Economic components of the morbidity and rehabilitation of the musculoskeletal system as factors of the organization of the system of physical therapy at the ambulatory stage

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Abstrakt

The aim: to consider the economic consequences of morbidity and rehabilitation of the musculoskeletal system (MSS) among the able-bodied population to confirm the economic feasibility of using physical therapy and the development of its system in the country in order to reduce losses from MSS pathologies in Ukraine.

Material and methods: the data of 63 literature sources on the prevalence of MSS diseases among the working population, their economic consequences (payments for treatment, employers' losses), the role of rehabilitation, physical therapy in reducing financial costs, and the needs of the population in rehabilitation and physical therapy were analyzed.

Results. Occupational diseases of the MSS are characterized by long-term disability and a high incidence of disability. The effectiveness of rehabilitation, including economic, with injuries and diseases of the MSS was given great attention in the works of domestic and foreign authors. A significant amount of research has confirmed that the funds spent on the implementation of rehabilitation are reimbursed many times by reducing the periods of temporary and permanent loss of working capacity.

Conclusion. The economic feasibility of directing the funds for rehabilitation and physical therapy in pathologies of the MSS is reflected in the short duration of disability, the period of adaptation of patients to work, and the need for rehabilitation. Therefore, channeling funds into building a rehabilitation and physical therapy system in Ukraine is appropriate in the framework of medical reform and will have long-term positive economic consequences.

Key words: prevalence; disability; orthopedic pathology; economic efficiency; efficiency, system; medical rehabilitation

Анотація

Федоренко С.М., Балаж М.С., Вітомська В.В., Лазарева Є.Б., Вітомська М.В. Економічні складові захворюваності та реабілітації опорно-рухового апарату як чинники організації системи фізичної терапії на амбулаторному етапі.

Мета: розглянути економічні наслідки захворюваності та реабілітації опорно-рухового апарату (ОРА) серед працездатного населення для підтвердження економічної доцільності використання фізичної терапії та розвитку її системи у державі з метою зменшення збитків від патологій ОРА на території України.

Матеріал і методи: проаналізовано дані 63 літературних джерел, котрі присвячені проблемам поширеності захворювань ОРА серед працездатного населення, їх економічним наслідкам (виплати на лікування, збитки роботодавців), ролі реабілітації, фізичної терапії у зменшенні фінансових витрат та потребам населення у реабілітації і фізичній терапії.

Результати. Професійні захворювання ОРА характеризуються тривалою втратою працездатності та високою частотою розвитку інвалідності. Ефективності реабілітації, в тому числі економічній, при травмах та захворюваннях ОРА приділялася велика увага у роботах вітчизняних та зарубіжних авторів. Значна кількість досліджень підтвердила, що кошти, витрачені на здійснення реабілітації, багаторазово відшкодовуються за рахунок скорочення періодів тимчасової та стійкої втрати працездатності.

Висновок. Економічна доцільність спрямування коштів на реабілітацію та фізичну терапію при патологіях ОРА відображається у скороченні тривалості втрати працездатності, періоду адаптації пацієнтів до праці після виходу на роботу, зменшенні показника первинної інвалідності, реалізації можливості повернутися на попередню роботу. Тому направлення коштів у розбудову системи реабілітації та фізичної терапії України є доцільним у рамках медичної реформи, а також матиме довгострокові позитивні економічні наслідки.

Ключові слова: поширеність; інвалідність; ортопедична патологія; економічна ефективність; працездатність, система; медична реабілітація

Аннотация

Федоренко С.Н., Балаж М.С., Витомский В.В., Лазарева Е.Б., Витомская М.В. Экономические составляющие заболеваемости и реабилитации опорно-двигательного аппарата как факторы организации системы физической терапии на амбулаторном этапе.

Цель: рассмотреть экономические последствия заболеваемости и реабилитации опорно-двигательного аппарата (ОДА) среди трудоспособного населения для подтверждения экономической целесообразности использования физической терапии и развития ее системы в государстве с целью уменьшения убытков от патологий ОДА на территории Украины.

Материал и методы: проанализированы данные 63 литературных источника, которые посвящены проблемам распространенности заболеваний ОДА среди трудоспособного населения, их экономическим последствиям (выплаты на лечение, убытки работодателей), роли реабилитации, физической терапии в уменьшении финансовых затрат и потребностям населения в реабилитации и физической терапии.

