxychloroquine/chloroquine. Similarly, effects of various COVID-19 candidate drugs/anticytokines as well as proinflammatory cytokines implicated in the illness are also examined. The underlying assumption was that compared to COVID-19, an effective drug/anticytokine and a disease aggravating agent would affect gene regulation in opposite and same direction, in that order. Remarkably, the assumption was supported with respect to both the RCT drugs. With this control validation, etanercept, followed by tofacitinib and adalimumab, showed transcriptomic effects predictive of benefits in both ventilation and non-ventilation ICU stages as well as in non-ICU phase. On the other hand, canakinumab showed potential for effectiveness in high oxygen supplementation phase. These findings may inform experimental and clinical studies toward drug repurposing in COVID-19.

505. Sharma K. Vaccines for COVID-19: Where do we stand in 2021? /
K. Sharma, A. Koirala, K. Nicolopoulos [et al.] // Paediatric Respiratory Reviews.
– 2021. – Vol. 39. – P. 22–31. – URL:
<https://www.sciencedirect.com/science/article/pii/S1526054221000658>

As of July 2021, over 3 billion doses of a COVID-19 vaccines have been administered globally, and there are now 19 COVID-19 vaccines approved for use in at least one country. Several of these have been shown to be highly effective both in clinical trials and real-world observational studies, some of which have included special populations of interest. A small number of countries have approved a COVID-19 vaccine for use in adolescents or children. These are laudable achievements, but the global vaccination effort has been challenged by inequitable distribution of vaccines predominantly to high income countries, with only 0.9% of people in low-income countries having received at least one dose of a COVID-19 vaccine. Addressing this inequity is of critical importance and will result in better control of SARS-CoV-2 globally. Other challenges include: the

reduced protection from COVID-19 vaccines against some strains of SARS-CoV-2, necessitating the development of variant specific vaccines; and uncertainties around the duration of protection from vaccine-induced immunity.

506. Sharma R. COVID 19 pandemic and International Migration: An Initial View / R. Sharma, V. Kandpal // Sustainable Operations and Computers. – 2021. – Vol. 2. – P. 122–126. – URL: <https://www.sciencedirect.com/science/article/pii/S2666412721000222>

This paper explores how COVID-19 affects the global economy and the short-term measures taken by governments to immunize its impact upon the health of their nations and their economies. This paper also aims to bridge the lacuna in the current related literature based on analyzing the available secondary data, which applies to the nature of this study. Using a mixed theoretical framework (Keynesian Theory, Maslow's Theory of basic human needs, and the Theory of Social Distancing) was legitimate to interpret this study's findings. The researcher recommends that a proper policy framework should be planned and its implementation is ensured that protects the interest of the employers and employees. Opportunity for startups or small-scale businesses should be promoted to create employment opportunities and demand for the product, which ultimately helps the countries to come out of the situation of depression.

507. Shifa M. Spatial inequality through the prism of a pandemic: Covid-19 in South Africa / M. Shifa, A. David, M. Leibbrandt // Scientific African. – 2021. – Vol. 13. – P. e00949. – URL: <https://www.sciencedirect.com/science/article/pii/S2468227621002532>

In this paper, we examine whether pre-existing socio-economic inequalities relate to inequalities in vulnerability to COVID-19 infection in the context of South Africa using the 2016 Community Survey, which allows for a detailed geographical disaggregation of the analysis. For this purpose, we use a set of indicators of a household's vulnerability to COVID-19 infection and then aggregate these into an index of COVID-19 vulnerability. We use these indicators and their aggregate indices to profile COVID-19 vulnerability at the national, provincial and municipal levels as well providing an urban/rural breakdown. We find that pre-existing socio-economic inequalities are related to inequalities in vulnerability to COVID-19 infection. Poorer households are more vulnerable to infection due to their living conditions. While close to 30% of the population in the poorest two wealth quintiles may be considered vulnerable to the virus due to multiple vulnerability factors, the corresponding figure for the richest two wealth quintiles is less than 2%. There are also stark spatial inequalities in COVID-19 vulnerability. This has implications for budget allocations in response to the COVID-19 pandemic, especially as some of the government relief funding has been and will be apportioned according to municipal need.

508. Shields A. M. COVID-19 in patients with primary and secondary immunodeficiency: The United Kingdom experience / A. M. Shields, O. S. Burns, A. G. Richter [et al.] // Journal of Allergy and Clinical Immunology. – 2021. – Vol. 147, № 3. – P. 870–875. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0091674920324064>

Background. As of November 2020, severe acute respiratory syndrome coronavirus 2 has resulted in 55 million infections worldwide and more than 1.3 million deaths from coronavirus disease 2019 (COVID-19). Outcomes following severe acute respiratory syndrome coronavirus 2 infection in individuals with primary immunodeficiency (PID) or symptomatic secondary immunodeficiency (SID) remain uncertain.

Objectives. We sought to document the outcomes of individuals with PID or symptomatic SID following COVID-19 in the United Kingdom.

Methods. At the start of the COVID-19 pandemic, the United Kingdom Primary Immunodeficiency Network established a registry of cases to collate the nationwide outcomes of COVID-19 in individuals with PID or symptomatic SID and determine risk factors associated with morbidity and mortality from COVID-19 in these patient groups.

509. Shih R. D. Remdesivir for coronavirus 2019 (COVID-19): More promising but still unproven / R. D. Shih, D. G. Maki, C. H. Hennekens [et al.] // Contemporary Clinical Trials Communications. – 2020. – Vol. 20. – P. 100663. – URL: <https://www.sciencedirect.com/science/article/pii/S2451865420301472>

From December 2019 to May 22, 2020 the emerging and ever-increasing pandemic of coronavirus 19 (COVID-19) had no effective and safe treatment. Not surprisingly, remdesivir attracted worldwide attention. In a trial published online ahead of print, of 1063 patients, 541 were assigned at random to remdesivir and 522 to placebo. The primary prespecified endpoint was mean recovery time and patients assigned to remdesivir had a mean recovery time of 11 days versus 15 days for those assigned a random to placebo. ($p < 0.001$). With respect to mortality, the prespecified secondary endpoint, 34/538 patients in remdesivir and 54/521 in placebo died after 28 days, yielding a possible 31% reduction that approached but did not achieve statistical significance ($p = 0.059$).

The only other published trial of remdesivir randomized 237 patients in China. In that trial, 178 patients were assigned at random to remdesivir compared to 79 assigned to placebo. Those assigned at random to remdesivir experienced a possible but nonsignificant 23% faster time to clinical improvement of 21 days compared with 23 for those assigned to placebo [hazard ratio 1.23 [95% CI, 0.87-1.75]]. With respect to mortality there was no suggestion of any benefit. In fact, the mortality rate in those receiving remdesivir was 15% (22/150) compared with 13% (10/77) for those assigned to placebo.

Ongoing randomized trials should be designed, conducted and analyzed to provide the necessary reliable data on mortality to resolve the remaining clinical uncertainties.

510. Shuduo Z. Global health governance for travel health: lessons learned from the coronavirus disease 2019 (COVID-19) outbreaks in large cruise ships / Z. Shuduo, H. Lu, L. Peilong [et al.] // Global Health Journal. – 2020. – Vol. 4, № 4. – P. 133–138. – URL: <https://www.sciencedirect.com/science/article/pii/S2414644720300592>

The outbreak and global pandemic of coronavirus disease 2019 (COVID-19) attracts a great deal of attentions to the problem of travel health. Cruise tourism is increasingly popular, with an estimated 30 million passengers transported on cruise ships worldwide each year. Safeguarding the health of cruise travelers during the entire travel is of ultimate importance for both the industry and global public health.

511. Siam H. B. Insights into the first seven-months of COVID-19 pandemic in Bangladesh: lessons learned from a high-risk country / H. B. Siam, M. Hasana, S. M. Tashrif [et al.] // Heliyon. – 2021. – Vol. 7, № 6. – P. e07385. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844021014882>

South Asian countries have been struggling to control the COVID-19 pandemic despite imposing months of lockdown and other public health measures. This review aims to describe the epidemiological features and shortcomings in public health preparedness to tackle COVID-19 as well as derive lessons from these events in the context of Bangladesh. We have shown that an increase in human mobility was evident throughout the lockdown period. Over 20,000 frontline health workers were affected, and more than 2100 unofficial deaths possibly linked with COVID-19 diagnosis were reported. Males were disproportionately affected in terms of infection (71%) and death (77%) than females. Over 50% of infected cases were reported among young adults (20-40-year age group). After seven months into the pandemic, a downward trend in laboratory test positive percentage was seen, although the number of new deaths per day remained largely unchanged. We believe our findings, observations and recommendations will remain as a valuable resource to facilitate better public health practice and policy for managing current and future infectious disease like COVID-19 in resource-poor developing countries.

512. Silva A. L. R. An overview of the impact of COVID-19 on the cruise industry with considerations for Florida / A. L. R. da Silva // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 10. – P. 100391. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221000981>

This paper provides an overview of the current state of the world's cruise industry, with a focus on the chronology and the main impacts that the COVID-19 has had on the industry. Florida is presented as a micro context of the pandemic's impacts on the local economies of cruise-dependent regions. As a result of the COVID-19 pandemic and the many infected ships in the first quarter of 2020, the entire cruise industry was stopped and a prohibition on resuming this industry was imposed worldwide. This paper presents some of the consequences of stopping the cruise industry and the recommended protocols for resuming. Due to the dramatic impacts on the entire industry, some cruise lines are trying to resume despite the fact that the COVID-19 is not yet under control. The first aim of this paper is to cover the cruise industry and its importance for society, introduce the main facts of the COVID-19 outbreak, and the correlation between cruise ships and the spread of this disease. The second aim is to present the new pattern to resume the cruise industry and its challenges.

513. Simadibrata D. M. Neutrophil-to-lymphocyte ratio on admission to predict the severity and mortality of COVID-19 patients: A meta-analysis / D. M. Simadibrata, J. Calvin, A. D. Wijaya [et al.] // *The American Journal of Emergency Medicine*. – 2021. – Vol. 42. – P. 60–69. URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000097>

Background

The neutrophil-to-lymphocyte ratio (NLR), an inflammatory marker, was suggested to be predictive of severity and mortality in COVID-19 patients. Here, we investigated whether NLR levels on admission could predict the severity and mortality of COVID-19 patients.

Methods

A literature search was conducted on 23 July 2020 to retrieve all published articles, including grey literature and preprints, investigating the association between on-admission NLR values and severity or mortality in COVID-19 patients. A meta-analysis was performed to determine the overall standardized mean difference (SMD) in NLR values and the pooled risk ratio (RR) for severity and mortality with the 95% Confidence Interval (95%CI).

Results

A total of 38 articles, including 5699 patients with severity outcomes and 6033 patients with mortality outcomes, were included. The meta-analysis showed that severe and non-survivors of COVID-19 had higher on-admission NLR levels than non-severe and survivors (SMD 0.88; 95%CI 0.72–1.04; I² = 75.52% and 1.87; 95%CI 1.25–2.49; I² = 97.81%, respectively). Regardless of the different NLR cut-off values, the pooled mortality RR in patients with elevated vs. normal NLR levels was 2.74 (95%CI 0.98–7.66).

Conclusion

High NLR levels on admission were associated with severe COVID-19 and mortality. Further studies need to focus on determining the optimal cut-off value for NLR before clinical use.

514. Šime. Z. EU-India relations in the multi-vector matrix of science diplomacy and Asia-Europe Meeting / Z. Šime // Research in Globalization. – 2021. – Vol. 3. – P. 100057. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000228>

Online training events deserve more attention as a form of people-to-people connectivity. The purpose of the article is to elaborate on how online training events gain prominence in the context of the COVID-19 imposed restrictions on geographical mobility. The autoethnographic account provides new ideas on what higher education extra-curricular and capacity building activities should be taken into consideration when taking a comprehensive look at people-to-people sustainable connectivity. As the analysed three online training events that took place over the summer 2020 show, these virtual occasions of people-to-people connectivity are promising building blocks for the future exploration of the EU structural diplomacy towards India both in a bilateral setting and multilateral context of Asia-Europe Meeting.

515. Sinaci S. Impact of vitamin D on the course of COVID-19 during pregnancy: A case control study / S. Sinaci, D. F. Ocal, D. F. Y. Yetiskin [et al.] // The Journal of Steroid Biochemistry and Molecular Biology. – 2021. – Vol. 213. – P. 105964. – URL: <https://www.sciencedirect.com/science/article/pii/S0960076021001576>

Objective

We aimed to evaluate the vitamin D status of pregnant women with COVID-19, and the association between vitamin D level and severity of COVID-19.

Methods

In this case control study, 159 women with a single pregnancy and tested positive for SARS-CoV-2, and randomly selected 332 healthy pregnant women with similar gestational ages were included. COVID-19 patients were classified as mild, moderate, and severe. Vitamin D deficiency was defined as 25-hydroxycholecalciferol <20 ng/mL (50 nmol/L), and 25-OH D vitamin <10 ng/mL was defined as severe vitamin D deficiency, also 25-OH D vitamin level between 20–29 ng/mL (525–725 nmol/L) was defined as vitamin D insufficiency.

Results

Vitamin D levels of the pregnant women in the COVID-19 group (12.46) were lower than the control group (18.76). 25-OH D vitamin levels of those in the mild COVID-19 category (13.69) were significantly higher than those in the moderate/severe category (9.06). In terms of taking vitamin D supplementation,

there was no statistically significant difference between the groups. However, it was observed that all of those who had severe COVID-19 were the patients who did not take vitamin D supplementation.

Conclusion

The vitamin D levels are low in pregnant women with COVID-19. Also, there is a significant difference regarding to vitamin D level and COVID-19 severity in pregnant women. Maintenance of adequate vitamin D level can be useful as an approach for the prevention of an aggressive course of the inflammation induced by this novel coronavirus in pregnant women.

516. Singh A. L. Impact assessment of lockdown amid COVID-19 pandemic on tourism industry of Kashmir Valley, India / A. L. Singh, S. Jamal, W. S. Ahmad // Research in Globalization. – 2021. – Vol. 3. – P. 100053. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000186>

The term tourism includes those people that travel to different places, either locally, nationally or globally for vacation and relaxation, but also for social or economic motives. It is one of the progressive industries whose activities influence the economies of various nations to a great extent. It is significant to note that various past crises have troubled global tourism, but the rapidly evolving global COVID-19 pandemic has confronted this sensitive industry with unprecedented circumstances. The tourism sector contributes significantly to Kashmir's economy, which is a land of unimaginable scenic beauty with a perfect nature with shining lakes, glaciers and meadows, colourful gardens, orchards and saffron fields, with the magnificent snowy Himalayas, and home of popular pilgrimage sites, in sum a perfect acclaimed tourist destination for national and international tourists. We have chosen it as the study area for the present paper. Tourism is a part of Kashmir valley's tradition and contributes massively to its economic development. The present situations of travel and tourism has promoted the spread of highly infectious novel corona virus, which spoils tourism and raises serious questions about the future of this sector. The present paper addresses two important concerns: first it pertains to the unprecedented sociocultural and economic impacts that Kashmir's tourism industry faces amid current conditions, and second it relates to the significant change in the tourist profession and other activities due to the COVID-19 lockdown. The study draws on documentary research with semi-structured interviews, using purposive sampling together with a phenomenological approach. The findings of the study provide a rapid assessment of the reported impacts of COVID-19 on Kashmir tourism all through 2020 with a speedy decrease in tourist arrivals including documented travel restrictions. The research revealed that the stakeholders of tourism changed their means of livelihood from tourism which comes to a halt, to other possible means and the differential regional impacts of the pandemic on tourist centres as well as the severe implications on the economic development of Kashmir Valley. The findings also reveal that lower economic groups (stakeholders of tourism) were deeply affected by this pandemic.

Thus, recognizing the early impacts of COVID-19 and summing up estimates of the damage to the tourism economy amid lockdown and beyond is important to restore tourism activities in Kashmir, vital for people's livelihoods.

517. Singh V. Effectiveness of policy interventions during financial crises in China and Russia: Lessons for the COVID-19 pandemic / V. Singh, E. Roca, B. Li // Journal of Policy Modeling. – 2021. – Vol. 43, № 2. – P. 253–277. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0161893821000168>

We test the hypothesis that policy interventions in crisis periods are less effective when markets are integrated, drawing on China and Russia's experience during the global financial crisis. We conduct an event study to examine the response of stock market returns and volatility to intervention efforts using DCC-GARCH and Markov Regime Switching Models. We then estimate the extent of integration of China and Russia with the US market and assess its impact on policy interventions' effectiveness based on a regression framework. We find that interventions were effective in China but failed in Russia, where greater global links were evident. Our findings provide important policy lessons to address the impact of the current COVID-19 pandemic, given the increasing global market linkages.

518. Sinha P. Early administration of interleukin-6 inhibitors for patients with severe COVID-19 disease is associated with decreased intubation, reduced mortality, and increased discharge / P. Sinha, A. Mostaghim, C. G. Bielick [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 28–33. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220305683>

Objective

The aim of this observational study was to determine the optimal timing of interleukin-6 receptor inhibitor (IL6ri) administration for coronavirus disease 2019 (COVID-19).

Methods

Patients with COVID-19 were given an IL6ri (sarilumab or tocilizumab) based on iteratively reviewed guidelines. IL6ri were initially reserved for critically ill patients, but after review, treatment was liberalized to patients with lower oxygen requirements. Patients were divided into two groups: those requiring $\leq 45\%$ fraction of inspired oxygen (FiO₂) (termed stage IIB) and those requiring $>45\%$ FiO₂ (termed stage III) at the time of IL6ri administration. The main outcomes were all-cause mortality, discharge alive from hospital, and extubation.

519. Smith M. A. Impact of disruptions and recovery for established cervical screening programs across a range of high-income country program designs, using COVID-19 as an example: A modelled analysis / M. A. Smith,

E. A. Burger, A. Castanon [et al.] // Preventive Medicine. – 2021. – Vol. 151. – P. 106623. – URL: <https://www.sciencedirect.com/science/article/pii/S0091743521002073>

COVID-19 has disrupted cervical screening in several countries, due to a range of policy-, health-service and participant-related factors. Using three well-established models of cervical cancer natural history adapted to simulate screening across four countries, we compared the impact of a range of standardised screening disruption scenarios in four countries that vary in their cervical cancer prevention programs. All scenarios assumed a 6- or 12-month disruption followed by a rapid catch-up of missed screens. Cervical screening disruptions could increase cervical cancer cases by up to 5–6%. In all settings, more than 60% of the excess cancer burden due to disruptions are likely to have occurred in women aged less than 50 years in 2020, including settings where women in their 30s have previously been offered HPV vaccination. Approximately 15–30% of cancers predicted to result from disruptions could be prevented by maintaining colposcopy and precancer treatment services during any disruption period. Disruptions to primary screening had greater adverse effects in situations where women due to attend for screening in 2020 had cytology (vs. HPV) as their previous primary test. Rapid catch-up would dramatically increase demand for HPV tests in 2021, which it may not be feasible to meet because of competing demands on the testing machines and reagents due to COVID tests. These findings can inform future prioritisation strategies for catch-up that balance potential constraints on resourcing with clinical need.

520. Sohrabi C. Impact of the coronavirus (COVID-19) pandemic on scientific research and implications for clinical academic training – A review / C. Sohrabi, G. Mathew, T. Franchi [et al.] // International Journal of Surgery. – 2021. – Vol. 86. – P. 57–63. – URL: <https://www.sciencedirect.com/science/article/pii/S1743919121000029>

A pneumonia outbreak of unknown aetiology emerged in Wuhan, China in December 2019. The causative organism was identified on 7th January 2020 as a novel coronavirus (nCoV or 2019-nCoV), later renamed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The resulting coronavirus disease (COVID-19) has infected over 88 million individuals, resulted in over 1.9 million deaths, and has led to an unprecedented impact on research activities worldwide. Extraordinary challenges have also been imposed on medical and surgical trainees following redeployment to full-time clinical duties. Moreover, the introduction of travel restrictions and strict lockdown measures have forced the closure of many institutions and laboratories working on research unrelated to the pandemic. The lockdown has similarly stifled supply chains and slowed research and development endeavours, whilst research charities have endured significant financial strains that have since reshaped the allocation and availability of funds. However, worldwide scientific adaptation to the COVID-19 pandemic has been observed through

unprecedented levels of international collaboration alongside the uprise of remote telecommunication platforms. Although the long-term consequence of the COVID-19 pandemic on research and academic training is difficult to ascertain, the current crises will inevitably shape working and teaching patterns for years to come. To this end, we provide a comprehensive and critical evaluation of the impact of COVID-19 on scientific research and funding, as well as academic medical and surgical training.

521. Solak Ç. Linking the behavioral immune system to COVID-19 vaccination intention: The mediating role of the need for cognitive closure and vaccine hesitancy / Ç. Solak, H. Peker-Dural, S. Karlıdağ [et al.] // Personality and Individual Differences. – 2022. – Vol. 185. – P. 111245. – URL: <https://www.sciencedirect.com/science/article/pii/S0191886921006243>

Vaccination has become one of the most effective ways of controlling the spread of COVID-19. Consequently, revealing the evolutionary and cognitive antecedents of COVID-19 vaccine hesitancy and vaccination intention has become crucial. Drawing on the theory of behavioral immune system (BIS), we investigate whether perceived vulnerability to disease (PVD) is associated with vaccination intentions through the need for cognitive closure (NCC) and vaccine hesitancy. The data was collected from 525 adults from Turkey. The structural equation modeling results indicate that of the two dimensions of PVD, germ aversion predicts COVID-19 vaccination intention through sequential mediation of NCC and vaccine hesitancy. Perceived infectability, on the other hand, is directly and positively related to vaccination intention. By showing the mediating role of NCC, our results offer an insight as to why germ aversion translates into vaccine hesitancy, and low vaccination intention. We discuss the potential benefits of considering the roles of BIS and NCC in campaigns and policies targeted at increasing COVID-19 vaccine uptake and suggest implications for such practices.

