

THE ROLE OF MOBILE APPS IN A POST-WAR PSYCHOTRAUMA OVERCOMING

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The paper is focused on the theoretical review of appropriateness of mental health mobile applications to help Ukrainians in a post-war psychotrauma overcoming. The advantages are seen in: convenience of access and use; accessing the capabilities built into the smartphone; resource preservation; stigma overcoming; scope of influence; flexibility and range of functionality; alignment with traditional methods; gamification; and user autonomy. The obstacles for effective usage of apps are shown as: user's features; technical problems; costs issues; doubtful efficacy; ethical issues; user incompetence; and inappropriateness for severe disorders. The certain apps for post-war psychotraumatization decreasing are described: from English-language "PTSD Coach" etc. to Ukrainian-language "Socio-Psychological Adaptation of Veterans", "Mobile psychological help", and "PFA Mobile Ukraine". The recommendations of appropriate apps for post-war rehabilitation usage are presented: utilizing as a conjunctive treatment modality, creating guidelines for individual use and choosing apps with high validity and specific design.

Key words: mHealth, e-mental health, smartphone interventions, mental health mobile apps, post-war psychotrauma, PTSD.

Problem statement in general and its connection with important scientific and practical tasks. The antiterrorist operation (ATO) carrying out in the territory of Ukraine is as enormal and full of human losses as a real war. The presence of such a massive traumatic experience for Ukrainian society is a new and unusual phenomenon. That's why most of ATO participants who have a pronounced stress disorder do not know how to deal with the states and feelings, which they are experiencing. Moreover, this psychotraumatization has the direct influence not only on combatants, but also on their close encirclement – family, friends, acquaintances, those who often do not know how to behave and react. Unfortunately traditional psychological practice cannot fully deal with such huge threat to mental health of Ukrainians. That's why socio-psychological science needs to use modern but already habitual ways to decrease the war impact on minds of militaries and civilians.

The transition from industrial society with its orientation on productivity and technological development to information society with its new communication values, interdisciplinarity and networking must lead to rethinking on how to maintain human well-being. The point is electronic gadgets with quick information and gamification tools can play a big part in rehabilitation and readaptation processes.

Though lots of researchers complain on personality's loss of critical thinking while drowning into virtuality instead of establishing real social contacts, psychologists should focus on the bright side of innovative digital technologies, especially mobile applications in smartphones. Western healthcare specialists have been using electronic health services since 1990-s as mailing by sms and e-mail, specified computer programs, online counseling and psychotherapy. And today there are thousands of mental health mobile applications to promote healthy lifestyle by information provision and psychoeducation; self-screening, self-assessment, and self-monitoring; psychological prevention and intervention; and social support for numerous mental health problems.

Recent research and publications analysis. Mobile phone software applications have great potential within the field of mental health. This statement became common for scholars since 2010-s. The effectiveness of Mental Health mobile applications (MHMAs) in different aspects of personal well-being was researching by Kailas et al., 2010, Morris et al., 2010, Riper et al., 2010, Harrison et al., 2011, Leis-Newman, 2011, Luxton et al., 2011, Aguilera et al., 2012, Flood, 2013, Proudfoot, 2013, Lal, Adair, 2014, Brown, 2015, Apolinário-Hagen et al., 2017, etc. There were also the reviews of acceptability of e-mental health services for solving psychological problems in terms of advantages and disadvantages: Klein and Cook, 2010, Casey L.M. et al., 2013, Eichenberg et al., 2013, Musiat et al., 2014, Brown, 2015, Prentice, Dobson, 2014, Bakker et al., 2016, Apolinário-Hagen et al., 2017.

The problem of integrating MHMAs in psychological counseling and therapeutic practice was solving in works of Cuijpers et al., 2010, Andersson et al., 2012, East, 2015, Watanabe et al., 2015. Numerous researches were dedicated to the effectiveness of cognitive behavioral therapy delivered electronically: Kaltenthaler et al., 2008, Richardson et al., 2010, Foroushani et al., 2011, Ly et al., 2012, Muench, 2012, Aguilera, Watts, 2013, Andersson et al., 2013, So et al., 2013, Musiat, TARRIER, 2014, Bucci et al., 2015, Tang, Kreindler, 2017.