Результаты. Профессиональные заболевания ОДА характеризуются длительной потерей работоспособности и высокой частотой развития инвалидности. Эффективности реабилитации, в том числе экономической, при травмах и заболеваниях ОДА уделялось большое внимание в работах отечественных и зарубежных авторов. Значительное количество исследований подтвердили, что средства, потраченные на осуществление реабилитации, многократно возмещаются за счет сокращения периодов временной и стойкой потери работоспособности.

Вывод. Экономическая целесообразность направления средств на реабилитацию и физическую терапию при патологиях ОДА отображается в укорочении продолжительности потери работоспособности, периода адаптации пациентов к труду после выхода на работу, уменьшении показателя первичной инвалидности, реализации возможности вернуться на прежнюю работу. Поэтому направление средств на развитие системы реабилитации и физической терапии Украине целесообразно в рамках медицинской реформы, а также имеет долгосрочные позитивные экономические последствия.

Ключевые слова: распространенность; инвалидность; ортопедическая патология; экономическая эффективность; работоспособность; система; медицинская реабилитация

Introduction

To study the need for healthy targeting in the organization of the physical therapy service for patients on the outpatient stage, the main source is to treat patients with clusters. Naukovo obhruntovani Data Pro potreby nacelelnyya country in reabilitatsiyniy dopomozi hvorym and ocobam of invalidnictyu mozhut cluzhyty pidtavoyu for perepektyvnoho planning rozvytku merezhi likuvalno-profilaktychnykh institutions, their medychnoyi spetsializatsiyi, ratsionalnoho vykoryctannya lizhkovoho fondu, medychnykh personnel nemedykamentoznykh metodiv treatment pidvyschennya efektyvnocti treatment hvoryh [1, 2].

The most common cause of chronic disability in the whole world is the violation of the musculoskeletal system (MSS). The World Health Organization (2003, 2004) underlined the burden of the pathology of the musculoskeletal system and its growth by 25% over the past decade. In the structure of MSS disease, the highest values are given to ocular arthrosis (OA); inflammatory arthritis; back pain; musculoskeletal injuries, including sports injuries; crystalline arthritis (gout and disease of calcium pyrophosphate) and metabolic disease, a major cause of otoporosis [3].

In the structure of the prevalence of the disease, there are five places (5.55%) for the disease of the working population of Ukraine for the diseases of the musculoskeletal system and the connective tissue. diseases of digestive organs (10.70%) and diseases of tubular system (7.89%) and have a dynamics of increase in the prevalence during the following years (by 0.37% in 2016) compared to 2015 [4].

According to the data Andriychuk, Grigus [5] and Ipatova with co-authors [6], for the decade of pathology of the cutaneous-muscular system, rose from the fourth to the third rank in the structure of the primary extracorporeal lobe. In this case, there is persistent growth of primary disability due to injuries of the musculoskeletal system and due to diseases of the musculoskeletal system [6].

MSS disease is a major occupational disease among EU workers, accounting for more than 59% of occupational diseases with a prevalence rate of more than 2.5% among workers, accounting for over 4 million people [7]. In the US, occupational diseases of the MSS in the manufacturing and services sectors account for about half of all musculoskeletal diseases combined [8]. According to Fartushnaya, Basanets. [9], occupational diseases of the musculoskeletal system, characterized by long-term disability and high incidence of disability among workers, are widespread in Ukraine: the number of cases of

registered occupational diseases of MSS in Ukraine annually increases, occupying the frequency among all other professions. place after pneumoconiosis. A particularly high incidence of occupational diseases was in 2006, accounting for 1490 cases per year. It is important to emphasize that occupational diseases of the musculoskeletal system are gaining more and more weight in the pathology of persons not only the elderly but also middle-aged, while prospective demographic studies predict a doubling of the number of patients by 2020 [10]. Diseases of the bone and joint apparatus significantly impair the quality of life of people through constant pain, impaired functional activity, loss of freedom of movement, thus complicating the lives of not only the patient and his family, but also society as a whole [11].

The aim: to consider the economic consequences of morbidity and rehabilitation of the musculoskeletal system (MSS) among the able-bodied population to confirm the economic feasibility of using physical therapy and the development of its system in the country in order to reduce losses from MSS pathologies in Ukraine.

