60 subjects (21; 16 and 23 subjects in active GD, cured GD and healthy control groups, respectively) were included. Fractalkine levels were higher within active and cured GD subjects in comparison to healthy controls (mean 0.70 ± 0.14; 0.93 ± 0.15; 0.48 ± 0.13 ng/mL; $p < 0.05$, respectively). There was no difference in FN BMD among study groups. LS BMD was lowest in the cured GD group in comparison to active GD and control group subjects (0.926 ± 0.030; 1.016 ± 0.030; 1.051 ± 0.030 g/cm^2; $p < 0,05$, respectively). The TBS in active GD patients were lower than in cured GD patients, with the highest values observed among healthy controls (1.395 ± 0.020; 1.402 ± 0.020, 1.469 ± 0.020; $p < 0.05$, respectively). There was a postitive relationship between fT4, fractalkine, P1NP and CTx and negative between fractalkine, a-TSH and TBS values observed. **Conclusions.** Active GD in pre-menopausal females is associated with increased levels of fractalkine and decreased TBS, but not BMD, proving that osteoblast-induced osteoclastogenesis, as measured by fractalkine levels, leads to detoriation of trabecular microarchitecture.

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25-hydroxy vitamin D levels, vitamin D deficiency and insufficiency in patients with musculoskeletal disorders

Introduction. Vitamin D deficiency is prevalent in all the world countries. Recent studies show the correlation between Vitamin D deficiency and musculoskeletal disorders. **The purpose** of this study is to examine 25(OH)D level, Vitamin D deficiency and insufficiency prevalence in patients of various ages who have musculoskeletal disorders, and to reveal the influence of seasonal factors on these conditions. **Materials and methods.** 3460 patients of the Ukrainian Scientific-Medical Center of Osteoporosis Problems, aged 1 to 92 years, who were referred by other specialists to the Center for bone state evaluation, were examined. Their predominant group was made by patients with systemic osteoporosis and its complications, spinal osteochondrosis, knee and hip osteoarthritis (mean age — 52.9 ± 21.1 years). Among them, women took over (83.5 %), their mean age being 55.6 ± 19.4 years, while men's mean age was 38.6 ± 17.3 years ($p < 0.001$). 25(OH)D and PTH analyses were performed by means of electrochemiluminescent method (Elecsys 2010 analyzer, Roche Diagnostics, Germany) and cobas test-systems. "Statistica 6.0" software package (Copyright StatSoft, Inc. 1984–2001) was also applied. **Results.** Among the patients with bone-muscular pathology, the highest 25(OH)D level was noted in the age group of 1–9 years (30.6 ± 15.1 ng/ml) and the lowest — in the age group of 80 and over (20.4 ± 11.4 ng/ml). Age negatively influenced 25(OH)D concentration values. Prevalence of vitamin D deficiency among the patients with bone-muscular pathology was 37.3 %, vitamin D insufficiency — 30.6 %, normal vitamin D status — in 32.1 %. Normal 25(OH)D concentration was found in 38.0 % of children, 33.2 % of adults and in 29.6 % of elderly patients. Month of blood-sampling had a significant influence on 25(OH)D concentration values ($F = 7.49$, $p < 0.0000001$). The highest 25(OH)D concentrations were observed in August (28.6 ± 11.4 ng/ml) and September (28.6 ± 11.6 ng/ml), the lowest — in February (23.1 ± 11.6 ng/ml) and March (23.4 ± 11.3 ng/ml). Children had the lowest 25(OH)D concentration in February (20.8 ± 10.9 ng/ml), and the highest in August (35.7 ± 11.1 ng/ml); adults had the lowest in February (23.5 ± 12.0 ng/ml) and in March (23.1 ± 10.4 ng/ml), and the highest in August (30.4 ± 10.8 ng/ml) and September (29.9 ± 11.1 ng/ml); elderly people had the lowest 25(OH)D concentrations in February (23.1 ± 11.3 ng/ml) and in March (23.3 ± 11.0 ng/ml), and the highest in September (26.7 ± 11.1 ng/ml). The highest significant differences in 25(OH)D concentrations during the summer vs. winter months were observed in the age groups of 10–19 years (18.2 %), 40–49 years (17.3 %), 30–39 years (16.2 %) and 1–9 years (16.1 %). There were no significant seasonal differences observed in the elderly patients (60 years and older) with musculoskeletal pathology. **Conclusions.** Despite the combined calcium and vitamin D supplementation utilized by most patients with a bone-muscular pathology, only 37.9 % of children, 33.2 % of adults and 29.6 % of the elderly people had normal 25(OH)D concentration values and thus required screening examination of vitamin D level in patients with musculoskeletal disorders and additional vitamin D prescriptions (Guidelines for the Central and Eastern Europe).

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Risk factors of sarcopenia in Ukrainian postmenopausal women

Introduction. Sarcopenia is a geriatric syndrome characterized by an age-related reduction in muscle mass, strength and performance. The frequency of sarcopenia affecting the Ukrainian women aged 65 yrs and older is 21.3 % (Povoroznyuk V., 2017); however, there are many underlying causes of age-related skeletal muscle mass loss. Recent studies attest to a strong connection of dietary peculiarities and body composition of elderly people (Evans W.J., 2004; Campbell W.W., 2007; Lord C. et al., 2007; Bopp M.J. et al., 2007; Cruz-Jentoft A.J. et al., 2010; Morley J.E. et al., 2010; Budul S.L., 2015). In this context, protein with its prominent dietary status gains an especial standing as far as the older population's health is concerned. There has also been a number of studies examining associations among skeletal muscles and vitamin D, as well as androgens and growth hormone (Di Monaco M., 2011; Cruz-Jentoft A.J., 2010; Buehring B., Binkley N., 2013; Yuki A. et al., 2015; Cangussu L.M.,