Certain apps for disorders and wellness increasing were analyzed by Depp et al., 2010, Dimeff et al., 2011, Harrison et al., 2011, Rizvi et al., 2011, Donker et al. 2013, van der Krieke et al., 2014, Bucci et al., 2015, Nicholas J. et al., 2015, Shen N. et al., 2015, Giosan et al., 2016, Howells A. et al., 2016, Larsen et al., 2016, Menon et al., 2016, Oliveira et al., 2016, Baharum et al., 2017, Christmann C.A. et al., 2017, Sannino et al., 2017.

The ideas on how to provide better healthcare delivery to users by means of mental health apps were in works of Donker et al., 2013, Jones et al., 2014, Mar et al., 2014, Musiat et al., 2014, Price et al., 2014, Dicianno et al., 2015, Macias et al., 2015, Proudfoot et al., 2015, Yardley et al., 2015, Loo Gee et al., 2016.

Finally, few aspects of apps dealing with post-war psychological problems including PTSD was overviewed by Hoffman et al., 2011, Kuehn, 2011, Bush et al., 2015.

Previously unsolved aspects of the problem. The number of mental health apps developed and now available to smartphone users, so apps have the potential to play an important part in the future of mental health care. A lot of these applications even have the evidence of efficacy and guides on usage for mental disorders. However, there is any view on how to use MHMAs to get better results in psychological rehabilitation and overcoming a post-war psychotraumatization for healthy people, which is urgently needed in today's situation in Ukraine to prevent mental illnesses' spreading. So **the purpose of the article** is to analyse advantages and barriers of mental health apps usage, to provide an overview of mental health smartphone apps for post-war rehabilitation, and to give a view on adequate MHMAs usage by those, who were susceptible to post-war psychotraumatization.

The main research material. To obtain scholarly up-to-date material this paper was written using a method of literature review by means of Google Academy mail subscription. The search engine used words "mobile application", "electronic services", "mHealth", "information society", "psychological trauma", "psychological rehabilitation".

Taking a look on a modern reality we can see that "smartphones are routinely carried throughout the day and are always on, that's why they are readily available in the moment where and when needed. Because using a smartphone in public is perceived as normal, individuals can inconspicuously manage mental health issues without drawing unwanted attention" [10, p. 12].

Mobile phones enable psychologists to deliver therapy via several methods. Thus, in addition to traditional telephone calls, other forms of possible communication include text messaging and through phone-based applications, popularly known as "apps". Apps are mobile device software applications that allow users to access the app's information from their smartphone, tablet, or personal computing device [13, p. 282].

The first mobile software applications became available to download on a mobile device in 2008. Since then, penetration has increased rapidly and is anticipated to continue rising [8]. Given the persisting problem of treatment gaps in mental health care, providing effective treatments via the mobile software has been suggested as a cost-efficient way to expand public access to mental health services on a large scale [3].

Numerous mental health apps which are available on PlayMarket (for Android smartphones) and AppStore (for iOS devices) are aimed to improve mental health and well-being, ranging from guiding mental illness recovery to encouraging beneficial habits that improve emotional health [5]. About 6% of 13,600 health apps targeted mental health outcomes, while 18% focused on related health issues, such as sleep, stress, relaxation, and smoking behaviors [8]. MHMAs, actually, provide psychoeducation and interventions on a myriad of topics, including dementia, anxiety, depression, relaxation, sleep, obsessive

compulsive disorder, burnout prevention, stress management, mood tracking, domestic violence, and posttraumatic stress disorder [9].

Researches on acceptability of digital health interventions have emphasized the central role of profoundly understanding the views and needs of persons using digital health interventions. To examine determinants of technology use and behavioral intentions to use, the “Unified Theory of Acceptance and Use of Technology” (UTAUT) provides different key determinants of IT acceptance and moderators such as age, gender, and experience. Although the UTAUT is still rarely cited in research targeting the uptake of e-mental health treatments, some components of the framework can be found in recent surveys, such as perceived usefulness (helpfulness) and intentions to use e-mental health [3].

Considering this we can find numerous *advantages* of mental health mobile apps usage comparing to more traditional ways of psychological help delivery (face-to-face therapy or even online counseling).