522. Srifuengfung M. Impact of the COVID-19 pandemic on older adults living in long-term care centers in Thailand, and risk factors for post-traumatic stress, depression, and anxiety / M. Srifuengfung, K. Thana-udom, W. Ratta-apha [et al.] // Journal of Affective Disorders. – 2020. – Vol. 295. – P. 353–365. – URL: <https://www.sciencedirect.com/science/article/pii/S0165032721008491>

Background

There is a lack of data concerning impact of COVID-19 among older adults (OA) living at long-term care (LTC) centers. This study investigated how COVID-19 has affected this population. The prevalence of and risk factors for post-traumatic stress, depression, and anxiety were investigated.

Methods

A semi-structured interview to determine the effect of COVID-19 was conducted to 200 OA at two government LTC centers. The 17-item Post-traumatic Stress Disorder Checklist, the 9-item Patient Health Questionnaire, and the 7-item Generalized Anxiety Disorder Scale were used to evaluate post-traumatic stress, depression, and anxiety, respectively.

Results

Most OA reported moderate or severe impact of COVID-19. The most impacted area was financial due to decreased support from outside the center. Seventy percent of OA reported no or mild psychological stress from COVID-19; however, 5.5% had post-traumatic stress, 7.0% had depression, and 12.0% had anxiety. Higher psychological stress from COVID-19 and having respiratory tract infection symptoms were independently associated with post-traumatic stress, depression, and anxiety. Receiving COVID-19 news via social media was independently associated with post-traumatic stress and depression. Having psychiatric comorbidity was independently associated with depression.

Conclusions

OA living in LTC centers reported moderate or severe impact from COVID-19, especially financial, but relatively low psychological stress. Psychological stress from COVID-19, having respiratory tract infection symptoms, and receiving COVID-19 news via social media were risk factors for psychological disorders.

Limitations

The data reflected the post-outbreak period. There is limitation in the generalizability of the results for other countries with different health care systems.

523. Sokal L. I've had it! Factors associated with burnout and low organizational commitment in Canadian teachers during the second wave of the COVID-19 pandemic / L. Sokal, L. E. Trudel, J. Babb // International Journal of Educational Research Open. – 2021. – Vol. 2-2. – P. 100023. – URL: <https://www.sciencedirect.com/science/article/pii/S2666374020300236>

1. Introduction

Teaching is recognized as a high-stress profession, and the high levels of teacher burnout and subsequent attrition that sometimes results bring considerable financial costs to educational organizations. In the case of teachers, burnout and attrition also can have negative effects on school climate, school effectiveness, and ultimately on students (Ford, Olsen, Khojasteh, Ware & Urick, 2019; Maslach, Schaufeli & Leiter, 2001). The pathway to burnout in teachers has been associated with negative consequences on teachers' health, absenteeism, and work performance (Schaufeli & Buunk, 2003; Swider & Zimmerman, 2010). Key signs of teacher burnout such as exhaustion and cynicism initially result in reduced effort and involvement in lesson planning and less social interaction with students

(Jennings & Greenberg, 2009). Additionally, teachers who are experiencing symptoms of burnout are more likely to be critical, which may cause students to exhibit less motivation and competence (Klusmann, Richter & Lüdtke, 2016). Thus, while teacher burnout and attrition come with financial costs to organizations, more importantly they affect teacher health, student learning, and school climate as the burnout processes take place before burnt out teachers leave their schools (Klusmann et al., 2016). These effects are alarming under typical circumstances, and as a result they have received global research attention (Albrecht & Marty, 2017). The need to support teachers and prevent burnout and attrition is now even more urgent within the realities of COVID-19.

524. Sousa Coelho F. The multiple benefits of second-generation β -lactamase inhibitors in treatment of multidrug-resistant bacteria / F. de Sousa Coelho, J.-L. Mainardi // Infectious Diseases Now. – 2021. – Vol. 51, № 6. – P. 510–517. – URL: <https://www.sciencedirect.com/science/article/pii/S2666991920000172>

The World Health Organisation (WHO) has designated antibiotic resistance as one of the most challenging public health threats of the 21st century. Production of β -lactamase enzymes by Gram-negative bacteria is the main mechanism of resistance to β -lactam (BL), the most widely used antibiotic in clinics. In an attempt to neutralise the hydrolytic activity of these enzymes, β -lactamase inhibitors (BLIs) have been developed. First-generation BLIs include clavulanic acid, sulbactam and tazobactam. However, none of them cover all β -lactamase classes, and an increasingly wide panel of inhibitor-resistant bacterial strains has developed. Second-generation BLIs function via different mechanisms and were developed by novel scaffolds from which diazabicyclooctane (DBOs) and boronic acids have emerged. In this paper, we provide descriptions of promising second-generation β -lactamase inhibitors, such as avibactam, vaborbactam and boronic acids, as well as several BL–BLI combinations that have been designed. While some combinations are now being used in clinical practice, most are presently limited to clinical trials or pre-clinical studies. In this paper, we emphasise the continuous need to develop novel and different BLIs to keep up with the multidrug-resistant bacteria that arise. At this time, however, second-generation BLIs constitute a promising and effective approach.

525. Sprague B. L. Prioritizing breast imaging services during the COVID pandemic: A survey of breast imaging facilities within the Breast Cancer Surveillance Consortium / B. L. Sprague, E. S. O'Meara, C. I. Lee [et al.] // Preventive Medicine. – 2021. – Vol. 151. – P. 106540. – URL: <https://www.sciencedirect.com/science/article/pii/S0091743521001249>

The COVID-19 pandemic disrupted breast cancer screening and diagnostic imaging in the United States. We sought to evaluate how medical facilities prioritized breast imaging services during periods of reduced capacity or upon re-

opening after closures. In fall 2020, we surveyed 77 breast imaging facilities within the Breast Cancer Surveillance Consortium in the United States. The survey ascertained the pandemic's impact on clinical practices during March–September 2020. Nearly all facilities (97%) reported closing or operating at reduced capacity at some point during this period. All facilities were open by August 2020, though 14% were still operating at reduced capacity in September 2020. During periods of re-opening or reduced capacity, 93% of facilities reported prioritizing diagnostic breast imaging over breast cancer screening. For diagnostic imaging, facilities prioritized based on rescheduling canceled appointments (89%), specific indication for diagnostic imaging (89%), patient demand (84%), individual characteristics and risk factors (77%), and time since last imaging examination (72%). For screening mammography, facilities prioritized based on rescheduled cancelations (96%), patient demand (83%), individual characteristics and risk factors (73%), and time since last mammogram (71%). For biopsy services, more than 90% of facilities reported prioritization based on rescheduling of canceled exams, patient demand, patient characteristics and risk factors and level of suspicion on imaging. The observed patterns from this large and geographically diverse sample of facilities in the United States indicate that multiple factors were commonly used to prioritize breast imaging services during periods of reduced capacity.

526. Stiglitz J. Lessons from COVID-19 and Trump for Theory and Policy (Paper) / J. Stiglitz // Journal of Policy Modeling. – 2021. – Vol. 43, № 2. – P. 749–760. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0161893821000314>

1. Introduction

What the world, and our economy, has been through over the past few years has much to teach us about economic theory and policy. We've seen the limitations of many of the standard models, but we've also learned much about the economy and the important role that government has to play.

In response to the pandemic downturn, with its plummeting tax revenues, there was widespread support for massive government assistance. We heard the voice of John Maynard Keynes far more than Herbert Hoover's. At least for a moment, we were all Keynesians. Lawmakers had few qualms about providing unemployment insurance, which some New Dealers seemed to have a bit of angst over. There was even considerable understanding of how to target money to have the biggest bang for the buck, as well as to do the most in alleviating the suffering that the pandemic had wrought.

And yet the pandemic exposed several deficiencies both in the standard models and in our policy frameworks. It is the latter that I discuss here, and there are two themes that I consider.

The first concerns a matter of theory¹ : in particular, the deficiencies in the standard macroeconomic models, the dynamic stochastic general equilibrium models (DSGE), that have become central within macroeconomics. COVID-19, like the 2008 crisis, was an event beyond anticipated in rational expectations models. While such events don't happen every day, they happen recurrently. They are typical of the political and economic events that mark history, the wars and depressions, pandemics and crises, that have profound effects on the evolution of the economy. These are events that are never fully anticipated, not well described by "stationary stochastic processes," and have profound effects at the moment and often for years afterward. Even before the pandemic, the world was going through a different kind of trauma, the abrogation of the international rule of law by the United States, which had done so much to create the international institutions that governed globalization. Who built the chaotic trade wars into their plans? It was not something that could just be subsumed as a "technology shock" inside a rational expectations model. These kinds of events loom large, and undermine the credibility of any model predicated on the economy always being in equilibrium. In section I, I take up what this implies for how we think about macroeconomics.

Section II addresses a set of related policy issues. In particular, I examine the question of what is the appropriate policy framework in such contexts.

527. Sturrock B. R. H. Impact of affluence on the local spread of SARS-CoV2 during the first wave of the COVID-19 pandemic / B. R. H. Sturrock, E. I. Chevassut, A. Shahvisi [et al.] // Public Health in Practice. – 2021. – Vol. 2. – P. 100141. – URL: <https://www.sciencedirect.com/science/article/pii/S2666535221000665>

Objectives

Socioeconomic factors such as elevated incidence of chronic disease, overcrowding, and increased occupational exposure result in higher risk of infectious disease. The COVID-19 pandemic has appeared to disproportionately affect communities affected by deprivation and discrimination, who also appear to be at greater risk of severe disease. Our aim was to investigate the evolution of the socioeconomic groups affected by COVID-19 over the course of the first wave of the pandemic by examining patients presenting to an acute NHS trust.

Study design

and methods: A retrospective study using the postcodes of patients presenting to the Brighton and Sussex University Hospitals NHS Trust who tested PCR-positive for COVID-19 were used to determine average house price and index of multiple deprivation. These were used as markers of affluence to examine the trend in the socioeconomic status of affected patients from February to May 2020.

Results

384 cases were included. The postcodes of those individuals who were initially infected had higher average house prices and index of multiple deprivation, both of which followed downward trends as the outbreak progressed.

Conclusion

Our data shows that the outbreak spread from higher to lower affluence groups through the course of the pandemic. We hypothesise that this was due to wealthier individuals initially transmitting the virus from abroad. Therefore, an earlier and more effective quarantine could have reduced spread to members of the community at greater risk of infection and harm. We suggest that hospitals systematically record the socioeconomic status of affected individuals in order to monitor trends, identify those who may be at risk of severe disease, and to push for more equitable public health policy.

528. Su M. A bibliometric study of COVID-19 research in Web of Science / M. Su, S. Xu, J. Weng // Pharmacological Research. – 2021. – Vol. 169. – P. 105664. – URL: <https://www.sciencedirect.com/science/article/pii/S1043661821002486>

Since December 2019, a number of unexplained viral pneumonia cases have been found in some hospitals [1], [2]. On 11 February, 2020, the International Committee on Taxonomy of Viruses (ICTV) announced the official name for novel coronavirus: severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) [3]. On the same day, the World Health Organization (WHO) announced that the novel coronavirus was officially named as "COVID-19" [4], [5]. The COVID-19 pandemic has now emerged as one of the world's greatest health challenges. SARS-CoV-2 has spread to five continents. As of 6:31 p.m. CET on 28 January 2021, there were a total of 100,455,529 confirmed cases of COVID-19 involving 223 countries, areas or territories with cases worldwide, including 2,166,440 deaths, which have been reported to WHO [6]. Although most patients with mild infection had a good disease prognosis, some patients had a higher mortality rate from diffuse alveolar injury and acute respiratory distress syndrome (ARDS), which was the main cause of death [7,8], and it mainly occurred in elderly patients or patients with underlying diseases [9,10]. The most common symptoms of COVID-19 are cough, fever and fatigue. Other symptoms include expectoration, diarrhoea, headache, hemoptysis, dyspnea and lymphocytopenia. Nevertheless, COVID-19 also showed some special clinical characteristics, including targeting the lower respiratory tract with obvious upper respiratory symptoms such as runny nose, sneezing, and sore throat [1,9,11]. At present, patients infected with COVID-19 are treated by various strategies such as convalescent plasma therapy (CPT), monoclonal antibody therapy (such as tocilizumab) and traditional Chinese medicine [12–15]. As of December 7, 2020, a total of 214 vaccines are under development worldwide, 52 of which have entered the clinical trial stage, and 13 of which are in the phase III clinical stage [15]. Currently, several vaccines have been approved for full marketing and vaccination.

529. Sukendro S. Using an extended Technology Acceptance Model to understand students' use of e-learning during Covid-19: Indonesian sport science education context / S. Sukendro, A. Habibi, K. Khaeruddin [et al.] // Heliyon. – 2021. – Vol. 6, № 11. – P. e05410. – URL: <https://www.sciencedirect.com/science/article/pii/S2405844020322532>

This study was to explore factors predicting the use of e-learning during Corona Virus Disease 2019 (Covid-19) among sport science education students In Indonesia Higher Education Institutions (HEIs). The study was conducted through survey with 974 participating students from five Indonesian HEIs. An extended Technology Acceptance Model (TAM) with facilitating condition as the external factor was implemented to be the theoretical framework of this study. An analysis method through Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to measure and assess the proposed model. The findings informed that: (1) the TAM-based proposed scale has been successfully explained factors predicting the use of e-learning among Indonesian sport science students during the pandemic; (2) the finding of significant relationships between facilitating condition and perceived ease of use and between facilitating condition and perceived usefulness was reported; and (3) the significant relationships among core components of TAM were found except for one, relationship between perceived usefulness and attitude.

530. Sultana M. S. Mental health difficulties in students with suspected COVID-19 symptoms and students without suspected COVID-19 symptoms: A cross-sectional comparative study during the COVID-19 pandemic / M. S. Sultana, A. H. Khan, S. Hossain [et al.] // Children and Youth Services Review. – 2021. – Vol. 128. – P. 106137. – URL: <https://www.sciencedirect.com/science/article/pii/S0190740921002139>

Introduction

Mental health problems are taking a heavy toll on students during the COVID-19 pandemic. The purpose of this study was to compare the level of anxiety symptoms, depressive symptoms, post-traumatic stress symptoms (PTSS), and fear of COVID-19 between students with suspected COVID-19 symptoms and students without any suspected symptoms during the pandemic in Bangladesh.

Methods

This cross-sectional comparative study was conducted online among Bangladeshi students from May to July 2020. Anxiety symptoms, depressive symptoms, PTSS, and fear of COVID-19 were assessed by using the Generalized Anxiety Disorder scale, Patient Health Questionnaire, the Impact of Event Scale, and Fear of COVID-19 Scale, respectively. College and University students were the participants of the study.

Results

Among 3777 students, 1259 had suspected COVID-19 symptoms and 2518 had no suspected COVID-19 symptoms. Students who experienced suspected COVID-19 symptoms had higher prevalence (moderate to severe) of depressive symptoms (61.15% vs. 47.62%), anxiety symptoms (44.96% vs. 36.97%), and PTSS (48.3% vs. 39.75%) compared to those who had no such symptoms. The study identified having suspected COVID-19 symptoms as a significant associated factor for anxiety symptoms ($\beta_1' = 1.39$; 95% CI: 1.03–1.74), depressive symptoms ($\beta_1' = 1.88$; 95% CI: 1.43–2.32), PTSS ($\beta_1' = 3.66$; 95% CI: 2.66–4.65), and fear of COVID-19 ($\beta_1' = 0.48$; 95% CI: 0.02 to 0.94). Students with suspected COVID-19 symptoms thought more that they would be better off dead, or of hurting themselves ($P < 0.01$) and felt more afraid as if something awful might happen ($P < 0.01$) than their counterparts.

Conclusion

Mental health difficulties are more prevalent among students with suspected COVID-19 symptoms than the students without having such symptoms. This finding suggests that public health practitioners should deploy a rapid diagnostic system and consider psychological intervention in addition to clinical management for those who have COVID-19 like symptoms during the pandemic.

531. Sulyok M. Mobility and COVID-19 mortality across Scandinavia: A modeling study / M. Sulyok, M. D. Walker [et al.] // *Travel Medicine and Infectious Disease*. – 2021. – Vol. 41. – P. 102039. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1477893921000806>

Background

In response to COVID-19, the Swedish government imposed few travel and mobility restrictions. This contrasted with its Scandinavian neighbours which implemented stringent restrictions. The influence these different approaches had on mobility, and thus on COVID-19 mortality was investigated.

Methods

Datasets indicating restriction severity and community mobility were examined; Google's 'Community Movement Reports' (CMR) show activity at key location categories; the Oxford COVID-19 Government Response Tracker collates legislative restrictions into a 'Stringency Index' (SI)

532. Suman R. Impact of COVID-19 Pandemic on Particulate Matter (PM) concentration and harmful gaseous components on Indian metros / R. Suman, M. Javaid, S. K. Choudhary [et al.] // *Sustainable Operations and Computers*. – 2021. – Vol. 2. – P. 1–11. – URL: <https://www.sciencedirect.com/science/article/pii/S2666412721000088>

The COVID-19 pandemic has created a heartbreaking situation across the globe. It is affecting the human population both in terms of health issues and food

safety concerns. Most of the countries are struggling to save their economies during the lock-down conditions. The fight against the COVID-19 is very tough; either one can save the economy or save his country's human population. It seems COVID-19 have all the negative impact across the world. However, there is also some positive impact of this pandemic, where we observe much reduced environmental pollution. There has been significant improvement in the air quality at almost all the places where lock-down is implemented. Air pollution directly affects our health and hence the quality of life. In India, air quality has improved much beyond our expectations during the lock-down. This paper studies the positive impact of the COVID-19 pandemic on air pollution in major Indian cities. In the air quality rating, the paper considers types of air pollutants like Particulate Matters and Gaseous Components as benchmarks. Authors have also used available literature to study the ongoing pollution measurements, impact, and change over time. The study analysed available air quality data of four metros, i.e., Delhi, Kolkata, Mumbai, and Chennai, over the four months (National Lockdown). Two particulate matters (PM-2.5 and PM-10) pollution levels are compared with last year's values to identify the significant variations. Moreover, Gaseous components are used to analyse their impact on the country's human health and food ecosystem. The study analyses the effect of COVID-19 on air pollution, and the general recommendations are given. Paper identifies that there is a very good or positive impact of closing polluting units and vehicular movements.

533. Sun X. A simulation-based analysis for effective distribution of COVID-19 vaccines: A case study in Norway / X. Sun, E. A. Andoh, H. Yu // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 11. – P. 100453. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221001585>

Since December 2020, the vaccines from several manufacturers, e.g., Pfizer/BioNTech, Moderna, etc., have been approved for mass vaccination to control the COVID-19 pandemic, which has caused more than 100 million infections and 2.4 million deaths. These vaccines are produced and transported in large quantities to suffice the needs of several countries. Before arriving at the end-users, the vaccines need to be stored at extremely low temperatures and distributed through reliable cold chain logistics networks. Thus, the timely and cost-effective distribution of COVID-19 vaccines via cold chain logistics has become a complex operational challenge. In this paper, we develop a simulation-based approach combining both route optimization and dynamic simulation to improve the logistics performance for COVID-19 vaccine distribution. A state-of-the-art simulation package called anyLogistix is used to perform a real-world case study in Norway. With the data of periodic vaccine demands, customer and warehouse locations, vehicle-related costs and emissions, and expected service levels, implications are obtained based on the analysis of several scenarios. Our experimental results reveal that the service level, cost-effectiveness, environmental performance, and equity of a cold chain vaccine logistics system can be

significantly influenced by the fleet size, the fleet composition, the type of vehicle used, and the route optimization. Thus, these factors need to be holistically considered in the planning of an effective COVID-19 vaccine distribution system.

534. Sunyer J. Environment and the COVID-19 pandemic / J. Sunyer, P. Dadvand, M. Foraster [et al.] // Environmental Research. – 2021. – Vol. 195. – P. 110819. – URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7845501/>

Tony McMichael, an environmental epidemiologist, was one of the first to think and write about the relationship between global change, and what we know today as Anthropocene, and human health including the risks of infectious diseases in 1993 (McMicheal, 1993). He described how the interactions between deforestation and the use of natural ecosystems, their impact on animal reservoirs and changes in biodiversity, food systems and human mobility and settlement, together with climate change, were at the root of the distribution of infectious diseases (McMicheal, 1993; McMichael, 2013).

535. Syed F. Estimation of economic benefits associated with the reduction in the CO2 emission due to COVID-19 / F. Syed, A. Ullah // Environmental Challenges. – 2021. – Vol. 3. – P. 100069. – URL: <https://www.sciencedirect.com/science/article/pii/S2667010021000482>

Since World War-II, the COVID-19 pandemic is considered the most serious challenge faced by the mankind. This pandemic has not only adversely affected the health systems but has also disrupted the manufacturing and industrial sectors and thus leading to low CO₂ emissions. Reduction in the carbon dioxide (CO₂) gas emission has been noticed nearly everywhere in the world due to shutdown of industries and lockdown imposed by governments as a consequence of the COVID-19 pandemic. In the year 2019, around 37 billion tons of CO₂ emitted globally that has been reduced by 9% in the same period (January to July) for the year 2020 as consequence of COVID-19 pandemic. The Social Cost of Carbon (SCC) of a country reflects the economic damages caused by per ton increase in the CO₂ emissions. Economic and environmental benefits are associated with the reduction of CO₂ emissions as a result of COVID-19 and their estimation is the main theme of the study. Coupling reduction in the CO₂ emissions to the Social Cost of Carbon gives economic benefit for a country. The research presented investigates the long term economic and environmental benefits associated with the reduction in the CO₂ emissions for various regions of the world. The economic benefit due to the reduction in the of the CO₂ emissions as consequence of the COVID-19 to global economy is estimated as 650 billion US Dollars for the period of 6 months (from January to July). The study mainly focuses on the countries that contribute the high percentage of CO₂ emissions to the atmosphere. The first half of year 2020 (from January 2020 to July 2020) is taken into consideration because lockdown was mainly followed in that period. Further, within the country the sectors that contribute the high percentage of CO₂ emissions are also taken into account.