2015). **The purpose** of the study was to study the risk factors (dietary protein intake, vitamin D, growth hormone (GH), total and free testosterone level (TT, FT)) of sarcopenia in Ukrainian postmenopausal women. **Materials and methods.** To evaluate the connection between appendicular lean mass (ALM) and dietary protein intake we have examined 63 women aged 52–89 yrs (mean age — 68.46 ± 9.26 yrs). For the purpose of studying the correlation between skeletal muscles and vitamin D level 87 healthy women aged 45–83 yrs were examined (mean age — 66.29 ± 8.35 yrs). To study the correlation between skeletal muscles and GH, TT, FT level, 42 healthy women aged 60–86 yrs (mean age — 70.62 ± 6.97 yrs) were examined. To assess the dietary habits of women, we used a three-day sampling method. Lean mass was evaluated using Dual X-ray absorptiometry (Prodigy, USA). Strength of skeletal muscle was evaluated using springy carpal dynamometer, the functional capacity of skeletal muscle — by «four-meter» test. To determine the level of 25(OH)D, GH, TT and FT electrochemiluminescent method was used. **Results.** Women of 80–89 yrs consuming less than 1.0 grams of protein per 1 kg of body weight accounted for more than a half of their group (57.1 %). Significant correlations among dietary protein, aminoacids and ALM index values ($p < 0.01$) were determined. We determined a significant correlation between parameters of lean mass ($p = 0.05$) and vitamin D level; skeletal muscle functionality ($p = 0.04$) and vitamin D level. Significant correlation between ALM and level of GH (60–74 yrs: $r = 0.36$; 60–89 yrs: $r = 0.31$), between strength of skeletal muscle and level of TT (75–89 yrs: $r = 0.55$; 60–89 yrs: $r = 0.32$), FT (75–89 yrs: $r = 0.31$), GH (75–89 yrs: $r = 0.35$; 60–89 yrs: $r = 0.32$); between function of skeletal muscle and level of TT (75–89 yrs: $r = 0.46$), FT (75–89 yrs: $r = 0.48$) was found. **Conclusions.** Significant correlation between parameters of lean mass, skeletal muscle strength, functionality and dietary protein intake, vitamin D, GH, TT and FT level was determined in the Ukrainian postmenopausal women.

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Evidence-based approach to managing musculoskeletal disorders: problems of implementation

Introduction. Evidence-based medicine (EBM) movement in Ukraine began in the early 2000s. Then, taking into account priority of both disease prevention and primary health care (PHC) development as national strategy, the concept of evidence-based prevention in health care and the system of its implementation were substantiated. **The purpose** of the research was to identify problems of the implementation of evidence-based management of patients with musculoskeletal disorders (MSDs), especially in PHC. **Materials and methods.** The study involved electronic and printed sources of EBM, incl. systematic reviews (SRs) from the Cochrane Collaboration website (n = 300, as 6 samples of the top-50); totalities of the recommendations of the USPSTF (n = 187) and CTFPHC (n = 62); contents of the TRIP Database and its categories; adapted clinical recommendations (n = 50) from the Register of medical standardization in the system of the Ministry of health of Ukraine; questionnaires for Kyiv PHC doctors (n = 252, the sample population) and for the officials (n = 30) that were responsible for conducting trainings on EBM. We used systemic approach, content-analysis, methods of medical statistics, expert assessments, sociological method as well. **Results.** 1. Conducted analysis of structure, content and dynamics of referrals to the most popular SRs revealed a 3,9-fold increase of the number of their downloads during 2011–2013. High interest to EBM-managing of MSDs (incl. surgical aspects) has been proved: the share of such SRs in the structures of top-50 was up to 18 %. 2. Having analyzed the TRIP Database content, we confirm expediency of use it for evidence support of managing patients with MSDs: from 2012 to 2014 the number of documents in category «Orthopedics» increased 10,5 times, in «Rheumatology» — 8.1 times, on these issues in category «Primary care» — 3.1 and 5.1 times respectively. 3. The share of papers on MSDs in the structures of the USPSTF and CTFPHC recommendations turned out to be small — 3.9 and 5.8 % respectively. The category MSDs of the USPSTF recommendations includes 4 papers of 2004–2012. Most of them (75 %) are devoted to screening: «Idiopathic scoliosis in adolescents»,«Developmental hip dysplasia», «Osteoporosis», and 25 % — to counseling and medication «Falls prevention in older adults» (topics of the CTFPHC recommendations are similar). There are no statements of grade A in these papers, and only 2 statements of grade B which recommend screening on osteoporosis in women older than 65 years as well as offering exercise or physiotherapy and vitamin D supplementation for falls prevention in older adults. 4. Only 1 adapted clinical recommendation developed in Ukraine since 2012 was devoted to MRDs (namely to rheumatoid arthritis, based on the EULAR and NICE recommendations). Neither the Cochrane Collaboration website, nor the USPSTF and TRIP data have been used as a source of national medical standards development. 5. Based on the results of our sociological studies, we revealed some needs as to quality of staffing and technical support of EBM-management in PHC. Much attention should be paid to problem of routine use of diagnostic tests in populations with low pretest probability of MSDs. The respondents have shown a predominantly low level of knowledge and of self-assessment of it on EBM-methodology (64.7 ± 3.0 % of them). Most doctors (77.8 ± 2.6 %) noted the high need for trainings on information support and methodology of EBM. **Conclusions.** Common and specific for Ukraine problems of implementation of EBM-managing of the patients with MSDs especially in PHC, as well as the needs to improve its information and staffing support are identified in the study.