Convenience of access and use. Mobile apps have the potential to increase the provision of a broad range of mental health resources to underserved populations who may otherwise not gain access to these services [13, p. 285]. According to a survey conducted in Ukraine in 2016 by Google there are 35% users of smartphones among all the respondents, and among young people under 35 years old this number rises to 72%. It means that most of ATO veterans (who are predominantly young people) have straight opportunity to get mental health care right from their smartphone without any special procedures in help-seeking. They can be anywhere where there is Internet to download the app and use it on the go. Individuals without transportation or those who live in rural settings may have access to interventions that otherwise might not be available to them.

Access to mobile apps is also exceedingly convenient, because mobile phones are compact, portable, and relatively discrete. Furthermore, once a program is downloaded and installed, several of the apps do not require an Internet connection, and access is therefore not confined to network parameters [13, p. 285].

Accessing the capabilities built into the smartphone. The multiple features of smartphones make them therapeutic gold. There is the great ability to capture objective data. For example, individuals can record their feelings in vivo using the simple photos, audio recordings or videos of themselves for later review [1]. On the other hand, using accelerometers, gyroscopes, and GPS built into modern smartphones can give great opportunities to detect movement, location, and even body reactions (e.g., through galvanic skin response, heart rate variability, etc.) of users to make monitoring or prevent some dangerous actions (e.g. in suicidal cases).

Resource preservation. Being an average smartphone user any person can download a MHMA quickly and easily on own gadget. This saves time and

even money. Most of MHMAs are free of charge or has the price less than 10 \$, which is not comparable to the face-to-face therapy compensation. In addition, the usage of app is absolutely 24/7 time-free while most psychologists can be available only 8 hr a day, 5 days a week. Moreover, clients may require assistance during regular working hours, but the specialist may be otherwise occupied and unable to address the needs of the client promptly [13, p. 285]. In consequence, mobile apps can reduce costs for treatment and increase the timeliness of mental health services and potentially shorten the length of time between the need for an intervention and when it is provided.

Stigma overcoming. Lots of people who have psychological problems are not receiving professional treatment in part due to the negative stigma associated with seeking help. Using MHMAs allows anonymous utilization in the privacy of the user's home without any shade of shame. In addition, while making self-assessment smartphone usage in public is a behavior that is more socially accepted than completing a paper form.

Scope of influence. E-mental health field adopt various forms of mental health interventions to reduce both – prevalence (cases with some dysfunction now) and incidence (new cases that emerge). That's why the dichotomy between the significant need for a reduction in the burden of mental illness and the lack of treatment people with mental illness could be shorten.

Flexibility and range of functionality. The MHMA user may be able to use the system to track and record data of interest. Mobile apps are used for monitoring symptoms, record keeping, provision of personalized feedback and motivational support, references for professionals, and may act as a communication tool between client and psychologist. The user may access educational materials such as videos, diagrams, instructions. He may also receive information to manage real-time psychotherapy or peer-to-peer meeting.

The apps also can be responsive to the unique needs of an individual with a different mental health condition. Individuals can select apps geared toward managing their specific symptoms and level of severity. In addition, apps can include features that allow customization to further tailor the intervention for the user's needs and preferences [10, p. 12]

Alignment with traditional methods. Self-tracking and psycho-educational capabilities of mobile apps align with the goal-oriented approaches of therapy-based solutions, such as Cognitive Behavior Therapy, Dialectical Behavior Therapy, and Solution-Focused Therapy. In some applications supporting guided in vivo exposure, therapists may even initiate a televideo call to help patients successfully complete exposure trials, thereby demonstrating an integration of real time assessment, treatment and outcome enhancement [14].

Increased treatment adherence. Apps are intrinsically interactive and facilitate record keeping, primarily through the diary tracking of such variables as symptoms, behaviour, mood and cognition. Homework completion in CBT

is one of the most salient predictors of treatment outcomes. Thus, MHMAs that promote regular use, assignments, and the successful recording of cognitive and behavioral change are likely to significantly contribute to positive treatment outcome. Clients who are highly motivated to change are likely to undertake self-assignments and to report them in their app [13, p. 285].

Gamification. Some apps have the capability to use competitive gaming system that provides feedback and adjusts the level of difficulty based on performance in people who have some psychological difficulties. There can be used the rewards in the form of points viewable by the person and even others (if there is a need to team up in fighting the problem). Going further, apps can provide supportive messages or virtual rewards transformable to goods in real life (certificates for products or services). The social gamification component may incentivize individuals to continue exercises through peer support or a bit of healthy competition among friends and family as everyone reports their progress.