536. Szmuda T. Are online searches for the novel coronavirus (COVID-19) related to media or epidemiology? A cross-sectional study / T. Szmuda, S. Ali, T. V. Hetzger [et al.] // *International Journal of Infectious Diseases*. – 2020. – Vol. 97. – P. 386–390. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220304641>

Background

Previous studies on the novel Coronavirus (COVID-19) have found strong correlations between online searches and the epidemiology of the disease.

Aim

Our aim was to determine if online searches for COVID-19 related to international media announcements or national epidemiology.

Methods

Searches for “coronavirus” were made on Google Trends from December 31, 2019 to April 13, 2020 for 40 European countries. The online COVID-19 searches for all countries were correlated with each other. COVID-10 epidemiology (i.e. incidence and mortality) was correlated with the national online searches. Major announcements by the World Health Organization (WHO) were taken into consideration with peaks in online searches. Correlations were made using Spearman's rank correlation coefficient.

Results

Overall, the online searches for COVID-19 were not correlated with the actual incidence and mortality of COVID-19. The mean Spearman correlation for incidence was 0.20 (range –0.66 to 0.76) and for mortality was 0.35 (range –0.75 to 0.85). Online searches in Europe were all strongly synchronized with each other; a mean Spearman correlation of 0.93 (range 0.62 to 0.99).

537. Taboada M. Critically ill COVID-19 patients attended by anesthesiologists in northwestern Spain: A multicenter prospective observational study / M. Taboada, P. Rama, R. Pita-Romero // *Revista Española de Anestesiología y Reanimación*. – 2021. – Vol. 68, №1. – P. 10–20. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S234119292030175X>

Background and objectives

There is limited information on outcome, complications and treatments of critically ill COVID-19 patients requiring admission to an intensive care unit (ICU). The aim of this study is to describe the clinical ICU course, treatments used, complications and outcomes, of critically ill COVID-19 patients admitted in seven ICU in Galicia region during the 2020 March–April pandemic peak.

Methods

Between March 21 and April 19, 2020, we evaluated critically ill COVID-19 patients admitted to the ICU of Anesthesia of seven hospitals in Galicia,

northwestern Spain. Outcome, complications, and treatments were monitored until May 6, 2020, the final date of follow-up.

538. Taccone F. S. Organizational characteristics: Effect on outcome of ICU COVID-19 patients in Belgium – Authors' reply / F. S. Taccone, N. Van Goethem, R. De Pauw [et al.] // The Lancet Regional Health – Europe. – 2021. – Vol. 3. – P. 100070. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000478>

We thank Patel et al. [1]. for the interest in our work describing the role of organizational issues on the outcome of critically ill COVID-19 patients admitted to Intensive Care Units (ICU) in Belgium [2]. They have correctly pointed out that there is a typo in Fig. 1 of the study [2] (2070 instead of 2080 non-survivors among hospitalized patients not transferred to the ICU), although this did not influence the final results.

Concerning the study population, we excluded patients where admission (n = 1614) or discharge (n = 2564) data forms were not entered by the hospitals. In a recent study based on the same surveillance system [3], we found no difference for most baseline characteristics between patients with complete admission and discharge information and those without, suggesting the absence of major selection bias on final reporting. In case the patient was transferred to another hospital, the final outcome (i.e. survivor vs. non-survivor) remained unknown, and could not be included into the final analysis. We did not collect the information on the reason for transfer. However, we did investigate the profile of transferred patients within the overall cohort and this will be reported soon in a separate study.

Not all cohort patients were directly admitted to the ICU upon hospital entry; median time from hospital to ICU admission was 1 [IQR 0–4] days; however, this variable was not associated with outcome. Importantly, the classification of university and non-university centers was based on the affiliation of those hospitals with one of the seven Universities of Medicine of the country, which is very specific for the Belgian setting. Hence, the extrapolation of this classification to other settings or countries is probably not possible. Moreover, after correcting for individual hospitals as a covariate, the significant inter-class variation in hospital mortality between university, university-affiliated, or non-university affiliated hospitals disappeared.

Finally, the ICU “overflow” variable was calculated based on the data obtained from the Surge Capacity Survey (SCS). All hospitals in Belgium are obliged to provide a daily report on the number of confirmed and suspected COVID-19-patients present in their hospital and ICU. A confirmed COVID-19 patient is defined as a patient, for whom a positive polymerase-chain reaction (PCR) assay for SARS-CoV2 is available; a suspected COVID-19 patient is defined based on suspected findings on chest computed tomography (CT) in

association with clinical symptoms. Indeed, it is possible that some patients initially registered as “suspected” could have become “confirmed” at a later moment of reporting, when PCR results became available. In any case, the sum of confirmed and suspected COVID-19 patients in ICU reflects the total number of ICU beds occupied by potential COVID-19 patients in a given center, thus leading to overflow.

539. Taccone F. S. The role of organizational characteristics on the outcome of COVID-19 patients admitted to the ICU in Belgium / F. S. Taccone, N. Van Goethem, D. Van Beckhoven [et al.] // The Lancet Regional Health – Europe. – 2021. – Vol. 2. – P. 100019. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776220300193>

Background

Several studies have investigated the predictors of in-hospital mortality for COVID-19 patients who need to be admitted to the Intensive Care Unit (ICU). However, no data on the role of organizational issues on patients’ outcome are available in this setting. The aim of this study was therefore to assess the role of surge capacity organisation on the outcome of critically ill COVID-19 patients admitted to ICUs in Belgium.

Methods

We conducted a retrospective analysis of in-hospital mortality in Belgian ICU COVID-19 patients via the national surveillance database. Non-survivors at hospital discharge were compared to survivors using multivariable mixed effects logistic regression analysis. Specific analyses including only patients with invasive ventilation were performed. To assess surge capacity, data were merged with administrative information on the type of hospital, the baseline number of recognized ICU beds, the number of supplementary beds specifically created for COVID-19 ICU care and the “ICU overflow” (i.e. a time-varying ratio between the number of occupied ICU beds by confirmed and suspected COVID-19 patients divided by the number of recognized ICU beds reserved for COVID-19 patients; ICU overflow was present when this ratio is ≥ 1.0).

Findings

Over a total of 13,612 hospitalised COVID-19 patients with admission and discharge forms registered in the surveillance period (March, 1 to August, 9 2020), 1903 (14.0%) required ICU admission, of whom 1747 had available outcome data. Non-survivors (n = 632, 36.1%) were older and had more frequently various comorbid diseases than survivors. In the multivariable analysis, ICU overflow, together with older age, presence of comorbidities, shorter delay between symptom onset and hospital admission, absence of hydroxychloroquine therapy and use of invasive mechanical ventilation and of ECMO, was independently associated with an increased in-hospital mortality. Similar results were found in in the subgroup of invasively ventilated patients. In addition, the proportion of supplementary beds

specifically created for COVID-19 ICU care to the previously existing total number of ICU beds was associated with increased in-hospital mortality among invasively ventilated patients. The model also indicated a significant between-hospital difference in in-hospital mortality, not explained by the available patients and hospital characteristics.

Interpretation

Surge capacity organisation as reflected by ICU overflow or the creation of COVID-19 specific supplementary ICU beds were found to negatively impact ICU patient outcomes.

540. Tafreshi S. A case of secondary sclerosing cholangitis due to COVID-19 / S. Tafreshi, I. Whiteside, I. Levine [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 239–242. – URL: <https://www.sciencedirect.com/science/article/pii/S019607092100274X>

COVID-19 was first recognized by the World Health Organization (WHO) in December 2019 and declared a global pandemic in March 2020. Although COVID-19 primarily results in pulmonary symptoms, it is becoming apparent that it can lead to multisystemic manifestations. Liver damage with elevated AST and ALT is seen in patients with COVID-19. Although the etiology of liver damage is still debated, biliary damage is rarely seen. This case demonstrates a potential complication of COVID-19 in a previously healthy patient. The patient contracted COVID-19 in March 2020 and endured a complicated course including intubation, multiple readmissions, and chronic abdominal pain. He is now awaiting a liver transplant. Our case portrays biliary damage as an additional possible complication of COVID-19 and the importance of imaging in its diagnosis.

541. Talbot N. An investigation of the impacts of a successful COVID-19 response and meteorology on air quality in New Zealand / N. Talbot, A. Takada, A. H. Bingham [et al.] // Atmospheric Environment. – 2021. – Vol. 254. – P. 118322. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1352231021001400>

The COVID-19 pandemic brought about national restrictions on people's movements, in effect commencing a socially engineered transport emission reduction experiment. In New Zealand during the most restrictive alert level (Level 4), roadside concentrations of nitrogen dioxide (NO₂) were reduced 48–54% compared to Business-as-usual (BAU) values. NO₂ concentrations rapidly returned to near mean levels as the alert levels decreased and restrictions eased.

PM₁₀ and PM_{2.5} responded differently to NO₂ during the different alert levels. This is due to particulates having multiple sources, many of natural origin and therefore less influenced by human activity. PM₁₀ and PM_{2.5} concentrations were reduced during alert level 4 but to a lesser extent than NO₂ and with more

variability across regions. Particulate concentrations increased notably during alert level 2 when many airsheds reported concentrations above the BAU means.

To provide robust BAU reference concentrations, simple 5-year means were calculated along with predictions from machine learning modelling that, in effect, removed the influence of meteorology on observed concentrations. The results of this study show that latter method was found to be more closely aligned to observed values for NO₂ as well as PM_{2.5} and PM₁₀ away from coastal regions.

542. Tan M. Effects of Covid-19 on the audio-vestibular system / M. Tan, D. U. Cengiz, İ. Demir [et al.] // American Journal of Otolaryngology. – 2021. – Vol. 43, № 1. – P. 103173. – URL: <https://www.sciencedirect.com/science/article/pii/S019607092100274X>

Purpose

It was aimed to investigate the effects of COVID-19 infection on hearing and the vestibular system.

Methods

Twenty-six patients whose treatment had been completed and who had no previous hearing or balance complaints were included in the study. Patients diagnosed with the disease by PCR were included in the study. Patients with at least one month of illness were included in the study. The hearing of patients was evaluated with transient evoked otoacoustic emissions (TEOAE) and pure-tone audiometry. Bedside tests, the European Evaluation of Vertigo scale (EEV), Video Head Impulse Test (vHIT), Ocular Vestibular Myogenic Evoked Potential (oVEMP), Cervical Vestibular Myogenic Evoked Potential (cVEMP) and Videonystagmography (VNG) tests were applied to evaluate the vestibular system.

Results

A statistically significant difference was found between the COVID-19 positive and control groups according to the mean values of the 4000 Hz and 8000 Hz in both the right and left ears ($p < 0.05$). No statistically significant difference was found in the other frequencies and TEOAE. No statistically significant difference was found between the COVID-19 positive and control groups in terms of their normal or pathological VNG saccade, optokinetic and spontaneous nystagmus values ($p > 0.05$). The normal and pathological VNG head shake values were found to be significantly different between the COVID-19 positive and control groups ($p < 0.05$).

Conclusion

The high frequencies in audiometry in the COVID-19 positive group were worse than those in the control group. In the vestibular system, especially in oVEMP and cVEMP, asymmetric findings were obtained in comparison to the

control group, and a low gain in vHIT was shown. This study shows that the audiovestibular system of people with COVID-19 infection may be affected.

543. Tanrıverdi G. What can we learn from the JATM literature for the future of aviation post Covid-19? - A bibliometric and visualization analysis / G. Tanrıverdi, M. Bakır, R. Merkert [et al.] // Journal of Air Transport Management. – 2021. – Vol. 89. – P. 101916. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0969699720304993>

This paper aims to draw lessons from retrospectively evaluating the evolution of the air transport discipline right up to the COVID-19 outbreak through the Journal of Air Transport Management (JATM), the main scholarly air transportation journal globally. As such, this study deploys a comprehensive bibliometric analysis and graphical mapping of the JATM knowledge body through CiteSpace visualization of 1483 JATM papers from 2001 to 2019. Our results suggest that while the industry has experienced pandemics and economic crises in the past, both were not dominant in influencing JATM literature neither in frequency nor in impact. That said, recovery, crisis and disruption are important key words in JATM papers not just in regard to safety and economic crisis management but increasingly also related to health concerns with recent key papers published in the pandemic and recovery management context which may have helped the industry dealing with the current crisis as well as current JATM papers on this topic assisting with preparing for a transitioning out of COVID-19 world.

544. Taquet M. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA / M. Taquet, S. Luciano, J. R. Geddes [et al.] // The Lancet Psychiatry. – 2021. – Vol. 8, № 2. – P. 130–140. – URL: <https://www.sciencedirect.com/science/article/pii/S2215036620304624>

Summary

Background

Adverse mental health consequences of COVID-19, including anxiety and depression, have been widely predicted but not yet accurately measured. There are a range of physical health risk factors for COVID-19, but it is not known if there are also psychiatric risk factors. In this electronic health record network cohort study using data from 69 million individuals, 62 354 of whom had a diagnosis of COVID-19, we assessed whether a diagnosis of COVID-19 (compared with other health events) was associated with increased rates of subsequent psychiatric diagnoses, and whether patients with a history of psychiatric illness are at a higher risk of being diagnosed with COVID-19.

Methods

We used the TriNetX Analytics Network, a global federated network that captures anonymised data from electronic health records in 54 health-care

organisations in the USA, totalling 69·8 million patients. TriNetX included 62 354 patients diagnosed with COVID-19 between Jan 20, and Aug 1, 2020. We created cohorts of patients who had been diagnosed with COVID-19 or a range of other health events. We used propensity score matching to control for confounding by risk factors for COVID-19 and for severity of illness. We measured the incidence of and hazard ratios (HRs) for psychiatric disorders, dementia, and insomnia, during the first 14 to 90 days after a diagnosis of COVID-19.

Findings

In patients with no previous psychiatric history, a diagnosis of COVID-19 was associated with increased incidence of a first psychiatric diagnosis in the following 14 to 90 days compared with six other health events (HR 2·1, 95% CI 1·8–2·5 vs influenza; 1·7, 1·5–1·9 vs other respiratory tract infections; 1·6, 1·4–1·9 vs skin infection; 1·6, 1·3–1·9 vs cholelithiasis; 2·2, 1·9–2·6 vs urolithiasis, and 2·1, 1·9–2·5 vs fracture of a large bone; all $p < 0·0001$). The HR was greatest for anxiety disorders, insomnia, and dementia. We observed similar findings, although with smaller HRs, when relapses and new diagnoses were measured. The incidence of any psychiatric diagnosis in the 14 to 90 days after COVID-19 diagnosis was 18·1% (95% CI 17·6–18·6), including 5·8% (5·2–6·4) that were a first diagnosis. The incidence of a first diagnosis of dementia in the 14 to 90 days after COVID-19 diagnosis was 1·6% (95% CI 1·2–2·1) in people older than 65 years. A psychiatric diagnosis in the previous year was associated with a higher incidence of COVID-19 diagnosis (relative risk 1·65, 95% CI 1·59–1·71; $p < 0·0001$). This risk was independent of known physical health risk factors for COVID-19, but we cannot exclude possible residual confounding by socioeconomic factors.

Interpretation

Survivors of COVID-19 appear to be at increased risk of psychiatric sequelae, and a psychiatric diagnosis might be an independent risk factor for COVID-19. Although preliminary, our findings have implications for clinical services, and prospective cohort studies are warranted.

545. Tarkoma S. Fighting pandemics with digital epidemiology / S. Tarkoma, S. Alghnam, M. D. Howell // *EClinicalMedicine*. – 2020. – Vol. 26. – P. 100512. – URL: <https://www.sciencedirect.com/science/article/pii/S258953702030256X>

Digital epidemiologists conduct traditional epidemiological studies and health-related research using new data sources and digital methods from data collection to analysis [1,2]. According to Salathé, digital epidemiology is epidemiology building on digital data and tools, but a narrower definition defines it as epidemiology building on data generated and obtained with a primary goal other than conducting epidemiological studies [1]. Digital epidemiology provides insights into health and disease determinants in human populations by building on diverse digital data sources. Infectious diseases already account for > 50% of

digital epidemiology studies [2], but in the current crisis the rapid understanding of disease spread, risk factors, and intervention impact at the population scale has never been more important to mitigate health and economic consequences.

546. Tavilani A. COVID-19 vaccines: Current evidence and considerations / A. Tavilani, E. Abbasi, F. K. Ara [et al.] // *Metabolism Open.* – 2021. – Vol. 12. – P. 100124. – URL: <https://www.sciencedirect.com/science/article/pii/S2589936821000487>

The coronavirus disease 2019 (COVID-19) pandemic is a global crisis, with devastating health, business and social impacts. Vaccination is a safe, simple, and effective way of protecting a person against COVID-19. By the end of August 2021, only 24.6% of the world population has received two doses of a COVID-19 vaccine. Since the emergence of COVID-19, several COVID-19 vaccines have been developed and approved for emergency use. Current vaccines have shown efficacy with low risk of adverse effects. However, COVID-19 vaccines have been related to a relatively small number of cases of heart inflammation, anaphylaxis (allergic reactions), and blood clots formation. On the other hand, COVID-19 vaccination is not recommended for children less than 12 years of age. Furthermore, It has been proposed that some new variants (e.g., Lambda and Delta) are proficient in escaping from the antiviral immunity elicited by vaccination. Herein we present current considerations regarding the COVID-19 vaccines including: efficacy against new variants, challenges in distribution, disparities in availability, dosage gender and race difference, COVID-19 vaccine transport and storage, limitations in children and pregnant women. Long-time monitoring is essential in order to find vaccine efficacy and to rule out related side effects.

547. Taylor H. Cross sectional investigation of a COVID-19 outbreak at a London Army barracks: Neutralising antibodies and virus isolation / H. Taylor, W. Wall, D. Ross [et al.] // *The Lancet Regional Health - Europe.* – 2021. – Vol. 2. – P. 100015. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776220300156>

Background

Military personnel in enclosed societies are at increased risk of respiratory infections. We investigated an outbreak of Coronavirus Disease 2019 in a London Army barracks early in the pandemic.

Methods

Army personnel, their families and civilians had nasal and throat swabs for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by reverse transcriptase -polymerase chain reaction (RT-PCR), virus isolation and whole genome sequencing, along with blood samples for SARS-CoV-2 antibodies. All tests were repeated 36 days later.

Findings

During the first visit, 304 (254 Army personnel, 10 family members, 36 civilians, 4 not stated) participated and 24/304 (8%) were SARS-CoV-2 RT-PCR positive. Infectious virus was isolated from 7/24 (29%). Of the 285 who provided a blood sample, 7% (19/285) were antibody positive and 63% (12/19) had neutralising antibodies. Twenty-two (22/34, 64%) individuals with laboratory-confirmed infection were asymptomatic. Nine SARS-CoV-2 RT-PCR positive participants were also antibody positive but those who had neutralising antibodies did not have infectious virus. At the second visit, no new infections were detected, and 13% (25/193) were seropositive, including 52% (13/25) with neutralising antibodies. Risk factors for SARS-CoV-2 antibody positivity included contact with a confirmed case (RR 25.2; 95% CI 14–45), being female (RR 2.5; 95% CI 1.0–6.0) and two-person shared bathroom (RR 2.6; 95% CI 1.1–6.4).

Interpretation

We identified high rates of asymptomatic SARS-CoV-2 infection. Public Health control measures can mitigate spread but virus re-introduction from asymptomatic individuals remains a risk. Most seropositive individuals had neutralising antibodies and infectious virus was not recovered from anyone with neutralising antibodies.

548. Terry C. Effects of the COVID-19 pandemic on noise pollution in three protected areas in metropolitan Boston (USA) / C. Terry, M. Rothendler, L. Zipf [et al.] // Biological Conservation. – 2021. – Vol. 256. – P. 109039. – URL:<https://www.sciencedirect.com/science/article/abs/pii/S0006320721000914>

Noise pollution can reduce the ability of urban protected areas to provide a refuge for people and habitat for wildlife. Amidst an unprecedented global pandemic, it is unknown if the changes in human activity have significantly impacted noise pollution in metropolitan parks. We tested the hypothesis that reduced human activity associated with the COVID-19 pandemic lockdowns would lead to reduced sound levels in protected areas compared with non-pandemic times. We measured sound levels in three urban protected areas in metropolitan Boston, MA (USA) at three time periods: in the fall and summer before the pandemic, immediately after the government-imposed lockdown in March 2020 when the trees were leafless, and during the beginning of reopening in early June 2020 when the trees had leaves. At all time periods, sound levels were highest near major roads and demonstrated a logarithmic decrease further from roads. At the two protected areas closest to the city center, sound levels averaged 1–3 dB lower during the time of the pandemic lockdown. In contrast, at the third protected area, which is transected by a major highway, sound levels were 4–6 dB higher during the time of the pandemic, likely because reduced traffic allowed vehicles to travel faster and create more noise. This study demonstrates that altered human levels of activity, in this case associated with the COVID-19 pandemic, can

have major, and in some cases unexpected, effects on the levels of noise pollution in protected areas.