User autonomy. MHMAs provide specific guidance in healthcare process, but the reliance on the user to provide his or her own solutions shifts the responsibility of treatment success from a psychologist to the individual user. Thus mobile apps require users to be self-reliant, and may therefore facilitate autonomy and self-improvement [13, p. 286]. Apps can also facilitate connecting individuals in a therapy group to support each other outside the clinic, which could potentially enhance cohesion and independence or simply could be used by therapists as a means to be alerted when a patient indicates they are having problems [6].

In spite of all these promising advantages there are some serious *barriers* for MHMAs full usage. They are the next.

User's features. Some clients simply may not like using smartphones. Others may find mobile technology intrusive or cite privacy concerns [1]. Older people could claim the efforts required due to their incompetence in mobile technology. Besides, as showed up, help-seeking intentions in e-mental health programs are stronger only among female, higher educated, divorced, and reported a history of mental health problems [3]. The app market saturated with clinical diagnosis apps also has the potential to be harmful for help seekers. Users who are experiencing low-level symptoms of a problem may feel labeled by an app that assumes that they have a clinical diagnosis. Self-stigma from this labeling can be harmful, lowering self-esteem and self-efficacy. Only MHMAs that focus on nonclinical mental health, psychological well-being, or coping abilities may therefore avoid the harmful effects of labeling mental illness [5].

Technical problems. The simplest point is that factors related to telecommunication can arise, e.g., battery failures, reliability and sustainability of Internet connections [8]. Moreover, apps can be updated at any time, removed entirely from the app stores, or disappear from the search results due to decreasing popularity. So guidelines for their usage can be discredited. This can

also be a challenge for specialists recommending an app, as there is no guarantee that an app will continue to be available.

Costs issues. In spite lots of people do have an opportunity to use a smartphone and an app in it, lots of people still do not. The lower cost of smartphones is certainly a factor that will allow them to become more ubiquitously used. But this problem seems to be solved pretty soon. Miller, 2012, states that by 2025 more than 5 billion people on our planet will be using ultra-broadband, sensor-rich smartphones far beyond the abilities of today's iPhones, Androids, and Blackberries. But another point is that start-up and research and development costs are necessary to create effective and clear to user MHMAs.

Efficacy. Unfortunately most of MHMAs don't have strong evidence base to be used as fully efficient form of mental care. So the main criticisms is that a majority of technological interventions lack empirical support: the studies contain small sample sizes, have an uncontrolled or nonrandomized research design, or even any evidence of efficacy at all.

Ethical issues. Doing no harm is one of the main ethical statements of professional psychology. That's why the practice of evidence-based interventions and assessments is strongly recommended to ensure clients to prevent adverse consequences. That's the deal of informed consent, which must ensure the user in competence and confidentiality of the app. Not every MHMA contain specific details in the informed consent. While there must be: the type of user information collected, how the information is to be utilized, whether the information is monitored, how long and in what form the information will be retained, the benefits and risks associated with the assessment and/or intervention procedures that are intended, safeguards that have been established to mitigate risks, and limits to confidentiality [13, p. 286].

In addition, although smartphones are typically in the care of their owner, and many smartphones require an identification procedure to be turned on, a user's privacy and confidentiality may be compromised if the mobile phone is physically stolen or misplaced. Electronic records saved to the app are also potentially vulnerable to Internet hackers and digital theft. So the app developer's website must contain the procedures to be followed in case of phone loss [13, p. 286].

User competence. While only few app intend to replace therapy entirely, most of them are just the adjunct to an intervention delivered by a qualified psychologist. Those ones as independent interventions may be conducive to misuse, misinterpretations and have the potential to cause harm to a user. So the MHMAs applied outside the context of therapy may further lead to costs that are not well spent, interventions that are not well validated, may delay effective assistance from a licensed specialist, and potentially place patients at a greater risk to experience aversive reactions [13, p. 283-284].

Appropriateness. The form of mobile apps may not be appropriate for complex or high-risk problems (e.g. firmly held delusions, hallucinations, or

severe anorexia nervosa), but may be appropriate for individuals experiencing mild mental health problems. The issue also in that the decision of when to utilize apps and for whom requires specialist's judgment, a skill that is likely not acquired in lay populations [13, p. 284].

Taking into account analyzed advantages and obstacles in MHMAs usage the appropriate apps can be presented as recommended for post-war psychotrauma overcoming.