549. Ting T. C. M. Impact of COVID-19 outbreak on post traumatic stress in patients with psychiatric illness / T. C. M. Ting, A. W. S. Wong, W. S. Liu [et al.] // Psychiatry Research. – 2021. – Vol. 303. – P. 114065. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121003620>

The present study aimed to examine the prevalence of posttraumatic stress response in reaction to the COVID-19, including posttraumatic-stress-disorder-like symptoms (PTSD-like symptoms) and depressive symptoms, among patients with pre-existing psychiatric illness. The socio-demographic and psychological correlates of PTSD-like symptoms were also examined. A total of 193 participants were recruited. More than 45% of the respondents reported significant PTSD-like symptoms related to the COVID-19; this group of patients also had a high level of pandemic-related depressive symptoms. High level of PTSD-like symptoms were predicted by rumination on concerns about the outbreak of COVID-19 and feeling of social isolation. They were also associated with hypervigilance to cues related to the pandemic. Our results suggested that the pandemic had taken a psychological toll on people living with psychiatric illness. Further research is needed to understand the development and mechanism of traumatic stress reaction in response to a prolonged infectious disease outbreak among this vulnerable population. Clinical attention is also called to mitigate the psychiatric sequelae of the pandemic in this vulnerable group of people.

550. Tissot N. Patients with history of covid-19 had more side effects after the first dose of covid-19 vaccine / N. Tissot, A.-S. Brunel, F. Bozon [et al.] // Vaccine. – 2021. – Vol. 39, № 36. – P. 5087–5090. – URL: <https://www.sciencedirect.com/science/article/pii/S0264410X21009257>

Introduction

COVID-19 vaccination seems to be the most pertinent pharmacologic public health measure to control the pandemic. Reactogenicity symptoms were frequent in vaccine recipients mostly mild to moderate and commonly reported after the second dose. However, there is a lack of data in patients with a previous diagnosis of Covid-19.

Methods

We analysed side effects of 311 patients after the first dose of Pfizer-BioNTech COVID-19 vaccine, in a french university hospital. We compared patients with COVID-19 history to naive individuals. All the data collected are based on self-reported, including COVID-19 exposure status.

Results

Overall, 229 (74%) patients reported at least one side effect. Among participants with history of Covid-19, 95% reported at least one adverse event versus 70% in naive patients ($p < 0.01$). However, symptom intensity was not different between the 2 groups.

Conclusion

Vaccine recipients with prior COVID-19 reported more, but no more serious, side effects than naive participants.

551. Tiftonell P. Emerging responses to the COVID-19 crisis from family farming and the agroecology movement in Latin America – A rediscovery of food, farmers and collective action / P. Tiftonell, M. Fernandez, V. E. Mujtar // Agricultural Systems. – 2021. – Vol. 190. – P. 103098. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21000512>

CONTEXT

In Latin America, the so-called informal sector associated with family farming and the agroecology movements were instrumental at coping with and adapting to the COVID-19 challenges.

OBJECTIVE

To assess the nature and extent of the early initiatives (first three months) deployed by this informal sector to cope with and adapt to the impacts of the COVID-19 pandemic on food production and consumption in several countries of the region.

METHODS

We used key informant consultation ($n = 168$), an online survey ($n = 125$) and the detailed characterisation of regional case studies ($n = 4$). Textual data was analysed and categorised using Reinert's method, combined with similarity analysis.

RESULTS AND CONCLUSIONS

65% of the initiatives were 'local' in terms of geographic reach, 30% of them started within the first month after the pandemic and most of them were urban or urban-rural, whereas only 29% of them were exclusively rural. The analysis of the textual information captured through the survey revealed four major types of initiatives that were deployed or adapted in response to COVID-19:

1.

Direct producer-to-consumer food sales, generally existing before the COVID-19 crisis but adapted/strengthened to cope with it;

2.

Short value chains that linked rural and urban organisations and individuals supported by national or local governments, readapted through new health and safety protocols;

3.

Newly developed support and training programs on sustainable food production for self-consumption or local commerce, in rural, urban or peri-urban settings;

4.

Food assistance and aid initiatives focusing on vulnerable populations, relying on solidarity networks associated with the agroecological movement.

552. Toğa G. COVID-19 prevalence forecasting using Autoregressive Integrated Moving Average (ARIMA) and Artificial Neural Networks (ANN): Case of Turkey / G. Toğa, B. Atalay, M. D. Toksari // Journal of Infection and Public Health. – 2021. – Vol. 14, № 7. – P. 811–816. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121001155>

A local outbreak of unknown pneumonia was detected in Wuhan (Hubei, China) in December 2019. It is determined to be caused by a severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) and called COVID-19 by scientists. The outbreak has since spread all over the world with a total of 120,815,512 cases and 2,673,308 deaths as of 16 March 2021. The health systems in the world collapsed in many countries due to the pandemic and many countries were negatively affected in the social life. In such situations, it is very important to predict the load that will occur in the health system of a country. In this study, the COVID-19 prevalence of Turkey is inspected. The infected cases, the number of deaths, and the recovered cases are predicted with Autoregressive Integrated Moving Average (ARIMA) and Artificial Neural Networks (ANN) in Turkey. The techniques are compared in terms of correlation coefficient and mean square error (MSE). The results showed that the used techniques used are very successful in the estimation of prevalence in Turkey.

553. Tomchin D. A. Prediction of the COVID-19 spread in Russia based on SIR and SEIR models of epidemics [et al.] / D. A. Tomchin, A. L. Fradkov // IFAC-PapersOnLine. – 2020. – Vol. 53, № 5. – P. 833–838. – URL: <https://www.sciencedirect.com/science/article/pii/S240589632100375X>

An attempt is made to use the simplest epidemic models: SIR and SEIR to predict the spread of COVID-19 in Russia. Simplicity and a small number of parameters are very significant advantages of SIR and SEIR models in conditions of a lack of numerical initial data and structural incompleteness of models. The forecast of distribution of COVID-19 in Russia is carried out according to public data sets from March 10 to April 20, 2020. Comparison of forecast results by SIR

and SEIR models are given. In both cases, the peak number of infected persons while maintaining the current level of quarantine measures is forecasted at the end of May 2020.

554. Tonne C. Lessons from the COVID-19 pandemic for accelerating sustainable development / C. Tonne // Environmental Research. – 2021. – Vol. 193. – P. 110482. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935120313797>

It will soon be one year since the detection of the first cases of COVID-19 and the identification of the novel SARS-COV-2 virus. Since then this complex crisis with interlinked public health, social, political, and economic dimensions has tested the world's capacity to respond. Several lessons from COVID-19 are directly relevant to tackling the climate emergency and advancing sustainable development more broadly.

First, the COVID-19 pandemic shows that the scientific community can generate huge amounts of new, practical knowledge in record time. Remarkably, new specifically designed COVID therapy (as opposed to repurposed drugs) and several vaccines are already in phase III trials or approved for early or limited use. (New York Times, 2020; University of Oxford. Ran, 2019).

As of 13 October, Pubmed, the publications database focused on biomedicine and health sciences, returns over 63000 publications for the search term “COVID-19”. In comparison, a search for “climate change” returns only 53000 publications since 1975, pointing to glaring differences in societal and scientific priorities. With renewed urgency, and alignment of priorities and incentives, the scientific community, including the health sciences, could develop new climate change knowledge at the same scale and pace as for COVID-19.

Second, COVID-19 has highlighted that, even in an emergency, urgency cannot trump robustness in scientific research. Not only does rushed, poor quality research risk adding more noise than actionable knowledge, but it also risks misleading decision makers or public opinion on critical issues. More than 35 retracted COVID-19 publications have been identified so far in the Retraction Watch database. Quality, not quantity, must be emphasized.

Third, COVID-19 has been a salient example of reduced barriers at the science-policy interface, at least in countries where leaders looked to, rather than disregarded, science to shape decision making and communication strategies. It is not just the scale and pace of scientific production that is striking about COVID-19, but also how quickly new knowledge has been put into application.

555. Topuz Ş. A SWOT analysis of the opinions of midwifery students about distance education during the Covid-19 pandemic a qualitative study /

Ş. Topuz, N. Y. Sezer, M. N. Aker [et al.] // Midwifery. – 2021. – Vol. 103. – P. 103161. – URL: <https://www.sciencedirect.com/science/article/pii/S0266613821002412>

Background

The COVID-19 pandemic led to the suspension of face-to-face education and its replacement with distance education. This has caused important changes in midwifery education.

Objective

To determine midwifery students' opinions about distance education.

Design

This qualitative study employed an exploratory case study design.

Setting

This study was carried out at a national university in Ankara, Turkey between December 2020 and January 2021.

Participants

The sample of the study comprised 50 students in the midwifery department.

Measurements and findings

Data were collected using a SWOT analysis interview form developed by the researchers. The research findings were grouped into four themes: Satisfaction with distance education, barriers of distance education, facilitating aspects of distance education, and concerns about professional career.

Key conclusions and implications for practice

Distance education in midwifery education in Turkey was found to have aspects involving obstacles and concerns in addition to many pleasing and facilitating features. Our findings suggest distance education can be used together with face-to-face education provided that its pleasing and facilitating aspects are supported and the obstacles and factors causing concerns are removed. Inclusion of distance methods in midwifery programs requires curricula to be updated and support from instructors and students for the development of the necessary infrastructure. There is a role for employing bodies to facilitate practice-based learning for new graduates to address their concerns with a lack of practical experience because of COVID-19 restrictions on placement.

556. Tortorella G. L. Operations Management teaching practices and information technologies adoption in emerging economies during COVID-19 outbreak / G. L. Tortorella, G. Narayanamurthy, V. M. Sunder [et al.] // Technological Forecasting and Social Change. – 2021. – Vol. 171. – P. 120996. – URL: <https://www.sciencedirect.com/science/article/pii/S0040162521004285>

The objective of this article is three-fold. First, it aims at identifying the main teaching practices and information and communication technologies (ICTs) used to teach Operations Management (OM) in emerging economies during COVID-19 outbreak. Second, it investigates the effect of contextual characteristics on the adoption level of those teaching practices and ICTs. Third, this study examines the relationship between the adoption of ICTs and OM teaching practices during COVID-19 outbreak. Expectedly, schools around the world have pivoted to online learning and digital classrooms. Thus, OM lecturers and professors located in emerging economies that have been teaching during COVID-19 outbreak were surveyed. The collected data was analyzed through multivariate techniques. Findings indicate that lecturers and professors have been remarkably adopting specific teaching practices and ICTs to teach OM. Nevertheless, when considering the contextual characteristics of the universities, departments, and lecturers/professors, the adoption level of those practices and ICTs may significantly vary, especially depending on subject type and teaching experience. Moreover, we empirically verified that ICTs positively relate with OM teaching practices in emerging economies, although in a much less extent than expected. This research provides OM instructors guidelines to better plan their courses and subjects in face of extreme disruptive moments, such as the one caused by the COVID-19. Understanding how the concurrent utilization of ICTs and teaching practices helps OM programs to continue developing their activities is particularly important for universities located in emerging economies, since they are more likely to struggle with resources scarcity and more financially humble students.

557. Tougeron K. Impact of the COVID-19 pandemic on apple orchards in Europe – A rediscovery of food, farmers and collective action / K. Tougeron, T. Hance // Agricultural Systems. – 2021. – Vol. 190. – P. 103098. – URL: <https://www.sciencedirect.com/science/article/pii/S0308521X21000500>

CONTEXT

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has affected global agricultural chains and intensified the issue of food insecurity worldwide.

OBJECTIVE

We propose a short retrospective of the reported effects of the COVID-19 pandemic from its beginning in March 2020 in Europe, on orchard management and harvest, sales and agricultural chains, monitoring and research in orchards, and we expose some of the solutions undertaken to tackle down these issues.

RESULTS AND CONCLUSION

In Europe, the fruit and vegetable sector has been affected by the pandemic in terms of production, distribution, and disturbance in market performance. Concerning apple, the most harvested and exported fruit in Europe, national governments, European institutions, the industry and producers have undertaken

actions to ensure production and supply demand. Yet, stakeholders have faced several difficulties and additional costs for growth and harvest, sales, but also monitoring and research. However, European Union demand for fresh apples has increased during the pandemic. In addition, apple harvest has started a couple of months after the end of the first lockdown in most countries, and European apple orchards are usually in more flexible smallholder or family farms. Finally, the fruit itself has relatively long shelf-life comparatively to other fruits. For these main reasons, we argue that the apple sector might be more resilient than other fruit sectors or other cultures, despite the negative effects of seasonal workforce shortage and unstable market. The apple sector may suffer more from side-effects such as increasing labor, distribution, and packaging costs, than from actual stock and production issues.

SIGNIFICANCE

The pandemic could be an opportunity to reconsider production modes and to innovate for the future of food production in different crop systems in Europe, including apple orchards.

558. Thombs B. D. Protocol for a partially nested randomised controlled trial to evaluate the effectiveness of the scleroderma patient-centered intervention network COVID-19 home-isolation activities together (SPIN-CHAT) program to reduce anxiety among at-risk scleroderma patients / B. D. Thombs, L. Kwakkenbos, M.-E. Carrier [et al.] // *Journal of Psychosomatic Research*. – 2021. – Vol. 135. – P. 110132. – URL: <https://www.sciencedirect.com/science/article/pii/S0022399920304001>

Objective

Contagious disease outbreaks and related restrictions can lead to negative psychological outcomes, particularly in vulnerable populations at risk due to pre-existing medical conditions. No randomised controlled trials (RCTs) have tested interventions to reduce mental health consequences of contagious disease outbreaks. The primary objective of the Scleroderma Patient-centered Intervention Network COVID-19 Home-isolation Activities Together (SPIN-CHAT) Trial is to evaluate the effect of a videoconference-based program on symptoms of anxiety. Secondary objectives include evaluating effects on symptoms of depression, stress, loneliness, boredom, physical activity, and social interaction.

Methods

The SPIN-CHAT Trial is a pragmatic RCT that will be conducted using the SPIN-COVID-19 Cohort, a sub-cohort of the SPIN Cohort. Eligible participants will be SPIN-COVID-19 Cohort participants without a positive COVID-19 test, with at least mild anxiety (PROMIS Anxiety 4a v1.0 T-score ≥ 55), not working from home, and not receiving current counselling or psychotherapy. We will randomly assign 162 participants to intervention groups of 7 to 10 participants each or waitlist control. We will use a partially nested RCT design to reflect

dependence between individuals in training groups but not in the waitlist control. The SPIN-CHAT Program includes activity engagement, education on strategies to support mental health, and mutual participant support. Intervention participants will receive the 4-week (3 sessions per week) SPIN-CHAT Program via videoconference. The primary outcome is PROMIS Anxiety 4a score immediately post-intervention.

Ethics and dissemination

The SPIN-CHAT Trial will test whether a brief videoconference-based intervention will improve mental health outcomes among at-risk individuals during contagious disease outbreak.

559. Tortonese S. COVID-19 in Patients on Maintenance Dialysis in the Paris Region / S. Tortonese, I. Scriabine, L. Anjou [et al.] // Kidney International Reports. – 2021. – Vol. 5, № 9. – P. 1535–1544. – URL: <https://www.sciencedirect.com/science/article/pii/S2468024920314145>

Introduction

Coronavirus disease 2019 (COVID-19) represents a serious threat to patients on maintenance dialysis. The clinical setting, mortality rate, and prognostic factors in these patients have not been well established.

Methods

We included all dialyzed patients with COVID-19 referred to our dialysis center between March 11 and April 11, 2020. Data were obtained through the review of the medical records and were censored at the time of data cutoff, on May 11, 2020.

Results

Forty-four patients on maintenance dialysis with COVID-19 were referred to our dialysis unit during the COVID-19 epidemic. Median age was 61 years (interquartile range [IQR]: 51.5–72.5); 65.9% were men. Comorbidities included hypertension (97.7%), diabetes mellitus (50%), and chronic cardiac (38.6%) and respiratory (27.3%) diseases. Initial symptoms were fever (79.5%), shortness of breath (29.5%), cough (43.2%), and diarrhea (13.6%). Three profiles of severity were distinguished based on the World Health Organization (WHO) progression scale. Forty-one (93.2%) were hospitalized and only 3 were maintained on outpatient hemodialysis. Thirty-three (75%) patients required oxygen therapy, including 15 (45.5%) who were referred to the intensive care unit. Overall, 27.3% of patients died, and 58.5% were discharged from hospital, including only 2 (13.3%) of those admitted to the intensive care unit. By multivariate analysis, cough, thrombopenia <120 g/l, lactate dehydrogenase (LDH) level greater than 2 times the upper limit of normal, and blood C-reactive protein (CRP) >175 mg/l were significantly associated with death.

Conclusion

A major outbreak of COVID-19 occurred in the Paris region, and spread among dialyzed patients. Our study underscores the severity of COVID-19 in these patients and identified prognostic markers.

560. Tosato M. Prevalence and Predictors of Persistence of COVID-19 Symptoms in Older Adults: A Single-Center Study / M. Tosato, A. Carfi, I. Martis [et al.] // Journal of the American Medical Directors Association. – 2021. – Vol. 22, № 9. – P. 1840–1844. – URL: <https://www.sciencedirect.com/science/article/pii/S1525861021006411>

Objectives

Symptom persistence weeks after laboratory-confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) clearance is a relatively common long-term complication of Coronavirus disease 2019 (COVID-19). Little is known about this phenomenon in older adults. The present study aimed at determining the prevalence of persistent symptoms among older COVID-19 survivors and identifying symptom patterns.

Design

Cross-sectional study.

Setting and Participants

We analyzed data collected in people 65 years and older ($n = 165$) who were hospitalized for COVID-19 and then admitted to the Day Hospital Post-COVID 19 of the Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS (Rome, Italy) between April and December 2020. All patients tested negative for SARS-CoV-2 and met the World Health Organization criteria for quarantine discontinuation.

Measures

Patients were offered multidisciplinary individualized assessments. The persistence of symptoms was evaluated on admission using a standardized questionnaire.

Results

The mean age was 73.1 ± 6.2 years (median 72, interquartile range 27), and 63 (38.4%) were women. The average time elapsed from hospital discharge was 76.8 ± 20.3 days (range 25–109 days). On admission, 137 (83%) patients reported at least 1 persistent symptom. Of these, more than one-third reported 1 or 2 symptoms and 46.3% had 3 or more symptoms. The rate of symptom persistence was not significantly different when patients were stratified according to median age. Compared with those with no persistent symptoms, patients with symptom persistence reported a greater number of symptoms during acute COVID-19 (5.3 ± 3.0 vs 3.3 ± 2.0 ; $P < .001$). The most common persistent symptoms were fatigue

(53.1%), dyspnea (51.5%), joint pain (22.2%), and cough (16.7%). The likelihood of symptom persistence was higher in those who had experienced fatigue during acute COVID-19.

Conclusions and Implications

Persistent symptoms are frequently experienced by older adults who have been hospitalized for COVID-19. Follow-up programs should be implemented to monitor and care for long-term COVID-19–related health issues.

561. Trostle M. E. COVID-19 vaccination in pregnancy: early experience from a single institution / M. E. Trostle, M. A. Limaye, V. Avtushka [et al.] // American Journal of Obstetrics & Gynecology MFM. – 2021. – Vol. 3, № 6. – P. 100464. – URL: <https://www.sciencedirect.com/science/article/pii/S2589933321001592>

OBJECTIVE

Pregnant women are at increased risk for morbidity owing to infection with the COVID-19 virus.¹ Vaccination presents an important strategy to mitigate illness in this population. However, there is a paucity of data on vaccination safety and pregnancy outcomes because pregnant women were excluded from the initial phase III clinical trials. Our objective was to describe the maternal, neonatal, and obstetrical outcomes of women who received a messenger RNA (mRNA) COVID-19 vaccination while pregnant during the first 4 months of vaccine availability.

STUDY DESIGN

This was an institutional review board–approved descriptive study of pregnant women at New York University Langone Health who received at least 1 dose of an mRNA COVID-19 vaccination approved by the US Food and Drug Administration (FDA) (Pfizer-BioNTech or Moderna) from the time of the FDA Emergency Use Authorization to April 22, 2021. Eligible women were identified via search of the electronic medical record (EMR) system. Vaccine administration was ascertained via immunization records from the New York State Department of Health. Women were excluded if they were vaccinated before conception or during the postpartum period. Charts were reviewed for maternal demographics and pregnancy outcomes. Descriptive analyses were performed using the R software version 4.0.2 (The R Foundation, Boston, MA).

RESULTS

We identified 424 pregnant women who received an mRNA vaccination. Of those, 348 (82.1%) received both doses and 76 (17.9%) received only 1 dose. The maternal characteristics and vaccination information are shown in Table 1. Of the included women, 4.9% had a history of a confirmed COVID-19 diagnosis before vaccination. After vaccination, no patient in our cohort was diagnosed with COVID-19. In terms of the pregnancy outcomes, 9 women had spontaneous

abortions, 3 terminated their pregnancies, and 327 have ongoing pregnancies. Of the women included, 85 delivered liveborn infants. There were no stillbirths in our population. Of the 9 spontaneous abortions, 8 occurred during the first trimester at a range of 6 to 13 weeks' gestation. There was 1 second trimester loss. The rate of spontaneous abortion among women vaccinated in the first trimester was 6.5%. The 327 women with ongoing pregnancies have been followed for a median of 4.6 weeks (range, 0–17 weeks) following their most recent dose. A total of 113 (34.6%) women, initiated vaccination during the first trimester, 178 (54.4%) initiated vaccination during the second trimester, and 36 (11.0%) during the third trimester. Following the vaccination, 2 fetuses (0.6%) developed intrauterine growth restriction, whereas 5 (1.5%) were diagnosed with anomalies. Outcomes for the 85 women who delivered are shown in Table 2. Of the women who delivered, 18.8% were diagnosed with a hypertensive disorder of pregnancy. The rate of preterm birth was 5.9%. One preterm delivery was medically indicated, whereas the remaining 3 were spontaneous. A total of 15.3% of neonates required admission to the neonatal intensive care unit (NICU). Of the NICU admissions, 61.5% were because of hypoglycemia or an evaluation for sepsis. Other reasons for admission included prematurity, hypothermia, and transient tachypnea of the newborn. Of all the neonates, 12.2% were small for gestational age (SGA) per the World Health Organization standards.