As known, the extreme form of post-war psychotraumatization turns out to be posttraumatic stress disorder (PTSD). That's why understanding PTSD symptoms should be a guideline on how to manage them by using MHMAs.

PTSD is characterized by: (1) re-experiencing symptoms, such as having intrusive traumatic memories (e.g., flashbacks, nightmares) and being emotionally and/or physiologically triggered by reminders of the trauma; (2) avoidant symptoms including avoiding thoughts, feelings, or situations that remind one of the trauma; and (3) hyperarousal symptoms, such as sleep and concentration problems, irritability or anger, hypervigilance, and excessive startle reactions [10, p. 12]

To help address PTSD symptoms, smartphone apps can draw upon empirically supported cognitive behavioral therapies (CBTs) for PTSD, such as stress inoculation training. CBT, compared to other psychotherapy paradigms, lends itself particularly well to translation onto technology platforms, including web and smartphone, because CBTs typically include education content and instruction in practical coping skills. Likewise, social avoidance and isolation can limit access to essential social support resources, which can maintain PTSD. Apps can provide information about the value of harnessing social support as well as help individuals identify and effortlessly connect to supportive others through their smartphones. Problems with anger and sleep can take their toll on mental and physical wellbeing; apps can provide just-in-time anger management tools and information on effective sleep hygiene practices [10, p. 12].

The most popular and evaluated in USA, Canada and Australia are the accordant versions of mobile app called "PTSD Coach". Anyone who has experienced trauma can use the app to learn more about PTSD, track symptoms and set up a support network of friends and family members. Unfortunately, there is no Ukrainian version for it, but its base must become a landmark for developers.

The "PTSD Coach" showed its efficacy on a 45 sample of military veterans with PTSD. This app is available at no cost from the iTunes and Google Play public app marketplaces. To comply with the stringent security standards set, PTSD Coach does not transmit any data to or from the device; all entered data are stored within the app and can be cleared by deletion of the app from the mobile device.

The app consists of four major sections: 1. Learn (psychoeducational information about PTSD); 2. Self Assessment (a well-validated, widely used self-report measure of PTSD symptoms); 3. Manage Symptoms (coping tools to help address acute PTSD symptoms); 4. Find Support (allows users to easily reach out to supportive others when needed, including emergency and crisis support).

For today “PTSD Coach” is the most full app for solving problems of post-war psychotraumatization. But for different symptoms of PTSD there can be also used another approved apps.

For example, the similar to “PTSD Coach” app is called “SUPPORT Coach”, and a Dutch team is currently analyzing data from a 1,300-patient trial on it [2]. Another familiar apps are “CBTReferee”, “MoodKit”, “eCBTMood”, and “iCouch CBT” [13, 286]. Donker et al., 2013, also described 5 more useful apps to manage posttraumatic symptoms including substance use (alcohol, drugs, and tobacco): “Mobilyze!”, “mobiletype”, “DBT Coach”, “Mobile Stress Management”, and “Get Happy Program” [8]. Mental health apps that have been developed by the government entities also include the following: “BioZen”, “Pain Coach”, “PE Coach”, “PFA Mobile”, “Breathe2Relax”, “LifeArmor”, “mTBI Pocket Guide”, “Positive Activity Jackpot”, “Provider Resilience”, “T2 Mood Tracker”, “Tactical Breather”, and “Stay Quit Coach” [6].

Among the newest apps for better psychotraumuma overcoming is a “MindSurf” which uses the Method of Levels (MOL) which is a transdiagnostic cognitive therapy that promotes contentment, wellbeing, and goal achievement through the resolution of internal conflicts underlying psychological distress [7]. Another one is questionnaire based app “Stress Catcher 2.0” which identifies the stress level and provide suitable tips for user to cope with their own stress [4]. To prevent suicides as one more dangerous outcome of post-war psychotraumatization can be used an app “MyPlan” which includes self-screening, crisis support and safety plans to manage personal crises [11].

All these apps are not available in Ukrainian but could be the landmark for specialist to monitor the similar designs. As for the already adapted to Ukrainian realities MHMAs which can work out with post-war psychotraumatization without therapist there are three of them. These are the course “Socio-Psychological Adaptation of Veterans” which is integrated to the Russian-language app “Pocket psychologist”; the modification of the Canadian app “OSI Connect” named “Mobile psychological help”; and Ukrainian version of “PFA Mobile” that was released at the beginning of 2017.