562. Tsou T.-P. Epidemiology of the first 100 cases of COVID-19 in Taiwan and its implications on outbreak control / T.-P. Tsou, W.-C. Chen, A. S. E. Huang [et al.] // Journal of the Formosan Medical Association. – 2021. – Vol. 119, № 11. – P. 1601–1607. – URL: <https://www.sciencedirect.com/science/article/pii/S0929664620303260>

Purpose

To describe the epidemiology and outcome of the first 100 COVID-19 cases in Taiwan.

Methods

We included the first 100 patients with laboratory-confirmed SARS-CoV-2 infection in Taiwan. Demographic, clinical, epidemiological and laboratory data were extracted from outbreak investigation reports and medical records.

Results

Illness onset of the 100 patients was during January 11 to March 16, 2020. Twenty-nine (29%) had at least one underlying condition and ten (10%) were asymptomatic. Seventy-one were imported, including four clusters. Twenty-nine were locally-acquired, including four clusters. The median days from onset to report was longer in locally-acquired cases (10 vs 3 days). Three patients died (case fatality rate 3%) and all of them had underlying conditions. As of May 13, 2020, 93 had been discharged in stable condition; the median hospital stay was 30 days (range, 10–79 days).

Conclusion

The first 100 cases of COVID-19 in Taiwan showed the persistent threat of imported cases from different countries. Even though sporadic locally-acquired disease has been identified, through contact investigation, isolation, quarantine and implementation of social distancing measures, the epidemic is contained to a manageable level with minimal local transmission.

563. Tsouros I. Activities, time-use and mental health during the first COVID-19 pandemic wave: Insight from Greece / I. Tsouros, A. Tsirimpa, I. Pagoni [et al.] // Transportation Research Interdisciplinary Perspectives. – 2021. – Vol. 11. – P. 100442. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221001482>

The COVID-19 pandemic shocked the global society and caused significant disruptions on various levels of economic and social activity, apart from the purely humanitarian and health perspective. International community and national governments introduced a series of restrictions and other measures to minimize the spread of the virus. This paper provides insight from Greece, focusing on activities and time-use, statements towards mental health and overall wellbeing of citizens during the spring lockdown period of 2020. The analysis is based on data from more than 400 individuals collected through an online survey, which included psychometric attitudes and mental health scales, activity participation and time-use, as well as socio-economic variables and reactions to COVID-19 measures and overall situation. We present results and a respondent segmentation, by employing a latent class cluster analysis, which provides useful insight into the mental health, wellbeing of individuals during the restrictions period and information regarding the activities of the various segments of the population before and during the lockdown. Main findings include the identification of three distinct clusters of the respondents, “Relaxed”, “Worried” and “Cautious” which demonstrated some heterogeneity time-use allocation and activity patterns and feelings/mental health during the lockdown. This is one of the first papers to present activity and time-use data for the 2020 lockdown period in Greece by developing a segmentation approach of the participants based on mental health scales and indicators. Such exploratory efforts are useful in identifying different population segments that may react to government restrictions in a heterogenous way and may exhibit varying mental health statuses.

564. Tur-Kaspa I. COVID-19 may affect male fertility but is not sexually transmitted: a systematic review / I. Tur-Kaspa, T. Tur-Kaspa, G. Hildebrand [et al.] // F&S Reviews. – 2021. – Vol. 2, № 2. – P. 140–149. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2666571921000049>

Objective

To determine if SARS-CoV-2, which has led to the rapidly spreading COVID-19 global pandemic, is sexually transmitted. Since the putative receptor

for the virus is identified in reproductive organs, it is also important to examine if COVID-19 may affect human fertility.

Evidence Review

A systematic review of English publications was conducted up to December 11, 2020 in PubMed, NIH iCite COVID-19 portfolio, Cochrane Library, and Google Scholar databases, searching for SARS-CoV-2 in the testes; seminal, prostatic, and vaginal fluids; and cervical smears. A total of 1,997 records were identified, duplicates were removed, and 1,490 records were reviewed for eligibility by examining titles and abstracts. Subsequently, 202 full-text relevant articles were reviewed by 2 independent reviewers. Forty-seven studies (literature reviews, editorials, and guidelines) were assessed qualitatively, and 23 studies that tested the male and female reproductive tracts of patients with COVID-19 for SARS-CoV-2 were quantitatively analyzed.

565. Ujunwa A. I. Rethinking African globalisation agenda: Lessons from COVID-19 / A. I. Ujunwa, A. Ujunwa, C. R. Okoyeuzu // *Research in Globalization*. – 2021. – Vol. 3. – P. 100055. – URL: <https://www.sciencedirect.com/science/article/pii/S2590051X21000204>

The COVID-19 outbreak resulted in a synchronized disruption of the global economy, globalization agenda, and re-emergence of protectionism. Africa appears to be worse-off by the re-emergence of protectionism despite the increasing debate that globalization tends to increase intra-country inequality and poverty in Africa. We argue that the enormous benefit Africa derived from globalization, especially, during the COVID-19 pandemic, makes it imperative for the African Union to rethink its globalization strategy, as well as strategies to mitigate African economies from the vulnerability of future pandemic. We argue that the vulnerability of African economies to the COVID-19 could be traced to characteristics of African economies, such as the dominance of low-skilled labour force, informally employed workers that do not have the option of working remotely, digital divide due to poor internet penetration, urban and rural structures that promote the spread of a virus, and breakdown of critical global supply chain may. On the basis of the above, we recommend that African Union globalization agenda should focus on promoting massive investment in virtual economic activities; global ecological responsible public policies; a more inclusive policies that promotes access to education, healthcare, and resources; and redesign urban settlement to reduce the spread of diseases.

566. Unnikrishnan A. Exploratory analysis of factors affecting levels of home deliveries before, during, and post- COVID-19 / A. Unnikrishnan, M. Figliozzi // *Transportation Research Interdisciplinary Perspectives*. – 2021. – Vol. 10. – P. 100402. – URL: <https://www.sciencedirect.com/science/article/pii/S1876034121001155>

The COVID-19 pandemic has significantly affected shopping behavior and has accelerated the adoption of online shopping and home deliveries. We administered an online survey among the population in the Portland-Vancouver-Hillsboro Metropolitan area on household and demographic characteristics, e-commerce preferences and factors, number of deliveries made before and during the COVID-19 lockdown, and number of deliveries expected to make post-pandemic. In this research, we conduct an exploratory analysis of the factors that affect home delivery levels before, during, and post-COVID-19. There was a significant increase in home deliveries during the COVID-19 lockdown relative to the before COVID-19 period. A high proportion of the households that made less than three deliveries per month before the pandemic stated they would order more online post-pandemic. A majority of the households that ordered more than three deliveries per month before COVID-19 are expected to revert to their original levels post-pandemic. The two variables most positively affecting the likelihood of online shopping were access to delivery subscriptions and income. Tech-savvy individuals are expected to make more home delivery orders post-pandemic compared to before and during COVID-19. Health concerns positively increase the likelihood of ordering online during the pandemic and post-pandemic. Older and retired individuals are less likely to use online deliveries. However, the likelihood of older and retired individuals ordering more home deliveries increased during the pandemic lockdown. Households with disabled members, single workers, and respondents concerned about online experience and health are more likely to be first-time online shoppers during the pandemic.

567. Vallejo-Janeta A. P. COVID-19 outbreaks at shelters for women who are victims of gender-based violence from Ecuador / A. P. Vallejo-Janeta, D. Morales-Jadana, B. Freire-Paspuel [et al.] // International Journal of Infectious Diseases. – 2021. – Vol. 108. – P. 531–536. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971221005014>

Background

One of the constraints in containing the impact of the COVID-19 pandemic in Ecuador is limited testing capacity, especially in high-risk populations such as people living in humanitarian shelters.

Objectives

The “United Nations High Commissioner for Refugees” office in Ecuador in collaboration with “Universidad de Las Américas” performed surveillance screening at shelters for women victims of gender-based violence. They had been granted access to RT-qPCR tests for SARS-CoV-2 diagnosis since July 2020, a few weeks after the general population lockdown was lifted.

Results

From 411 people tested, 52 tests were SARS-CoV-2 positive, yielding an overall high attack rate of 12.65%. Moreover, COVID-19 outbreaks were found in

nine of 11 shelters that were included in the study. While attacks rates varied among shelters, no association was found with occupancy.

Conclusion

This study is key to clarifying the epidemiological situation in this highly vulnerable population in Latin America. It highlights the importance of mass testing beyond the symptomatic population to prevent the spread of COVID-19.

568. Varol T. Selection of determinants of students' adherence to COVID-19 guidelines and translation into a brief intervention / T. Varol, R. Crutzen, F. Schneider [et al.] // Acta Psychologica. – 2021. – Vol. 219. – P. 103400. – URL: <https://www.sciencedirect.com/science/article/pii/S0001691821001505>

Background

When reopening universities in times of COVID-19, students still have to adhere to COVID-19 behavioral guidelines. We explored what behavioral determinants (and underlying beliefs) related to the adherence to guidelines are both relevant and changeable, as input for future interventions.

Methods

A cross-sectional online survey was conducted (Oct–Nov 2020), identifying behavioral determinants (and underlying beliefs) of university students' adherence to COVID-19-guidelines, including keeping 1.5 m distance, getting tested, and isolating (N = 255).

Results

Attitude, perceived norm, self-efficacy, and several beliefs (e.g., risk perception beliefs 'I am not afraid because I am young' [$r = -0.33$; $p < .001$]; attitudinal beliefs, e.g., 'I feel responsible for telling people to adhere to guidelines' [$r = 0.37$; $p < .001$]; self-efficacy beliefs, e.g., 'COVID-19-prevention guidelines are difficult to adhere to' [$r = -0.30$; $p < .001$]) were associated with intention to adhere to guidelines, and for those beliefs there was room for improvement, making them suitable as possible intervention targets.

Conclusions

Students mostly adhere to COVID-19 guidelines, but there is room for improvement. Interventions need to enhance students' adherence behavior by targeting the most relevant determinants as identified in this study. Based on these findings, a small intervention was introduced targeting the determinants of students' adherence to guidelines.

569. Velde S. V. Depressive symptoms in higher education students during the first wave of the COVID-19 pandemic. An examination of the association with various social risk factors across multiple high- and middle-

income countries / S. Van de Velde, V. Buffel, C. van der Heijde [et al.] // *SSM - Population Health*. – 2021. – Vol. 16. – P. 100936. – URL: <https://www.sciencedirect.com/science/article/pii/S2352827321002111>

Higher-education students face substantial risks for developing depressive symptoms during the COVID-19 pandemic or experiencing exacerbated pre-existing depressive symptoms. This study uses data from the COVID-19 International Student Well-Being Study, which collected data through a non-representative convenience sample in 125 higher-education institutions (HEI) across 26 high- and middle-income countries (N: 20,103) during the first wave of the COVID-19 pandemic. It describes the prevalence of depressive symptoms in higher-education students. We find substantial cross-national variation in depressive symptoms, with lowest mean levels established in the Nordic countries and France, while highest mean levels of depressive symptoms were found in Turkey, South Africa, Spain and the USA. Elevated risk for depressive symptoms was found in female students, students with fewer social support resources and in a more disadvantaged socioeconomic position, and students with a migrant background. COVID-19 related stressors, such as reduced social contact, increased financial insecurity, and academic stress explained a relatively larger proportion of the variance in depressive symptoms compared to non-COVID-19 related stressors. This finding shows that not the pandemic itself, but rather the secondary effects of the pandemic relate to students' mental health. Our results enable HEIs to be better equipped to target groups that are particularly at risk during a pandemic.

570. Vespa E. Stay (GI) Healthy: COVID-19 and Gastrointestinal Manifestations / E. Vespa, N. Pugliese, F. Colapietro [et al.] // *Techniques and Innovations in Gastrointestinal Endoscopy*. – 2021. – Vol. 23, № 2. – P. 179–189. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S2590030721000209>

Techniques SARS-CoV-2 is the virus responsible for COVID-19, whose clinical spectrum ranges widely, both in terms of severity and multi-organicity. SARS-CoV-2 mainly involves the respiratory tract, causing from a flu-like syndrome to interstitial pneumonia and acute respiratory distress syndrome. Although its entry receptor, angiotensin-converting-enzyme 2, is typically expressed in epithelial cells of the airways, extra-pulmonary involvement has been consistently demonstrated since the beginning of the outbreak. Gastrointestinal manifestations in COVID-19 may be explained by the abundant expression of ACE2 in the digestive tract. Moreover, not only COVID-19 patients often present with GI symptoms (diarrhea, nausea/vomiting, abdominal pain) and liver tests abnormalities, but there are also data showing active viral replication in the GI tract and possible fecal-oral transmission. Aim of this review is to summarize the evidence regarding prevalence and clinical significance of GI involvement and liver abnormalities in patients with COVID-19, providing the reader with evidence-based recommendations on the management of these conditions.

571. Vidoni E. D. The IGNITE trial: Participant recruitment lessons prior to SARS-CoV-2 / E. D. Vidoni, A. Szabo-Reed, C. Kang [et al.] // Contemporary Clinical Trials Communications. – 2020. – Vol. 20. – P. 100666. – URL: <https://www.sciencedirect.com/science/article/pii/S2451865420301502>

Full and diverse participant enrollment is critical to the success and generalizability of all large-scale Phase III trials. Recruitment of sufficient participants is among the most significant challenges for many studies. The novel SARS-CoV-2 coronavirus pandemic has further changed and challenged the landscape for clinical trial execution, including screening and randomization. The Investigating Gains in Neurocognition in an Intervention Trial of Exercise (IGNITE) study has been designed as the most comprehensive test of aerobic exercise effects on cognition and brain health. Here we assess recruitment into IGNITE prior to the increased infection rates in the United States, and examine new challenges and opportunities for recruitment with a goal of informing the remaining required recruitment as infection containment procedures are lifted. The results may assist the design and implementation of recruitment for future exercise studies, and outline opportunities for study design that are flexible in the face of emerging threats.

572. Vieira K. M. Loss of financial well-being in the COVID-19 pandemic: Does job stability make a difference? / K. M. Vieira, A. C. G. Potrich, A. A. Bressan [et al.] // Journal of Behavioral and Experimental Finance. – 2021. – Vol. 31. – P. 100554. – URL: <https://www.sciencedirect.com/science/article/pii/S2214635021000988>

This article aims to assess the loss of financial well-being in the COVID-19 pandemic. The developed theoretical model identifies the impacts of the perception of financial risk and financial anxiety on financial well-being. It also seeks, through a comparative analysis, to assess whether public servants, due to their status of job stability in Brazil, are less likely to have the effects of the pandemic than private employees. A survey was carried out on 1222 Brazilians with structural equation modeling and multi-group invariance tests. The results indicate that lower financial well-being is influenced by the level of financial anxiety and financial risk. Public servants perceive fewer losses in financial well-being, anxiety and risks than other professions. In the pandemic context, where the risks of unemployment and loss of income are increased, job stability works like an insurance, allowing public servants greater financial security and then minor losses of financial well-being. Evidence indicates that in countries where a large percentage of workers have temporary or informal jobs, the challenge of reducing the financial impacts of the pandemic will be great. Interventions to alleviating anxiety and public policies of income transfer and reduction of unemployment are instruments to reduce the loss of financial well-being.

573. Vijenthira A. Outcomes of patients with hematologic malignancies and COVID-19: a systematic review and meta-analysis of 3377 patients / A. Vijenthira, I. Y. Gong, T. A. Fox [et al.] // *Blood*. – 2020. – Vol. 136, № 25. – P. 2881–2892. – URL: <https://www.sciencedirect.com/science/article/pii/S000649712077864X>

Outcomes for patients with hematologic malignancy infected with COVID-19 have not been aggregated. The objective of this study was to perform a systematic review and meta-analysis to estimate the risk of death and other important outcomes for these patients. We searched PubMed and EMBASE up to 20 August 2020 to identify reports of patients with hematologic malignancy and COVID-19. The primary outcome was a pooled mortality estimate, considering all patients and only hospitalized patients. Secondary outcomes included risk of intensive care unit admission and ventilation in hospitalized patients. Subgroup analyses included mortality stratified by age, treatment status, and malignancy subtype. Pooled prevalence, risk ratios (RRs), and 95% confidence intervals (CIs) were calculated using a random-effects model. Thirty-four adult and 5 pediatric studies (3377 patients) from Asia, Europe, and North America were included (14 of 34 adult studies included only hospitalized patients). Risk of death among adult patients was 34% (95% CI, 28-39; N = 3240) in this sample of predominantly hospitalized patients. Patients aged ≥ 60 years had a significantly higher risk of death than patients < 60 years (RR, 1.82; 95% CI, 1.45-2.27; N = 1169). The risk of death in pediatric patients was 4% (95% CI, 1-9; N = 102). RR of death comparing patients with recent systemic anticancer therapy to no treatment was 1.17 (95% CI, 0.83-1.64; N = 736). Adult patients with hematologic malignancy and COVID-19, especially hospitalized patients, have a high risk of dying. Patients ≥ 60 years have significantly higher mortality; pediatric patients appear to be relatively spared. Recent cancer treatment does not appear to significantly increase the risk of death.

574. Villalta D. Diagnostic performance of an automated chemiluminescence immunoassay for SARS-CoV-2 IgG and IgM antibodies detection: A real life experience / D. Villalta, P. Martelli, A. Moratto [et al.] // *Practical Laboratory Medicine*. – 2021. – Vol. 25. – P. e00227. – URL: <https://www.sciencedirect.com/science/article/pii/S2352551721000275>

Background

Recently many serological assays for detection of antibodies to SARS-CoV-2 virus were introduced on the market. Aim of this study was to assess the diagnostic performance of an automated CLIA for quantitative detection of anti-SARS-CoV-2 IgM and IgG antibodies.

Methods

A total of 354 sera, 89 from consecutive patients diagnosed with COVID-19 (43 mild, 32 severe and 13 critical) and 265 from asymptomatic and negative on

rRT-PCR testing healthcare workers, were evaluated for IgM and IgG anti-SARS-CoV-2 antibodies with MAGLUMI immunoassay.

Results

The overall sensitivity and specificity were 86.5% (95%CI: 77.6–92.8) and 98.5% (95%CI:96.2–99.6), respectively. PPV, PPN, LR+, LR- and OR were 95.1 (95%CI: 87.8–98.6), 95.6 (95%CI: 92.4–97.7), 57.3 (95%CI: 21.6–152.1), 7.3 (95%CI: 4.31–12.4) and 418.6 (95%CI: 131.2–1335.2), respectively. The levels of SARS-CoV-2 IgM and IgG antibodies were 1.22 ± 1.2 AU/mL and 15.86 ± 24.83 AU/mL, 2.86 ± 2.4 AU/mL and 69.3 ± 55.5 AU/mL, 2.47 ± 1.33 AU/mL and 83.9 ± 83.9 AU/mL in mild, severe and critical COVID-19 groups, respectively. A significant difference in antibody levels between mild and severe/critical subjects has been shown.

575. Villaume S. C. High Parental Education Protects Against Changes in Adolescent Stress and Mood Early in the COVID-19 Pandemic / S. C. Villaume, J. E. Stephens, E. E. Nwafo [et al.] // *Journal of Adolescent Health*. – 2021. – Vol. 69, № 4. – P. 549–556. – URL: <https://www.sciencedirect.com/science/article/pii/S1054139X21002949>

Purpose

The COVID-19 pandemic has brought dramatic changes to the daily lives of U.S. adolescents, including isolation from friends and extended family, transition to remote learning, potential illness and death of loved ones, and economic distress. This study's purpose is to measure changes in adolescents' perceived stress and mood early in the pandemic.

Methods

The present study drew from a racially and ethnically diverse sample of high school student participants in an ongoing intervention study in the Midwestern U.S., 128 of whom provided reports of their daily stress and mood both before (December 2017 to March 2020) and during (March–July 2020) the COVID-19 pandemic. We expected to see increases in perceived stress, declines in positive mood states, and increases in negative mood states, with larger impacts on individuals from households with lower parental education levels.

Results

Multilevel models revealed increases in perceived stress primarily for adolescents from low/moderate education families during the pandemic. Impacts on mood states also diverged by education: adolescents from low/moderate education households reported feeling more ashamed, caring, and excited than before the pandemic, changes that were not shared by their peers from high education households. Although changes in mood that arose with the onset of the

pandemic became less pronounced over time, increased levels of home- and health-related stress stayed high for low/moderate education adolescents.

Conclusions

During the COVID-19 period, we observed disparate impacts on adolescents according to household education level, with more dramatic and negative changes in the emotional well-being of adolescents from low/moderate education households.

576. Vizcarra P. Description of COVID-19 in HIV-infected individuals: a single-centre, prospective cohort / P. Vizcarra, M. J. Pérez-Elías, C. Quereda [et al.] // The Lancet HIV. – 2021. – Vol. 7, № 8. – P. e554–e564. – URL: <https://www.sciencedirect.com/science/article/pii/S2352301820301648>

Summary

Background

Information about incidence, clinical characteristics, and outcomes of HIV-infected individuals with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is scarce. We characterised individuals with COVID-19 among a cohort of HIV-infected adults in Madrid.

Methods

In this observational prospective study, we included all consecutive HIV-infected individuals (aged ≥ 18 years) who had suspected or confirmed COVID-19 as of April 30, 2020, at the Hospital Universitario Ramón y Cajal (Madrid, Spain). We compared the characteristics of HIV-infected individuals with COVID-19 with a sample of HIV-infected individuals assessed before the COVID-19 pandemic, and described the outcomes of individuals with COVID-19.

Findings

51 HIV-infected individuals were diagnosed with COVID-19 (incidence 1.8%, 95% CI 1.3–2.3). Mean age of patients was 53.3 years (SD 9.5); eight (16%) were women, and 43 (84%) men. 35 (69%) cases of co-infection had laboratory confirmed COVID-19, and 28 (55%) required hospital admission. Age and CD4 cell counts in 51 patients diagnosed with COVID-19 were similar to those in 1288 HIV-infected individuals without; however, 32 (63%) with COVID-19 had at least one comorbidity (mostly hypertension and diabetes) compared with 495 (38%) without COVID-19 ($p=0.00059$). 37 (73%) patients had received tenofovir before COVID-19 diagnosis compared with 487 (38%) of those without COVID-19 ($p=0.0036$); 11 (22%) in the COVID-19 group had previous protease inhibitor use (mostly darunavir) compared with 175 (14%; $p=0.578$). Clinical, analytical, and radiological presentation of COVID-19 in HIV-infected individuals was similar to that described in the general population. Six (12%) individuals were critically ill, two of whom had CD4 counts of less than 200 cells per μL , and two (4%) died. SARS-CoV-2 RT-PCR remained positive after a median of 40 days

from symptoms onset in six (32%) individuals, four of whom had severe disease or low nadir CD4 cell counts.

Interpretation

HIV-infected individuals should not be considered to be protected from SARS-CoV-2 infection or to have lower risk of severe disease. Generally, they should receive the same treatment approach applied to the general population.

577. Vukojevića J. 100 Years apart: Psychiatric admissions during Spanish flu and COVID-19 pandemic / J. Vukojevića, N. Đurana, N. Žaja [et al.] // *Psychiatry Research*. – 2021. – Vol. 303. – P. 114071. – URL: <https://www.sciencedirect.com/science/article/pii/S0165178121003681>

The last pandemic comparable to the current COVID-19 pandemic was the Spanish flu. Using the admission record books for the years 1917 and 1918 and electronic health records for the years 2019 and 2020, we extracted the relevant data and explored how they affected the numbers of emergency psychiatric admissions. The general trend in both pandemics was that they did not cause a rise in psychiatric admissions, findings which go along with reports around Europe. The causes for these similarities are complex but provide an interesting perspective as to why there is no concurrent rise in emergency psychiatric admissions.

578. Wahaibi A. A. Effects of COVID-19 on mortality: A 5-year population-based study in Oman / A. A. Wahaibi, A. Al-Maani, F. Alyaquobi [et al.] // *International Journal of Infectious Diseases*. – 2021. – Vol. 104. – P. 102–107. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220325789>

Background

Mortality surveillance provides a crucial method for monitoring disease activity. Coronavirus disease 2019 (COVID-19) can cause excess mortality both directly and indirectly by increasing deaths from other diseases. The aim of this study was to investigate the effects of COVID-19 on mortality in Oman.

Methods

A cross-sectional retrospective analysis of mortality data from 1 January 2015 to 16 August 2020 was undertaken. Baseline mortality estimated using the Farrington flexible model and excess mortality were calculated for the pandemic period (16 March–16 August 2020) according to cause of death, place of death and age group.

Results

During the pandemic period, there was a 15% [95% confidence interval (CI) 14–17] increase in all-cause mortality from baseline. When classifying by cause, there was a 9% (95% CI 5–12) increase in deaths due to respiratory diseases, a 2%

(95% CI 1–4) increase in deaths due to infectious diseases and a 9% (95% CI 8–11) increase in unclassified deaths. In terms of place of death, 12% (95% CI 11–14) of excess mortality occurred in hospitals and 7% (95% CI 5–8) occurred in homes during the pandemic period. Patients aged >60 years recorded a 15% (95% CI 13–16) increase in all-cause mortality during this period.

Conclusion

The COVID-19 pandemic has resulted in a 15% increase in all-cause mortality in Oman, mainly as a result of deaths from COVID-19. However, unclassified deaths, deaths due to respiratory diseases and deaths due to infectious diseases have also increased, enforcing the need for a holistic approach and appropriate coordination of health services during such health crises.

579. Wang D. Risk Taker or Driver: An Empirical Analysis of US Financial Markets during the COVID-19 Pandemic / D. Wang, L. Huang, P. Li // Procedia Computer Science. – 2021. – Vol. 187. – P. 554–558. – URL: <https://www.sciencedirect.com/science/article/pii/S1877050921008978>

This paper studies the dynamic risk spillovers between ten major sectors of US stock market during the global COVID-19 pandemic based on the DYCI (Diebold-Yilmaz Connectedness Index) framework. We find that the pairwise directional connectedness between Finance and Utility, Technology and Utility, and Consumer Discretionary were larger than other pairs. These results show that COVID-19 pandemic brought huge shocks to US economy. We also find that the sectors that require in-person contact and were banned in some degree during the pandemic took the greatest impact during the pandemic. But the risk did drop down as the COVID-19 was somehow controlled by the US government.

580. Wang H. Delirium: A suggestive sign of COVID-19 in dementia / H. Wang // EClinicalMedicine. – 2020. – Vol. 26. – P. 100490. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302686>

Approximately 40% - 60% of people with dementia in residential care facilities experience behavioral and psychological symptoms (BPSD), such as agitation, psychosis, or apathy [1]. During the COVID-19, older adults with dementia were likely to develop behavioral changes [2]. Among multiple factors contributing to the behavioral disturbances in unprecedented times, delirium was not well recognized in dementia, especially among those without respiratory failure [3,4]. In the EClinicalMedicine, Tino Emanuele Poloni and colleagues report a retrospective study of delirium superimposed on dementia during the COVID-19 outbreak peak in a dementia facility in Italy [5].

581. Wang P. Bibliometric analysis of global scientific research on COVID-19 / P. Wang, D. Tian [et al.] // Journal of Biosafety and Biosecurity. – 2021. – Vol. 3, № 1. – P. 4–9. – URL: <https://www.sciencedirect.com/science/article/pii/S2588933821000029>

Since the outbreak of coronavirus disease 2019 (COVID-19), a large number of COVID-19-related reports have been published in journals or submitted to preprint platforms. In this study, we search the COVID-19-related literature officially published and included in the Web of Science (WOS) database or submitted to four preprint platforms: bioRxiv, medRxiv, Preprints, and SSRN. Using data on the number of reports, author institution, country, and research category, we analyze global trends in COVID-19 research, including institution distribution and research hotspots. The results show that a large number of COVID-19-related reports have been produced; the United States has contributed the most published literature, followed by China. The United States has published the most reports included in the WOS in the categories of non-pharmaceutical interventions, treatment, and vaccine-related reports, while China has published the most literature in the categories of clinical features and complications, virology and immunology, epidemiology, and detection and diagnosis. Publication countries are concentrated in Asia, North America, and Europe, while South America and Africa have less literature. In conclusion, many scientific research issues related to COVID-19 need to be further clarified and COVID-19 research urgently needs global cooperation.

582. Wang Q. Could the ambient higher temperature decrease the transmissibility of COVID-19 in China? / Q. Wang, Y. Zhao, Y. Zhang [et al.] // Environmental Research. – 2021. – Vol. 193. – P. 110576. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935120314730>

Background

Existing literatures demonstrated that meteorological factors could be of importance in affecting the spread patterns of the respiratory infectious diseases. However, how ambient temperature may influence the transmissibility of COVID-19 remains unclear.

Objectives

We explore the association between ambient temperature and transmissibility of COVID-19 in different regions across China.

Methods

The surveillance data on COVID-19 and meteorological factors were collected from 28 provincial level regions in China, and estimated the instantaneous reproductive number (R_t). The generalized additive model was used to assess the relationship between mean temperature and R_t .

Results

There were 12,745 COVID-19 cases collected in the study areas. We report the associated effect of temperature on R_t is likely to be negative but not of statistical significance, which holds for most Chinese regions.

Conclusions

We found little statistical evidence for that the higher temperature may reduce the transmissibility of COVID-19. Since intensive control measures against the COVID-19 epidemics were implemented in China, we acknowledge this may impact the underlying effect size estimation, and thus cautiousness should be taken when interpreting our findings.

583. Wang Q. Impacts of the COVID-19 pandemic on the dairy industry: Lessons from China and the United States and policy implications / Q. Wang, C. Liu, Y. Zhao [et al.] // Journal of Integrative Agriculture. – 2021. – Vol. 19, № 12. – P. 2903–2915. – URL: <https://www.sciencedirect.com/science/article/pii/S2095311920634438>

The purposes of this study are to assess the COVID-19 pandemic's impacts on the dairy industries in China and the United States and to derive policy recommendations for enhancing the dairy industries' resilience to pandemics and other market shocks. Specifically, data from the two nations are used to analyze and compare the mechanisms through which the pandemic has affected their dairy industries and to discuss potential lessons from their experiences. The findings suggest that this pandemic has heavily affected the dairy industries in both China and the United States through similar mechanisms, such as decreased farmgate milk prices, disruption and difficulties of moving milk within the supply chains, worker shortages, increased production costs, and lack of operating capital. There were also significant differences in the affecting mechanisms between the two nations, including transportation difficulties from widespread road closures and significant reduction in holiday sales of dairy products in China, and the shutdown of many dairy processors in the United States due to the closing of schools, restaurants, and hotels. While government financial reliefs are highly needed to help many dairy farms and processors survive this pandemic in the short term, the dairy industries and governments need to work together to develop long-term strategies and policies to balance the industries' efficiency and flexibility, product specialization and diversification, supply chain integration and local food systems, and market mechanisms and policy regulations and interventions.

584. Wang S. Can urban prosperity aid in recovery?: The relationship between healthcare workers' mental health status and the city level during the COVID-19 epidemic / S. Wang, P. Zhou, X. Yang [et al.] // Cities. – 2021. – Vol. 118. – P. 103361. – URL: <https://www.sciencedirect.com/science/article/pii/S0264275121002614>

The mental health of healthcare workers during epidemics is a complex topic. The outbreak of coronavirus disease 2019 (COVID-19) that occurred in late 2019 has become a global public health threat and provides an opportunity to investigate this topic. Based on a large-scale investigation of Chinese healthcare

workers during the COVID-19 epidemic, the article tests the assumption that the socioeconomic level of a city affects the mental health status of healthcare workers. The result is interesting and important: the mental health status of this population differs based on the city level. Hospital level, hospital type and departments risk level were investigated separately. With regard to the degree of anxiety, depression and post-traumatic stress disorder (PTSD), there were obvious differences based on the city level: the negative mental health impacts increase with increasing city level, such that healthcare workers in first-tier cities have the least negative mental health impacts, while those in third-tier cities have the most. City level reflects the degree of urban development, resource richness, resident satisfaction, and positive social atmosphere. Urban prosperity may affect mental health.

585. Wang Y. COVID-19-related government interventions and travel and leisure stock / Y. Wang, H. Zhang, W. Gao [et al.] // Journal of Hospitality and Tourism Management. – 2021. – Vol. 49. – P. 189–194. – URL: <https://www.sciencedirect.com/science/article/pii/S1447677021001583>

COVID-19-related government interventions have significantly affected tourism, while the impact of government interventions on the tourism financial market remains essentially unexplored. This paper comprehensively evaluates how COVID-19-related government interventions affected the travel and leisure stock markets based on a panel quantile regression model. Three government interventions (stringency index, containment and health index and economic support index) and two important stock market features (return and volatility) are discussed. The results reveal that the three government interventions are beneficial to the travel and leisure stock market, especially when the market is under adverse conditions. Specifically, containment and health measures lead to an increase in stock returns. Stringency measures and economic support measures promote stock return and restrain stock market volatility. This study provides significant insights for protecting and recovering the travel and leisure stock market by considering when and which government interventions should be implemented.

586. Wang Y. P Effect of antiplatelet treatments on patients with COVID-19 infection: A systematic review and meta-analysis / Y. Wang, G. Ao, B. Nasr, X. Qi // The American Journal of Emergency Medicine. – 2021. – Vol. 43. – P. 27–30. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000188>

Despite the rationale that early anti-platelet would lower the risk of major organ dysfunction, the effectiveness of this approach remains controversial. Therefore, we perform a systematic review and meta-analysis to investigate the effect of antiplatelet treatments on patients with COVID-19 infection. An electronic search was carried out in Pubmed, Embase, Cochrane library, Web of Science, MEDLINE, Wanfang and China National Knowledge Infrastructure

(CNKI). Meta-analysis and statistical analyses were completed with using the RevMan 5.3 and Stata 12.0. A total of 9 articles representing data from 5970 participants were included in this study. The meta-analysis showed antiplatelet agents were not associated with higher risk of severe COVID-19 disease (OR = 0.98, 95%CI: 0.64 to 1.50, $P = 0.94$; $I^2 = 65\%$), while an adjusted analysis indicated that antiplatelet agents was not associated with an increased risk of mortality (OR = 0.65, 95%CI: 0.40 to 1.06, $P = 0.498$; $I^2 = 0\%$). The results of this study reveal that while there is no significant benefit on mortality demonstrated with the use of antiplatelet agents, the upper bound of the confidence interval suggests that there is unlikely to be a compelling risk of harm associated with this practice. The benefit and risk of the use of antiplatelet agents should be fully considered especially in the presence of thrombocytopenia status in patients with COVID-19.

587. Ward H. Prevalence of antibody positivity to SARS-CoV-2 following the first peak of infection in England: Serial cross-sectional studies of 365,000 adults / H. Ward, G. S. Cooke, C. Atchison [et al.] // *Agricultural Systems*. – 2021. – Vol. 188. – P. 103039. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000752>

Background

The time-concentrated nature of the first wave of the COVID-19 epidemic in England in March and April 2020 provides a natural experiment to measure changes in antibody positivity at the population level before onset of the second wave and initiation of the vaccination programme.

Methods

Three cross-sectional national surveys with non-overlapping random samples of the population in England undertaken between late June and September 2020 (REACT-2 study). 365,104 adults completed questionnaires and self-administered lateral flow immunoassay (LFIA) tests for IgG against SARS-CoV-2.

Findings

Overall, 17,576 people had detectable antibodies, a prevalence of 4.9% (95% confidence intervals 4.9, 5.0) when adjusted for test characteristics and weighted to the adult population of England. The prevalence declined from 6.0% (5.8, 6.1), to 4.8% (4.7, 5.0) and 4.4% (4.3, 4.5), over the three rounds of the study a difference of -26.5% (-29.0, -23.8). The highest prevalence and smallest overall decline in positivity was in the youngest age group (18-24 years) at -14.9% (-21.6, -8.1), and lowest prevalence and largest decline in the oldest group (>74 years) at -39.0% (-50.8, -27.2). The decline from June to September 2020 was largest in those who did not report a history of COVID-19 at -64.0% (-75.6, -52.3), compared to -22.3% (-27.0, -17.7) in those with SARS-CoV-2 infection confirmed on PCR.

Interpretation

A large proportion of the population remained susceptible to SARS-CoV-2 infection in England based on naturally acquired immunity from the first wave. Widespread vaccination is needed to confer immunity and control the epidemic at population level.

588. Watfa M. O. Rapid implementation of teledentistry during the Covid-19 lockdown / M. O. Watfa, N. M. Bernfeld, D. Oren [et al.] // *Advances in Oral and Maxillofacial Surgery*. – 2021. – Vol. 2. – P. 100031. – URL: <https://www.sciencedirect.com/science/article/pii/S2667147621000182>

Introduction

The current corona virus disease 2019 (COVID-19) outbreak set new challenges to nearly all health plans and large health organizations worldwide, including movement restrictions, strict limitations in healthcare services, especially in the dental profession, and patient fears regarding potential infection. Telehealth can serve as an effective platform for remote connection between dental healthcare providers and patients, and can help reduce the risk of infection when social distancing is required.

Objective

The current study aimed to evaluate the quality of treatment provided via teledentistry, as perceived by patients using the service, as well as their willingness to use online distant medical consultation in the future.

Methods

Since March 2020, a new online service was implemented in the Oral Medicine Unit and Oral and Maxillofacial Surgery Department in the Galilee Medical Center, to expand the range of services beyond merely emergency treatments.

Results

The current study examined the quality of teledentistry services as perceived by 89 patients participating in at least one teleconsultation, and their acceptance of remote healthcare. Satisfaction rates were high in patients who received both full and partial solution to their chief complaint. Moreover, acceptance of the teledentistry platform was high, even in the older age groups.

Conclusions

We propose to implement teledentistry services in current and future pandemics, as well as during routine times, to strengthen our health care system with digital technologies.

589. Weersink A. COVID-19 and the agri-food system in the United States and Canada / A. Weersink, M. Massow, N. Bannon [et al.] // *Agricultural*

Agri-food supply chains in North America have become remarkably efficient, supplying an unprecedented variety of items at the lowest possible cost. However, the initial stages of the COVID-19 pandemic and the near-total temporary loss of the foodservice distribution channel, exposed a vulnerability that many found surprising. Instead of continued shortages, however, the agri-food sector has since moved back to near normal conditions with prices and production levels similar to those typically observed in years prior to the pandemic. Ironically, the specialization in most food supply chains designed for “just-in-time” delivery to specific customers with no reserve capacity, which led to the initial disruptions, may have also been responsible for its rapid rebound. A common theme in assessing the impacts across the six commodities examined is the growing importance of understanding the whole supply chain.

Over the longer term, a continuation of the pandemic could push the supply chain toward greater consolidation of firms and diversification of products given the increasing option value of maintaining flexibility. Other structural changes will be felt through input markets, most notably labour, as the trend toward greater automation will continue to accelerate as a response to meeting concerns about a consistent supply of healthy and productive workers. The economic fall out from the pandemic may lead to greater concentration in the sector as some firms are not able to survive the downturn and changes in consumer food buying behaviour, including movement toward online shopping and enhanced demand for attributes associated with resiliency, such as local. On the other hand, online shopping may provide opportunities for small producers and processors to shorten supply chains and reach customers directly. In the long term, COVID-19 impacts on global commerce and developing country production are more uncertain and could influence poverty reduction. While COVID-19's impacts on North American agriculture should have minimal effect on the Sustainable Development Goals (SDGs) through food prices, the ongoing global trends in trade and agribusiness accelerated by the pandemic are relevant for achievement of the SDGs.

590. Weld. J. K. Pediatric cardiology national education series: A remote education response to COVID-19 / J. K. Weld, L. H. Frank, R. Gandhi // Progress in Pediatric Cardiology. – 2021. – Vol. 61. – P. 101383. – URL: <https://www.sciencedirect.com/science/article/pii/S1058981321000503>

Objective

Medical education experienced widespread disruption during the first peak of the COVID-19 pandemic. In response, members of the Society of Pediatric Cardiology Training Program Directors (SPCTPD) created a series of live, Zoom-based lectures for pediatric cardiology fellows. The goals were to support fellow didactic education and connect fellows and faculty during the pandemic. We

sought to determine the impact of the lecture series on pediatric cardiology fellows around the country.

Methods

Pediatric cardiology experts from across the country volunteered to give lectures in the Pediatric Cardiology National Education Series (PC-NES). Lectures were held online once or twice weekly for 3 months during Spring 2020, while many fellows had modified clinical responsibilities. Fellows voluntarily completed an online survey before and after the lecture series.

Results

On the initial survey, a majority of fellows responded they would benefit from more didactic education while their training was impacted by COVID-19. After the series concluded, almost all (95%) fellows responded that PC-NES lectures were valuable supplements to their training during COVID-19. They included quality of lectures, board-relevance, and a way to connect to the pediatric cardiology community as key reasons for participating in PC-NES, and 100% responded they felt PC-NES should continue in some capacity.

Conclusion

The PC-NES was a low-cost, simple way to deliver high-quality supplemental education to pediatric cardiology fellows, help trainees build a network of peers and learn from experts outside their home institution. Similar models could connect other pediatric trainees at local, regional, or national levels, and provide valuable supplemental education opportunities.

591. Wijeratne D. T. Gender differences in outcomes of cancer patients with COVID: Signal or noise? / D. T. Wijeratne, N. Hammad, B. Gyawali // EClinicalMedicine. – 2020. – Vol. 26. – P. 100535. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302790>

Cancer is the second leading cause of deaths globally, responsible for 1 out of every 6 deaths [1]. COVID-19 pandemic has already resulted in the death of nearly 0.8 million people worldwide in just seven months [2]. Combine the two, and we have one of the most lethal combinations of diseases in the history of mankind.

Patients with cancer do not have the luxury to stay in complete lockdown during the pandemic. They need continued access to cancer treatment, supportive care or palliative care and are at a risk of being exposed to coronavirus. They may also face more severe outcomes from COVID-19 compared to the rest of the population, although the extent of this detriment is not clear [3]. Thus, cancer patients are constantly having to make the tough choice during the pandemic of either foregoing cancer treatments or risking COVID-19 infection by continuing to be exposed to the hospital environment.

592. Winch G. M. Operation Warp Speed: Projects responding to the COVID-19 pandemic / G. M. Winch, D. Cao, E. Maytorena-Sanche [et al.] // Project Leadership and Society. – 2021. – Vol. 2. – P. 100019. – URL: <https://www.sciencedirect.com/science/article/pii/S2666721521000132>

The 2020 COVID-19 pandemic has profound socio-economic consequences. Extraordinary times call for extraordinary measures, so this paper focuses on radical changes to accepted practice in project organizing in response. In particular, we focus on schedule compression to deliver outputs to mitigate the immediate impact of the pandemic on health. In the spirit of engaged scholarship, which is problem-driven rather than theory-driven, we address directly the evidence of what happened in two empirical vignettes and one more substantial case study – the CoronavirusUY app; emergency field hospitals; and vaccine development. We then suggest the implications for project management theory in discussion.