The first course which is abbreviated “SPPA” suggests 30-days-program and encourages the user to work on his/her own. This app is very promising in terms of using cognitive-behavioral therapy in its base, although its interactivity is not very high. The app utilizing is recommended precisely because it has the opportunity (besides performing daily tasks) to track the dynamics of mood

changes over different periods of time – it is necessary to enter data into the “Diary of emotions” several times a day (for this there are convenient reminders). It is also possible to work offline (however, Internet on the device should be turned on at least once a day for the updates). The course finish encourages to write an e-mail to developers and to get feedback.

Another service “Mobile psychological help” is available on <http://psysservice.org/>. Actually, this version is not a smartphone app, but could be conveniently opened in the browser of any mobile device. The program allows the users to evaluate their own status in such categories as sleep quality, depression and PTSD, and also contains text-based materials sorted in the menu. This info concerns symptoms of PTSD; assistance to family members with combat psychotrauma; management of anger and anxiety; control of depression; alcohol and drugs addiction; stressed relations with close people; psychological resilience. The menu also includes the tools by which caregivers also can evaluate their own status (questionnaires of depression and post-traumatic stress); videos about PTSD and returning to peaceful life; as well as a list of clinics and psychological assistance services sorted by Ukrainian regions.

Finally, an app “PFA Mobile Ukraine” contains detailed recommendations for the provision of the first psychological self-help after receiving a psychological trauma, as well as for those who find themselves next to such person – peers, professionals and relatives. After installing the application, the visible options are as follows: About the first psychological help; Typical reactions to stress; Self-preservation; Key Stages of First Psychological Help; Directions to Victims; Resources. After choosing a particular option, the age is indicated and the questionnaire on readiness to provide first psychological help is conducted (it can also identify the lack areas of knowledge). After that, an algorithm to act is provided, and if necessary, the user can go to Resources to learn more about specific topics. In general, the application is distinguished by differentiation and interactivity, which makes it not only useful, but also attractive to use.

Unlike lots of English-language applications, Ukrainian MHMAs do not have proven effectiveness, and therefore require empirical validation. In addition, such programs cannot solve the problem of psychotraumatization quickly, effortlessly, and for perpetuity. The use of a psychological mobile application cannot replace the in-depth methods of psychotherapy, therefore, it should be regarded as the primary psychological assistance of the individual.

Another viewpoint is that mHealth apps can be more efficient as a conjunctive treatment modality in guided programs, for example, part of a website or through direct contact with a mental health professional. But for Ukrainian reality this much likely to be the far step in managing post-war psychological problems.

One more thing is that there is a pressing need to generate and disseminate guidelines for the ethical practice of app interventions and resources. These guidelines could be developed by the governing bodies as an adjunct to

the Psychological Code of Ethics, and could be adapted and/or adopted by provincial regulatory bodies. Although such guidelines would only be enforceable with respect to psychologists involved in the development and dissemination of mobile phone apps, they would serve an illustrative value for others in the field. Such guidelines would aid in the protection and welfare of Ukrainians from the potentially fictitious and harmful claims of mobile app developers, and instead promote the optimal development of evidence-based practice in an innovative and potentially very exciting area of psychological services [13, p. 288].

Finally, the recommendations of Bakker et al., 2016, can be used as a strategy to choose appropriate apps for post-war rehabilitation: the app must be (1) cognitive behavioural therapy based; (2) address both anxiety and low mood; (3) designed for use by nonclinical populations; (4) automated tailoring; (5) reporting of thoughts, feelings, or behaviors; (6) recommend activities; (7) mental health information; (8) real-time engagement; (9) activities explicitly linked to specific reported mood problems; (10) encourage nontechnology-based activities; (11) gamification and intrinsic motivation to engage; (12) log of past app use; (13) reminders to engage; (14) simple and intuitive interface and interactions; (15) links to crisis support services; (16) experimental trials to establish efficacy [5].

For instance, modern mobile-phone-based mental health treatments should be tested and judged like any other intervention. We need more apps' developments, experimental researches and evaluations.