593. Wittenberg E. COVID 19-transformed nursing education and communication competency: Testing COMFORT educational resources / E. Wittenberg, J. V. Goldsmith, C. Chen [et al.] // Nurse Education Today. – 2021. – Vol. 107. – P. 105105. – URL: <https://www.sciencedirect.com/science/article/pii/S0260691721003622>

Background

The COVID-19 pandemic brought a disruption to nurse education for both nursing faculty and students as all non-clinical nurse education courses worldwide moved to distance or online learning. The sudden shift to online education meant the loss of traditional activities for students to learn communication skills creating a critical demand for open educational resources for students and nursing faculty. Tools to support nursing faculty development for teaching communication are nearly non-existent and pedagogical content knowledge is needed.

Objectives

The purpose of this study was to test two COMFORT COVID-19 Communication Modules (PPE and Video/Phone) for undergraduate nursing students and evaluate student communication competency post-intervention.

Design

This pre-post study includes qualitative and quantitative data collected to evaluate student communication competency post-intervention.

Settings

Undergraduate Bachelor of Science in Nursing (BSN) students at four university campuses in the Pacific and MidSouth regions of the United States.

Participants

BSN nursing students (n = 197) predominantly in the third year of study (n = 138, 70%).

Methods

Students completed online modules as part of a nursing course. Faculty provided information and a link to access online learning modules. A pre-post assessment was completed for each module.

Results

Significant statistical differences were found across variables of communication attitude, knowledge, and skill across both modules.

Conclusions

As nursing education in the United States shifts to competency-based education which emphasizes skill development across the BSN program, it is imperative to establish communication learning objectives that are measurable and ensure communication theory and evidence-based practice is part of curriculum content.

594. Wong G. L.-H. Management of patients with liver derangement during the COVID-19 pandemic: an Asia-Pacific position statement / G. L. H. Wong, V. W.-S. Wong, A. Thompson [et al.] // The Lancet Gastroenterology & Hepatology. – 2020. – Vol. 5, № 8. – P. 776–787. – URL: <https://www.sciencedirect.com/science/article/pii/S2468125320301904>

Summary

The COVID-19 pandemic has spread rapidly worldwide. It is common to encounter patients with COVID-19 with abnormal liver function, either in the form of hepatitis, cholestasis, or both. The clinical implications of liver derangement might be variable in different clinical scenarios. With growing evidence of its clinical significance, it would be clinically helpful to provide practice recommendations for various common clinical scenarios of liver derangement during the COVID-19 pandemic. The Asia-Pacific Working Group for Liver Derangement during the COVID-19 Pandemic was formed to systematically review the literature with special focus on the clinical management of patients who have been or who are at risk of developing liver derangement during this pandemic. Clinical scenarios covering the use of pharmacological treatment for COVID-19 in the case of liver derangement, and assessment and management of patients with chronic hepatitis B or hepatitis C, non-alcoholic fatty liver disease, liver cirrhosis, and liver transplantation during the pandemic are discussed.

595. Xiong Y. International policies and challenges on the legalization of traditional medicine/herbal medicines in the fight against COVID-19 / Y. Xiong, M. Gao, B. Duijn [et al.] // Pharmacological Research. – 2021. –

Vol. 166. – P. 105472. – URL:
<https://www.sciencedirect.com/science/article/abs/pii/S1043661821000566>

The coronavirus disease 2019 (COVID-19) has now rapidly spread around the world, causing an outbreak of acute infectious pneumonia. To develop effective and safe therapies for the prevention and treatment of COVID-19 has become the major global public health concern. Traditional medicine (TM)/herbal medicines (HMs) have been used to treat multiple epidemics in human history, which brings hope for the fight against COVID-19 in some areas. For example, in China, India, and South Korea with traditional medication history and theory, the governments issued a series of guidelines to support TM/HMs in the medication of COVID-19. In contrast, other countries e.g. North American and European governments are typically silent on these practices, unless to warn of possible harm and overselling. Such difference is due to the discrepancy in culture, history and philosophical views of health care and medication, as well as unharmonized policies and standards in the regulation and legalization of TM/HMs among different areas. Herein, we reviewed the responses and scientific researches from seven selected countries on the policies and legalization of TM/HMs to treat COVID-19, and also analyzed the major challenges and concerns to utilize the traditional knowledge and resource.

596. Yagi M. Global supply constraints from the 2008 and COVID-19 crises / M. Yagi, S. Managi // *Economic Analysis and Policy*. – 2021. – Vol. 69. – P. 514–528. – URL:
<https://www.sciencedirect.com/science/article/pii/S0313592621000084>

The analysis of specific economic indexes suggests that the economic damage from the 2020 COVID-19 crisis (coronavirus pandemic, apparently first spread from Wuhan, China) may exceed that of the 2008 global financial crisis dating to around September 15, 2008. Thus, by comparing the first four months after these crises, the purpose of this study is to estimate the economic damage of the supply-chain disruptions (i.e., the supply constraints) in the mining and manufacturing (M&M) sectors. Employing the supply-driven input–output (IO) model for the world (35 countries in 56 sectors), the results show that the supply-chain damage from COVID-19 is 1.248%, when compared to the annual gross domestic production (GDP), in the overall sectors, 4.443% in the M&M sectors, and 0.362% in other sectors, which are approximately 1.4 times the figures from the 2008 crisis.

597. Yamout B. I. MENACTRIMS practice guideline for COVID-19 vaccination in patients with multiple sclerosis / B. I. Yamout, M. Zakaria, J. Inshasi [et al.] // *Multiple Sclerosis and Related Disorders*. – 2021. – Vol. 56. – P. 103225. – URL:
<https://www.sciencedirect.com/science/article/pii/S2211034821004922>

Summary

Patients with multiple sclerosis (MS) should be vaccinated against COVID-19.

All COVID-19 vaccines are effective and do not appear to carry any additional risk for patients with MS. Patients with MS should get a COVID-19 vaccine as soon as it becomes available. The risks of COVID-19 disease outweigh any potential risks from the vaccine.

Even if vaccinated, patients with MS should continue to practice standard and recommended precautions against COVID-19, such as wearing a face mask, social distancing and washing hands.

There is no evidence that patients with MS are at higher risk of complications from the mRNA, non-replicating viral vector, inactivated virus or protein COVID-19 vaccines, compared to the general population.

COVID-19 Vaccines are safe to use in patients with MS treated with disease-modifying therapies (DMTs).

The effectiveness of vaccination may be affected by few of the DMTs but yet some protection is still provided.

For certain DMTs we may consider coordinating the timing of the vaccine with the timing of the DMT dose to increase vaccine efficacy.

598. Yan J. Hospitality workers' COVID-19 risk perception and depression: A contingent model based on transactional theory of stress model / J. Yan, S. Kim, S. X. Zhang [et al.] // International Journal of Hospitality Management. – 2021. – Vol. 95. – P. 102935. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431921000785>

The hospitality industry worldwide is suffering under the COVID-19 pandemic. Drawing on the transactional theory of stress and coping, this study aims to investigate when hospitality workers' COVID-19 risk perception affects their likelihood of having depressive symptoms. Using data from 211 hospitality workers in 76 hotels in Peru, we examined the effects of perceived COVID-19 risk on the likelihood of experiencing depressive symptoms. We posited that this relationship is moderated by the workers' environment at work (job satisfaction) and at home (the number of children). The results indicate that job satisfaction weakens the link between hospitality workers' COVID-19 risk perception and their likelihood of depressive symptoms while the number of children exacerbates this link. We discuss the implications of our findings for research on COVID-19 risk perception and offer practical implications for hospitality workers under COVID-19 crisis.

599. Yang Y. Exploring the relationship between the COVID-19 pandemic and changes in travel behaviour: A qualitative study / Y. Yang, M. Cao, L. Cheng [et al.] // Transportation Research Interdisciplinary Perspective. – 2021. – Vol. 11. – P. 100450. – URL: <https://www.sciencedirect.com/science/article/pii/S2590198221001561>

During the COVID-19 crisis, a series of measures were taken to restrict travel and social activities outside the home in order to curb the pandemic and ameliorate its negative effects. These unprecedented measures have had a profound impact on the number and purposes of trips and modes of travel. In China, although the pandemic is now generally under control and transport availability has returned to nearly normal, the extent of the changes in travel behaviour wrought during and after the pandemic still remains unclear. Therefore, the aim of this paper is to investigate the differences in individual travel behaviours during and after the COVID-19 pandemic, using Huzhou as an example. Semi-structured interviews were used to examine the influence of COVID-19 on the travel behaviour and perceptions of different groups. The results indicate that, initially, travel demand was greatly reduced. Second, decreased travel reduced participation in activities, which can have adverse effects on people's health as well as their subjective well-being. Third, the degree and duration of such impacts varied from person to person. Students, lower income cohorts, groups living in small communities with insufficient green spaces, and those working in tourism, catering, informal businesses and transport-related sectors were more vulnerable than others. Policymakers, urban and transport planners should therefore pay attention to the social inequities that arise from unequal access to transport and heterogeneity between individuals. Additionally, public transport systems require further development to promote social cohesion.

600. Yao H. Public health emergencies and school attendance: What the Ebola crisis can teach us about the coming post-COVID education landscape / H. Yao, A. S. Memon, D. Amaro [et al.] // International Journal of Educational Development. – 2021. – Vol. 85. – P. 102457. – URL: <https://www.sciencedirect.com/science/article/pii/S0738059321001103>

Using nine Demographic and Health Surveys for the three West African countries affected by the 2013–16 Ebola epidemic, this study applies a district-level interrupted time series (ITS) design to explore the longer-term impacts of the epidemic on school attendance. It shows that, about three to four years after the crisis, attendance has returned to the long-term trend regardless of the difference in Ebola virus disease prevalence among districts. The study also shows no discernable effect on the attendance trends for children from vulnerable backgrounds. However, it suggests further areas for examination and study. This includes migration patterns, the investment of emergency relief and overseas development aid between regions, the possible role of orphan status and early marriage (for girls) as vectors for the effect of the EVD crisis on educational

outcomes and learnings losses for children who were out of school for up to an entire school year.

601. Yao K. Experience of 101 patients with coronavirus infectious disease 2019 (COVID-19) at a tertiary care center in Japan / K. Yao, S. Hasegawa, A. Takamatsu [et al.] // Journal of Infection and Chemotherapy. – 2021. – Vol. 27, № 2. – P. 413–210. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1341321X20304311>

Introduction. Clusters of novel coronavirus infectious disease of 2019 (COVID-19) have spread to become a global pandemic imposing a significant burden on healthcare systems. The lack of an effective treatment and the emergence of varied and complicated clinical courses in certain populations have rendered treatment of patients hospitalized for COVID-19 difficult.

Methods. Tokyo Metropolitan Tama Medical Center, a public tertiary acute care center located in Tokyo, the epicenter of COVID-19 in Japan, has been admitting patients with COVID-19 since February 2020. The present, retrospective, case-series study aimed to investigate the clinical course and outcomes of patients with COVID-19 hospitalized at the study institution.

602. Yaprak Ü. Is the Covid-19 pandemic strong enough to change the online order delivery methods? Changes in the relationship between attitude and behavior towards order delivery by drone / Ü. Yaprak, F. Kılıç, A. Okumuş // Technological Forecasting & Social Change. – 2021. – Vol. 169. – P. 120829. – URL: <https://www.sciencedirect.com/science/article/pii/S0040162521002614>

Delivery of products in online orders by drones has begun to be tested by major retailers. How about consumers? Are they ready for this? Due to the emergence of Covid-19 and its easy transmission from person to person, considering the risks in the streets, a lot of people have started to place their orders online. However, the interaction between the courier and the consumer during the order delivery has become a problem over time. Reducing people's anxiousness in such pandemic situations brings uncertainty about the delivery of the orders. The object of the research is to create a drone delivery system, which is an alternative delivery system that will be solution to these problems and is also used in a limited way around the world. With this study, whose theoretical background is based on the diffusion of innovations theory, technology acceptance model and protection motivation theory, it is aimed to test the relationship between consumer's perceptions, attitudes and behavioral intentions towards drone delivery of online orders. In this research, questionnaire method has been used for data collection and measurement. Moreover, the Structural Equation Modeling approach has been used for data analysis and validation of models. According to the results of this study, significant relationships have been identified between the consumers' perception of benefit and risk, and attitudes and behavioral intentions towards drone delivery of online orders during pandemics.

603. Yang C. All five COVID-19 outbreaks during epidemic period of 2020/2021 in China were instigated by asymptomatic or pre-symptomatic individuals / C. Yang, S. Zhang, S. Lu [et al.] // Journal of Biosafety and Biosecurity. – 2021. – Vol. 3, № 1. – P. 35–40. – URL: <https://www.sciencedirect.com/science/article/pii/S258893382100008X>

Introduction

The significance of asymptomatic or pre-asymptomatic individuals in driving the COVID-19 epidemic in China or other countries remains uncertain.

Method

We collected and analyzed all the epidemiologic and virological diagnostic details of the infected individuals released by public health authorities and reiterated every episode of outbreak on a timeline. All individuals associated with the five outbreaks had tested positive for SARS-CoV-2 infection.

Results

In this study, all five COVID-19 outbreaks reported in China since October 2020 were analyzed. The Kashgar outbreak in Xinjiang province came into light for the first time on October 22, 2020. However, it was initiated before October 11, 2020, by a local asymptomatic import and export worker, who was infected at the working place. Subsequently, his wife caught the infection, which led to 430 more infections reported in the outbreak. The Beijing outbreak with 41 cases was noticed for the first time on December 22, 2020. However, our analysis revealed that it was initiated by an asymptomatic individual from Indonesia on December 10, 2020. The Shenyang outbreak, with 38 cases, noticed for the first time on December 23, 2020, was initiated by a pre-symptomatic individual from South Korea on December 13, 2020.

Conclusion

The asymptomatic or pre-symptomatic individuals during the asymptomatic period were unsuspectingly infected by SARS-CoV-2, and unintentionally transmitted the virus to a large number of people. These findings suggest that early detection of asymptomatic or pre-symptomatic individuals is of critical importance in preventing future outbreaks or epidemics.

604. Yang M. COVID-19 and mobility in tourism cities: A statistical change-point detection approach / M. Yang, C. Han, Y. Cui // Journal of Hospitality and Tourism Management. – 2021. – Vol. 47. – P. 256–261. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1447677021000450>

This study uses statistical change-point analysis to investigate the impact of the COVID-19 pandemic on people's mobility in tourism cities. Based on the collected data sample containing mobility time series of nine tourism cities on three categories of places - Retail and Recreation, Parks and Transit Stations, we find apart from the mobility reduction observed on all place categories, most cities

experienced a three-phase pattern. Moreover, a time lag between the mobility decrease and introduction of lockdown measures is detected, suggesting that the latter is not the reason for people to reduce movement. Further, the mobility reduction is found less significant on Parks and appeared earlier on Transit Stations. The findings provide useful insights on how tourism, hospitality and travel sectors are affected by crisis events.

605. Ye H. Twelve out of 117 recovered COVID-19 patients retest positive in a single-center study of China / H. Ye, C. Zhao, L. Yang // *EClinicalMedicine*. – 2020. – Vol. 26, № 1. – P. 100492. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302364>

It has been reported that a fraction of recovered coronavirus disease 2019(COVID-19) patients have retested positive for SARS-CoV-2. Clinical characteristics and risk factors for retesting positive have not been studied extensively.

606. Yegorov S. Epidemiology, clinical characteristics, and virologic features of COVID-19 patients in Kazakhstan: A nation-wide retrospective cohort study / S. Yegorov, M. Goremykina, R. Ivanova [et al.] // *The Lancet Regional Health - Europe*. – 2021. – Vol. 4. – P. 100096. – URL: <https://www.sciencedirect.com/science/article/pii/S2666776221000739>

Background

The earliest coronavirus disease-2019 (COVID-19) cases in Central Asia were announced in March 2020 by Kazakhstan. Despite the implementation of aggressive measures to curb infection spread, gaps remain in the understanding of the clinical and epidemiologic features of the regional pandemic.

Methods

We did a retrospective, observational cohort study of patients with laboratory-confirmed COVID-19 hospitalized in Kazakhstan between February and April 2020. We compared demographic, clinical, laboratory and radiological data of patients with different COVID-19 severities on admission. Logistic regression was used to assess factors associated with disease severity and in-hospital death. Whole-genome SARS-CoV-2 analysis was performed in 53 patients.

Findings

Of the 1072 patients with laboratory-confirmed COVID-19 in March-April 2020, the median age was 36 years (IQR 24–50) and 484 (45%) were male. On admission, 683 (64%) participants had asymptomatic/mild, 341 (32%) moderate, and 47 (4%) severe-to-critical COVID-19 manifestation; 20 in-hospital deaths (1.87%) were reported by 5 May 2020. Multivariable regression indicated increasing odds of severe disease associated with older age (odds ratio 1.05, 95% CI 1.03-1.07, per year increase; $p < 0.001$), the presence of comorbidities (2.34,

95% CI 1.18-4.85; $p=0.017$) and elevated white blood cell count (WBC, 1.13, 95% CI 1.00-1.27; $p=0.044$) on admission, while older age (1.09, 95% CI 1.06-1.13, per year increase; $p<0.001$) and male sex (5.63, 95% CI 2.06-17.57; $p=0.001$) were associated with increased odds of in-hospital death. The SARS-CoV-2 isolates grouped into seven phylogenetic lineages, O/B.4.1, S/A.2, S/B.1.1, G/B.1, GH/B.1.255, GH/B.1.3 and GR/B.1.1.10; 87% of the isolates were O and S sub-types descending from early Asian lineages, while the G, GH and GR isolates were related to lineages from Europe and the Americas.

Interpretation

Older age, comorbidities, increased WBC count, and male sex were risk factors for COVID-19 disease severity and mortality in Kazakhstan. The broad SARS-CoV-2 diversity suggests multiple importations and community-level amplification predating travel restriction.

607. Yeh R. FDG PET/CT imaging features and clinical utility in COVID-19 / R. Yeh, A. Elsakka, R. Wray [et al.] // Clinical Imaging. – 2021. – Vol. 80. – P. 262–267. – URL: <https://www.sciencedirect.com/science/article/pii/S0899707121003351>

Purpose

To determine the imaging findings and potential clinical utility of FDG PET/CT in patients with laboratory-confirmed COVID-19.

Methods

We performed a single institution retrospective review of patients diagnosed with COVID-19 using real time reverse transcription–polymerase chain reaction (RT-PCR) who underwent FDG PET/CT for routine cancer care between March 1, 2020 to April 30, 2020, during the height of the pandemic in New York City, New York, United States. PET/CT scans were retrospectively reviewed for imaging findings suspicious for COVID-19. For positive scans, PET and CT findings were recorded, including location, FDG avidity (SUVmax) and CT morphology. Patient demographics and COVID-19 specific clinical data were collected and analyzed with respect to PET/CT scan positivity, lung SUVmax, and time interval between PET/CT and RT-PCR.

Results

Thirty-one patients (21 males and 10 females, mean age 57 years \pm 16) were evaluated. Thirteen of 31 patients had positive PET/CT scans, yielding a detection rate of 41.9%. Patients with positive scans had significantly higher rates of symptomatic COVID-19 infection (77% vs 28%, $p = 0.01$) and hospitalizations (46% vs. 0%, $p = 0.002$) compared to patients with negative scans. Eleven of 13 patients (84.6%) with positive scans had FDG-avid lung findings, with mean lung SUVmax of 5.36. Six of 13 patients (46.2%) had extrapulmonary findings of FDG-

avid thoracic lymph nodes. The detection rate was significantly lower when the scan was performed before RT-PCR versus after RT-PCR (18.8% (n = 3/16) vs. 66.7% (n = 10/15), p = 0.009). Lung SUVmax was not associated with COVID-19 symptoms, severity, or disease course.

Conclusion

FDG PET/CT has limited sensitivity for detecting COVID-19 infection. However, a positive PET scan is associated with higher risk of symptomatic infection and hospitalizations, which may be helpful in predicting disease severity.

608. Yilmaz A. Association between laboratory parameters and CT severity in patients infected with Covid-19: A retrospective, observational study / A. Yilmaz, R. Sabirli, M. Seyit [et al.] // The American Journal of Emergency Medicine. – 2021. – Vol. 42. – P. 110–114. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0735675721000437>

1. Introduction

Having appeared in Wuhan, China in the last month of 2019 and subsequently spread to the whole world, COVID-19 infected approximately 5.9 million people as of May 31 and developed into a pandemic leading to 367,166 deaths worldwide. By the same date, about 1.7 million cases were detected in the United States (USA), while the number of the identified cases amounted to around 163,000 in Turkey [1]. Patients diagnosed with COVID-19 have presented to emergency departments (EDs) worldwide with a wide range of symptoms, such as cough, shortness of breath, difficulty breathing, fever, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste or smell [2]. Clinical manifestations appearing in patients admitted to hospitals have a broad spectrum, ranging from asymptomatic forms to severe pneumonia progressing into respiratory failure, sepsis, septic shock, and multiple organ failure [3].

In addition, conditions, including acute respiratory distress syndrome (ARDS), septic shock, acute kidney injury, cardiac injury, and multi-organ failure are reported as complications of COVID-19 infection [1]. On the other hand, conditions, such as advanced age, immunodeficiency, diabetes, cardiovascular diseases, hypertension, and chronic lung disease, are identified as risk factors in COVID-19 disease [4,5].

The first confirmed case was detected on March 10, 2020 in Turkey and on March 15, 2020 in our hospital [6]. Within this framework, our study set out to report the clinical, laboratory and radiological features of the cases admitted to the adult ED of our tertiary care hospital and diagnosed with COVID-19.

2. Methods

2.1. Study type

This is a single-center, retrospective, descriptive, and observational study. The clinical procedures were inaugurated once the approval numbered 60116787-020/26607 was granted by the Non-Interventional Research Ethics Committee of Pamukkale University.

2.2. Study population

Carried out in Pamukkale University Emergency Department, the present study included the patients admitted to the COVID-19 outpatient clinic of our hospital and diagnosed with COVID-19 infection [confirmed by polymerase chain reaction (PCR)].