Conclusions. Smartphone access to psychological care creates new opportunities for those who have a post-war psychotrauma to reinforce their understanding of the plan of self-care, receive education, confirm home exercise techniques and strengthen their relationship with their therapists, or peers, or just close people who want to provide help to them. Among the advantages of mental health mobile apps are: convenience of access and use at any time and place; accessing the capabilities built into the smartphone, such as photo, audio- and video-recording, accelerometers, gyroscopes, and GPS; resource preservation as time and money; stigma overcoming as it is habitual to use smartphone everywhere; bigger scope of influence to involve more people who need help; high flexibility and range of functionality as the app can be high-sensitive for unique user; alignment with traditional methods such as cognitive behavior therapy; increased treatment adherence by rising motivation to use the service; gamification tools to stay attractive to user; and providing user autonomy to higher his/her responsibility and facilitate self-improvement.

Presented obstacles for effective usage of MHMAs are serious, but seem to be solvable: some user's features as age, gender, experiences; technical problems in usage; costs issues for non-smartphone users, developers and researchers; not proven efficacy for range of apps; ethical issues on validity and confidentiality of the app; probable user incompetence; and inappropriateness for complex or high-risk problems.

Certain apps for PTSD overcoming have great potential to work out with post-war trauma. As presented, the best one is “PTSD Coach” (besides the numerous others to handle stand-alone symptoms) in English and 3 available trials in Ukrainian: “Socio-Psychological Adaptation of Veterans”, “Mobile psychological help”, and “PFA Mobile Ukraine”.

Using the apps as stand-alone psychological interventions for mass of Ukrainians who have caught the war influence requires readable principles to follow, as was shown in present investigations. So further discussion and research will open up the **perspectives** for validation Ukrainian-language mental health apps and for systematical view on how to effectively incorporate e-mental health into service systems and to apply it to Ukrainian population.

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Дворник М. С. Роль мобільних додатків у подоланні післявоєнної психотравми

Статтю присвячено теоретичному огляду доречності використання мобільних додатків для ментального здоров'я в подоланні українцями післявоєнної психотравми. Переваги додатків представлено як: зручність доступу і користування; використання технічних можливостей смартфону; подолання стигматизації; адаптованість під користувача і варіативність функцій; узгодженість із традиційними методами психологічної допомоги; іграїзація; автономність користувача. Перешкодами для ефективного застосування додатків є: особливості користувачів; технічні незручності; фінансові питання; сумнівна ефективність; етичні негаразди; некомпетентність користувачів; недоцільність у випадку важких розладів. Описано також конкретні додатки для подолання післявоєнної психотравматизації: від англомовного “PTSD Coach” та інших до україномовних “Соціально-психологічна адаптація ветеранів”, “Мобільна психологічна допомога”, “PFA Mobile Ukraine”. Надано рекомендації щодо використання доречних мобільних додатків для післявоєнної реабілітації: застосування як супровідної форми інтервенцій, створення керівних вказівок для самостійного користування, вибір додатків із високим рівнем надійності та специфічним дизайном.

Ключові слова: mHealth, e-mental health, мобільні інтервенції, мобільні додатки для ментального здоров'я, післявоєнна психотравма, ПТСР.

Дворник М. С. Роль мобільних додатків у подоланні післявоєнної психотравми

Стаття посвячена теоретичному огляду уместности использования мобильных приложений для ментального здоровья в преодолении украинцами послевоенной психотравмы. Преимущества приложений представлены как: удобство доступа и пользования; использование технических возможностей смартфона; преодоление стигматизации; адаптированность под пользователя и вариативность функций; согласованность с традиционными методами психологической помощи; играизация; автономность пользователя. Препятствиями для эффективного применения приложений являются: особенности пользователей; технические неудобства; финансовые вопросы; сомнительная эффективность; этические проблемы; некомпетентность пользователей; нецелесообразность при тяжелых расстройствах. Описаны также конкретные приложения для преодоления послевоенной психотравматизации: от англоязычных “PTSD Coach” и др. до “Социально-психологическая адаптация ветеранов”, “Мобильная психологическая помощь” и “PFA Mobile Ukraine”. Даны рекомендации по использованию уместных мобильных приложений для послевоенной реабилитации: применение как сопроводительной формы интервенций, создание указаний для самостоятельного пользования, выбор приложений с высоким уровнем надежности и специфическим дизайном.

Ключевые слова: mHealth, e-mental health, мобильные интервенции, мобильные приложения для ментального здоровья, послевоенная психотравма, ПТСР.