2.3. Subject selection

The subjects, which admitted to the ED between March 11 and May 31, 2020, confirmed by PCR and performed thorax CT, were included for the study.

2.4. Research protocol

The dataset was composed of vital parameters [fever, blood pressure (BP), peripheral oxygen saturation (sPO₂)] at the time of admittance to the ED extracted from the hospital information system; complete blood count; C-reactive protein (CRP), urea, creatinine, D-dimer, Ferritin and high-sensitive troponin T (hsTnT) parameters; status of hospitalization; type of department referred for hospitalization; status of being dead or alive; patient complaints at the time of admittance; and presence of comorbid diseases.

609. Yu M. The effect of aviation responses to the control of imported COVID-19 cases / M. Yu, Z. Chen // Journal of Air Transport Management. – 2021. – Vol. 97. – P. 102140. – URL: <https://www.sciencedirect.com/science/article/pii/S0969699721001228>

The outbreak of the COVID-19 pandemic has a lasting and unprecedented negative impact on the global aviation industry. While countries such as China have successfully curbed the domestic outbreak of the virus with various restrictive and preventive measures, the challenge of avoiding imported cases remains. More importantly, it is still unclear to what extent these implemented aviation emergency responses have effectively mitigated the transmission risk of the virus. This paper provides an empirical assessment of aviation responses to the control of imported COVID-19 cases, with a focus on the following three strategies: the “circuit breaker” policy, the “negative Nucleic Acid testing (NAT)”, and the “double negative tests” requirement. Non-recursive structural equation models (SEM) with latent variables were applied to detailed international flight data and individual epidemic survey data of Guangzhou, China, between May 1 and November 30, 2020. The results show that the “double negative tests” measure has a positive effect on eliminating the number of SARS-CoV-2 carriers, while the effects of single “circuit breaker” and its co-intervention with “negative NAT” are counterproductive. This study provides important implications to civil aviation

agencies in regard to medium and long-term risk control of imported cases. Specifically, although the circuit breaker mechanism was designed to target on the risk control of imported COVID-19 cases, it may be more effective to carefully maintain a timely and reliable pre-boarding screening and testing to curb the number of imported cases.

610. Zanferrari C. Focal Cerebral Arteriopathy in a Young Adult Following SARS-CoV2 Reinfection / C. Zanferrari, S. Fanucchi, M. T. Sollazzo [et al.] // Journal of Stroke and Cerebrovascular Diseases. – 2021. – Vol. 30, № 9. – P. 105944. – URL: <https://www.sciencedirect.com/science/article/pii/S1052305721003475>

Ten days after SARS-Cov2 reinfection with mild gastrointestinal symptoms and headache that occurred 2 months after an initial infection, a previously healthy 37-year-old woman developed fluctuating facial and upper limb paresthesia and weakness. Diffusion-weighted magnetic resonance imaging revealed ischemic lesions in the right parietal region of different stages within the same vascular territory. A cerebral angiography demonstrated an isolated focal arteriopathy with no other arterial involvement. Focal cerebral arteriopathy is exceedingly rare among adults and most commonly triggered by varicella-zoster virus reactivation. We present a case of focal cerebral arteriopathy in a patient with a recent reinfection with SARS-CoV-2.

611. Zhang C. Teaching economics behind the global COVID-19 pandemic / C. Zhang, J. Ramse // International Review of Economics Education. – 2021. – Vol. 36. – P. 100206. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S1477388020300335>

The global COVID-19 pandemic has upended our daily lives in unprecedented ways. Several extraordinary economic events have occurred and have brought some intriguing and important questions to everyone's mind, creating an immersive teaching and learning environment. This paper shows how economic instructors may take advantage of this opportunity to educate their students with some key economic principles/theories using these COVID-19 related events. Integrating current events into economics instruction can stimulate students' interests and inspire them to think about the economics behind each event. The relevance and relatedness of these events can also boost students' motivation and engagement. This paper will foster reflection and discussion among economic instructors on how they may proactively connect what happens in the real world with what students learn in the classroom.

612. Zhang C. X. Non-interaction and identity change in Covid-19 tourism / C. X. Zhang, L. Wang, J. M. Rickly // Annals of Tourism Research. – 2021. – Vol. 89. – P. 103211. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0160738321000839>

The ongoing COVID-19 pandemic has challenged the fundamental desire for social interaction in international tourism. It is vital to understand how the loss of meaningful social interaction will impact on tourists' identity change. As the pandemic first appeared in Wuhan, capital city of Hubei province in central China, the study focuses on Chinese tourists' reflections on social identity change and its associated non-interaction during the time of the unexpected crisis. Using the constructivist grounded theory approach, this qualitative research explains how non-interaction with people and place influences, and indeed is influenced by, changes in their social identities during the crisis, and shapes their future social behaviours. Theoretical and practical implications of these findings are discussed.

613. Zhang D. Impact of COVID-19 on Urban Energy Consumption of Commercial Tourism City / D. Zhang, H. Li, H. Zhu [et al.] // Sustainable Cities and Society. – 2021. – Vol. 73. – P. 103133. – URL: <https://www.sciencedirect.com/science/article/pii/S2210670721004157>

In 2020, the COVID-19 pandemic has spread worldwide. To alleviate this spread, various blockade policies have been implemented in many areas. This has led to a sluggish demand in the world's major economies, sharp drop in the trade index, and negative growth in energy consumption. To formulate a better epidemic prevention policy for urban energy consumption of commercial tourism cities, this study summarizes the major statistics of energy supply and demand before and during the epidemic period based on actual data. The characteristics of energy consumption in different sectors, including hotels, transportation, tourism culture, and public utilities, are then analyzed in detail. Finally, the energy consumption features of commercial tourism cities represented by Macao are compared to those of other typical countries (e.g., Italy, United States, Japan, and Brazil). These analyses demonstrate the impact of COVID-19 on the energy consumption in commercial tourism cities, which provides insights for the government or energy providers to formulate policies to adapt to this pandemic.

614. Zhang M. Terminator or accelerator? Lessons from the peer-to-peer accommodation hosts in China in responses to COVID-19 / M. Zhang, R. Geng, Y. Huang [et al.] // International Journal of Hospitality Management. – 2021. – Vol. 92. – P. 102760. – URL: <https://www.sciencedirect.com/science/article/pii/S0278431920303121>

This study investigates how peer-to-peer accommodation (P2PA) hosts in China have responded to the COVID-19 pandemic. A multi-case study approach was adopted to depict the decision-making logic of three different types of hosts—speculators, diplomats, and entrepreneurs—based on an awareness-motivation-capability (AMC) framework under COVID-19. The findings highlight the role of owner motivation (profit/sharing/entrepreneurial-driven) and capabilities, such as having a unique value proposition and linkages with other hospitality experience, under COVID-19. Meanwhile, the platform collaboration capability failed to

support survival during the pandemic. Moreover, the current study indicated that, after the COVID-19, entrepreneurs will continue to innovate, diplomats' operations will remain unchanged and speculators will quit hosting. Hence, COVID-19 is an accelerator of P2P industry that reserving the hosts who embrace the original features of the P2PA sector, e.g. sharing and a focus on the experience, and eliminating the hosts who have diluted the uniqueness of the sector.

615. Zhang Q. Life-Threatening COVID-19: Defective Interferons Unleash Excessive Inflammation / Q. Zhang, P. Bastard, A. Bolze [et al.] // Med. – 2020. – Vol. 1, № 1. – P. 14–20. – URL: <https://www.sciencedirect.com/science/article/pii/S2666634020300295>

The risk of life-threatening COVID-19 pneumonia increases sharply after 65 years of age, but other epidemiological risk factors, genetic or otherwise, are modest. Various rare monogenic inborn errors of type I interferons (IFNs) underlie critical disease, and neutralizing autoantibodies against type I IFNs account for at least 10% of critical cases.

616. Zhang X. Barriers and benefits of primary caregivers' involvement in children's education during COVID-19 school closures / X. Zhang // International Journal of Disaster Risk Reduction. – 2021. – Vol. 66. – P. 102570. – URL: <https://www.sciencedirect.com/science/article/pii/S2212420921005318>

School closures during the COVID-19 pandemic have forced many children around the world to spend unprecedented amounts of time at home, and the responsibility for educating children, especially young ones, has largely fallen to parents and caregivers. Using a sample of 764 households with preschool children in Wuhan, China, where the pandemic started, this study examined the impact of the pandemic on primary caregivers' involvement in their children's education at home, and the barriers and benefits of such involvement for preschool children's learning and well-being. The results showed that primary caregivers were generally less involved in their children's education at home during the pandemic than they were prior to it. Having younger children, a lower socioeconomic status (i.e., parents' lower levels of education and less prestigious occupations), poorer physical health, and higher levels of household chaos were associated with lower frequencies of home-based involvement exhibited by caregivers. Finally, caregivers' home-based involvement during the pandemic was beneficial to preschool children's learning behavior and emotional health. The findings highlight the importance of understanding the barriers and benefits of caregivers' home-based involvement for designing interventions and policies to mitigate the negative impact of the pandemic on children and their families.

617. Zhang Y. ECMO support for COVID-19: a balancing act / Y. Zhang, B. Ji, Z. Zhou [et al.] // The Lancet. – 2021. – Vol. 397, № 10269. –

We read with great interest the analysis of data from the Extracorporeal Life Support Organization (ELSO) Registry. It provides valuable data that support the use of extracorporeal membrane oxygenation (ECMO) for patients with COVID-19. However, it is widely acknowledged that many critically ill patients with COVID-19 present with coagulation abnormalities that include thrombotic microangiopathy and venous and arterial thromboembolic complications. Hence, anticoagulants have been used in these critically ill patients both therapeutically and prophylactically.

618. Zhao D. Asymptomatic infection by SARS-CoV-2 in healthcare workers: A study in a large teaching hospital in Wuhan, China / D. Zhao, M. Wang, M. Wang [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 219–225. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306275>

Objectives

To investigate the proportion and characteristics of asymptomatic infection among healthcare workers (HCWs).

Methods

This study retrospectively investigated 1407 HCWs who were screened for COVID-19 by chest computed tomography (CT) scans and nasopharyngeal swabs for SARS-CoV-2 nucleic acid. Demographics, CT features, nasopharyngeal swabs, baseline symptoms, and laboratory data were collected.

Results

Of 1407 HCWs, 235 had symptoms and 1172 were asymptomatic close contacts, of which, 107 were symptomatic cases and 84 were close contacts who had abnormal CT findings. Of 152 symptomatic individuals and 908 close contacts tested for SARS-CoV-2 nucleic acid, 122 symptomatic cases and 38 close contacts had positive reverse-transcriptase real-time polymerase chain (RT-PCR) test results. The rate of confirmed asymptomatic infections was 4.2% (38/908). Both symptomatic and asymptomatic infected cases had high titrations of specific IgG or had \geq four-fold increase in IgG during convalescence compared with the acute phase. Combining the RT-PCR tests and serological findings, the rate of asymptomatic infections was 9.7% (88/908). In terms of the duration of viral shedding, there was no significant difference between symptomatic mild/moderate participants and asymptomatic infections.

Conclusions

The findings demonstrated that a high rate of asymptomatic SARS-CoV-2 carriers existed among healthcare worker close contacts during the outbreak of COVID-19.

619. Zhao S. A re-analysis to identify the structural breaks in COVID-19 transmissibility during the early phase of the outbreak in South Korea / S. Zhao, X. Liang // International Journal of Infectious Diseases. – 2020. – Vol. 100. – P. 10–11. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306901>

Exploring the temporal patterns of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission is of importance in understanding the features of coronavirus disease 2019 (COVID-19) and developing control strategies (Chong et al., 2020). By using the ‘SIR’-based compartmental model, one breakpoint with a drop in the transmission rate, i.e., 7 March 2020, was estimated in the COVID-19 outbreak in South Korea (Kim et al., 2020). In this study, a re-analysis of the outbreak in South Korea was performed, and we argue that there was likely more than one structural break in the local SARS-CoV-2 transmission.

620. Zhao S. D2A U-Net: SCOAT-Net: A novel network for segmenting COVID-19 lung opacification from CT images / S. Zhao, Z. Li, Y. Chen [et al.] // Pattern Recognition. – 2021. – Vol. 119. – P. 108109. – URL: <https://www.sciencedirect.com/science/article/pii/S003132032100296X>

Automatic segmentation of lung opacification from computed tomography (CT) images shows excellent potential for quickly and accurately quantifying the infection of Coronavirus disease 2019 (COVID-19) and judging the disease development and treatment response. However, some challenges still exist, including the complexity and variability features of the opacity regions, the small difference between the infected and healthy tissues, and the noise of CT images. Due to limited medical resources, it is impractical to obtain a large amount of data in a short time, which further hinders the training of deep learning models. To answer these challenges, we proposed a novel spatial- and channel-wise coarse-to-fine attention network (SCOAT-Net), inspired by the biological vision mechanism, for the segmentation of COVID-19 lung opacification from CT images. With the UNet++ as basic structure, our SCOAT-Net introduces the specially designed spatial-wise and channel-wise attention modules, which serve to collaboratively boost the attention learning of the network and extract the efficient features of the infected opacification regions at the pixel and channel levels. Experiments show that our proposed SCOAT-Net achieves better results compared to several state-of-the-art image segmentation networks and has acceptable generalization ability.

621. Zhao S. Shrinkage in serial intervals across transmission generations of COVID-19 / S. Zhao, Y. Zhao, B. Tang [et al.] // Journal of

One of the key epidemiological characteristics that shape the transmission of coronavirus disease 2019 (COVID-19) is the serial interval (SI). Although SI is commonly considered following a probability distribution at a population scale, recent studies reported a slight shrinkage (or contraction) of the mean of effective SI across transmission generations or over time. Here, we develop a likelihood-based statistical inference framework with truncation to explore the change in SI across transmission generations after adjusting the impacts of case isolation. The COVID-19 contact tracing surveillance data in Hong Kong are used for exemplification. We find that for COVID-19, the mean of individual SI is likely to shrink with a factor at 0.72 per generation (95%CI: 0.54, 0.96) as the transmission generation increases, where a threshold may exist as the lower boundary of this shrinking process. We speculate that one of the probable explanations for the shrinkage in SI might be an outcome due to the competition among multiple candidate infectors within the same case cluster. Thus, the nonpharmaceutical interventive strategies are crucially important to block the transmission chains, and mitigate the COVID-19 epidemic.

**622. Zhao X. D2A U-Net: Automatic segmentation of COVID-19 CT slices based on dual attention and hybrid dilated convolution / X. Zhao, P. Zhang, F. Song [et al.] // Computers in Biology and Medicine. – 2021. – Vol. 135. – P. 104526. – URL:
<https://www.sciencedirect.com/science/article/pii/S0010482521003206>**

Coronavirus Disease 2019 (COVID-19) has become one of the most urgent public health events worldwide due to its high infectivity and mortality. Computed tomography (CT) is a significant screening tool for COVID-19 infection, and automatic segmentation of lung infection in COVID-19 CT images can assist diagnosis and health care of patients. However, accurate and automatic segmentation of COVID-19 lung infections is faced with a few challenges, including blurred edges of infection and relatively low sensitivity. To address the issues above, a novel dilated dual attention U-Net based on the dual attention strategy and hybrid dilated convolutions, namely D2A U-Net, is proposed for COVID-19 lesion segmentation in CT slices. In our D2A U-Net, the dual attention strategy composed of two attention modules is utilized to refine feature maps and reduce the semantic gap between different levels of feature maps. Moreover, the hybrid dilated convolutions are introduced to the model decoder to achieve larger receptive fields, which refines the decoding process. The proposed method is evaluated on an open-source dataset and achieves a Dice score of 0.7298 and recall score of 0.7071, which outperforms the popular cutting-edge methods in the semantic segmentation. The proposed network is expected to be a potential AI-based approach used for the diagnosis and prognosis of COVID-19 patients.

623. Zhao Y. Follow-up study of the pulmonary function and related physiological characteristics of COVID-19 survivors three months after recovery / Y. Zhao, Y. Shang, W. Song [et al.] // EClinicalMedicine. – 2020. – Vol. 25. – P. 100463. – URL: <https://www.sciencedirect.com/science/article/pii/S2589537020302078>

The long-term pulmonary function and related physiological characteristics of COVID-19 survivors have not been studied in depth, thus many aspects are not understood.

624. Zhou J. Changes in social support of pregnant and postnatal mothers during the COVID-19 pandemic / J. Zhou, K. L. Havens, C. P. Starnes [et al.] // Midwifery. – 2021. – Vol. 103. – P. 103162. – URL: <https://www.sciencedirect.com/science/article/pii/S0266613821002424>

Objective

Our objectives were to assess in perinatal women: the most effective methods used to meet social support needs during COVID-19, the impact of COVID-19 on self-reported social support levels, and how perceived change in social support related to distress, depression, and mental health.

Design

One-time survey administered from April to August 2020

Setting

Online

Participants

Pregnant and postpartum women with infants less than 6 months of age

Measurement and Findings

Participants indicated the methods they used to meet social support needs during COVID-19. They self-rated their social support level pre- and during pandemic and their distress, depressive symptoms, and mental health changes on a Likert scale. Out of 1142 participants, the most effective methods for obtaining social support during the pandemic were virtual means (e.g. video call) and interaction with friends. There was a significant difference in distribution of self-reported levels of social support before and during the pandemic, with more respondents reporting a decrease in support. Decreases in social support were associated with higher distress levels, higher levels of depressive symptoms, and poorer mental health.

Key Conclusions

Perinatal women reported decreased social support during the COVID-19 pandemic which was associated with poorer mental health. Using virtual means of

social support and support provided by friends had the largest positive effect on perceived social support levels.

Implications for Practice

Interventions using virtual support means from friends may be helpful to improve social support and mental health in this population.

625. Zhu C. Role of atmospheric particulate matter exposure in COVID-19 and other health risks in human: A review / C. Zhu, K. Maharajan, K. Liu [et al.] // Environmental Research. – 2021. – Vol. 198. – P. 111281. – URL: <https://www.sciencedirect.com/science/article/pii/S0013935121005752>

Due to intense industrialization and urbanization, air pollution has become a serious global concern as a hazard to human health. Epidemiological studies found that exposure to atmospheric particulate matter (PM) causes severe health problems in human and significant damage to the physiological systems. In recent days, PM exposure could be related as a carrier for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus transmission and Coronavirus disease 2019 (COVID-19) infection. Hence, it is important to understand the adverse effects of PM in human health. This review aims to provide insights on the detrimental effects of PM in various human health problems including respiratory, circulatory, nervous, and immune system along with their possible toxicity mechanisms. Overall, this review highlights the potential relationship of PM with several life-limiting human diseases and their significance for better management strategies.

626. Zumla A. COVID-19 and the scaled-down 2020 Hajj Pilgrimage—Decisive, logical and prudent decision making by Saudi authorities overcomes pre-Hajj public health concerns / A. Zumla, E. I. Azhar, S. Alqahtani [et al.] // International Journal of Infectious Diseases. – 2020. – Vol. 99. – P. 34–36. – URL: <https://www.sciencedirect.com/science/article/pii/S1201971220306354>

The abrupt appearance of SARS-CoV-2 as a novel lethal zoonotic pathogen causing COVID-19 disease in humans in late December 2019 (WHO, 2020), and its explosive global spread (Hui et al., 2020) caught health authorities worldwide by surprise and exposed the ill-preparedness of global public health systems to deal with the appearance of a new pathogen. Apart from generic prevention and control issues of public health and lockdown measures to limit epidemic spread, specific issues of Mass Gathering sporting and religious events came under specific spotlight (Alzahrani et al., 2020; Memish et al., 2020; Baloch et al., 2020, McCloskey et al., 2020, Petersen et al., 2020b).

Mass gathering events present important health challenges related to the public health services and health of the host country population, the attendees and their home countries (Memish et al., 2014, Memish et al., 2019). The 2009 Hajj

was held during the 2009 H1N1 influenza pandemic and focused attention on developing Mass Gatherings Medicine as a formal discipline, resulting in the formation of a coalition of global academic and public health faculty and virtual WHO mass gathering collaborating centres to guide development of, and update, optimal public health and medical prevention and treatment guidelines at mass gathering events (Memish et al., 2014).

Mass gathering events and COVID-19

WHO with global mass gathering partners, developed comprehensive key recommendations for COVID-19, and since end of February 2020, there was a stepwise increase in cancellation, temporary suspension or postponement of international and national religious, sporting, musical, and other mass gatherings (WHO, 2020b; McCloskey et al., 2020; Petersen, McCloskey et al., 2020a). Apart from focusing on major sporting events, global attention has been on Saudi Arabia and the Umrah and Hajj pilgrimages. Approximately 10 million people from 182 countries travel to Saudi Arabia annually for the Hajj and Umrah pilgrimages (Memish et al., 2014, Memish et al., 2019). The Umrah pilgrimage can be performed anytime during the year, and thousands of pilgrims from all continents arrive in Saudi Arabia every month. Saudi Arabia with its extensive experience and commitment to pilgrim safety and wellbeing, was quick off the mark and on February 27th, 2020, restricted inbound flights and local and international pilgrims were prevented from travelling to Makkah and Madinah for the Umrah pilgrimage.

Список периодических изданий

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The bibliographic index includes foreign scientific publications of coronavirus disease Covid-19 that were found in electronic databases. The bibliographic list of publications is in English and organized alphabetically by authors. Index contains and covers a wide range of publications in medicine, economics, psychology, education, and other spheres related to the life of people in times of a pandemic.

There are 626 bibliographic records in the book. These are articles of science journals, published in 2020-2021 years that have the state of “open access”. Index is dedicated for doctors, scientists, explorers and all those who are interested in study of coronavirus disease Covid-19, its treatment and overcoming consequences of the pandemic.

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