Material and methods

The data of 63 literature sources dealing with the prevalence of MSS diseases among the able-bodied population, their economic consequences (payments for treatment, employers' losses), the role of rehabilitation, physical therapy in reducing financial costs, and the needs of the population in rehabilitation and physical therapy are analyzed.

Results

Occupational MSS diseases are associated with high costs for employers and the state to pay for sickness and disability sickness benefits, compensation for victims due to reduced productivity [12]. In some EU countries, up to 40% of workers' compensation benefits are linked to occupational MSS. The median incapacity in the US and EU for occupational MSS is 8 days compared to 6 days of disability due to all other occupational diseases [13].

According to the literature, the economic losses from MSS are quite high [14]. MSS accounts for nearly 70 million visits to the doctor's office annually in the United States. In all, 130 million cases of MSS (outpatient, inpatient and ambulance) are recorded annually in the US health system. Almost 1 million workers are temporarily disabled due to the disease. In the US, the economic burden of

in conventional ambulatorno-poliklinichnyh umovah, ckorotylocya in cerednomu at perelomah promenevoyi kictky 12 days malohomilkovoyi kictky - 18 days velykohomilkovoyi kictky - 22 days [26].

According to Shpetova [27], rehabilitation of patients with the consequences of injuries and diseases of the musculoskeletal system contributed to the recovery of 97% of patients, restoration of capacity in 78%. The period of adaptation of patients to work after leaving the work rate from 1-2 months to 5-7 days, the index of initial exit for disability due to trauma decreased from 1.34 to 0.5 per 10,000 workers.

Shcherbakov [28] provides data according to which 75% of patients are discharged from rehabilitation departments with complete recovery or with improvement of clinical and functional indicators of health.

According Danylova [29] cered ocib that poctrazhdaly of neschachno case on vyrobnytsvti at cvoyechano provided reabilitatsiyniy dopomozh povniectyu vidnovlyuvalacya pratsezdatchict in 36.8% of patients, both in todi necvoyechachnomu pryznachenni vidnovlyuvalnyh zahodiv povne vidnovlennyya pratsezdatchnocti docyahalocyya lyshe to 9.1% cases. The planned repetition of smokers with the implementation of an individual rehabilitation program allowed to restore the ability to work in 77.3% of patients.

Khodarev [30] also showed a great effect of rehabilitation: in 89.5% of patients with occipochondrosis of the spine, there was a complete regression of symptomatic manifestations or significant reductions in 87.3% of patients with complete recovery of functions with recovery of functions.

According to Lukyanova, 19.6% of patients were discharged from the number of patients who received rehabilitation, with improvement - 47.9% and without changes - 32.5% of patients [31].

Pieber et al. [32] studied the long-term effects of a multidisciplinary rehabilitation program for 6 months in patients with chronic pain in the lumbar spine in a longitudinal study. The results of the study showed that comprehensive outpatient rehabilitation programs can cause sustained improvement in muscle strength, reduced pain, improved functioning, and quality of life in patients with chronic low back pain. It was also found that these improvements persist until the next evaluation 18 months after the end of the intervention.

Coulter et al. [33] investigated the effectiveness of post-clinical rehabilitation in patients who were discharged from the hospital after total hip replacement. The systematic review

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included five studies involving 234 participants. Enough data for the meta-analysis was obtained only for indicators of hip and knee strength, walking speed, and distance. Post-clinical rehabilitation based on exercise increased the strength of the hip muscles by 16 Nm (95% CI 10 to 22), walking speed 6 m / min (95% CI 1 to 11) and length 20 steps / min (95% CI from 8 to 32). Functioning and quality of life could not be meta-analyzed due to lack of data and heterogeneity of measures, but functional measures tended to favor the physiotherapy rehabilitation group.

Crotty et al., 2010; Handoll et al., 2011 [34] analyzed the benefits of outpatient rehabilitation of patients after hip fractures. The authors concluded that, in general, comprehensive rehabilitation programs based on exercise have a significant positive impact on the different functional capabilities of the patient. However, the heterogeneity in the development of literature studies (ie, inappropriate methods, interventions, and outcomes) associated with outpatient rehabilitation programs for patients after hip fractures complicates the determination of the optimal timing, intensity, and duration of outpatient rehabilitation programs for this group of patients.

In general, evidence from the literature indicates that attending an outpatient rehabilitation program after a hip fracture has improved the following: mobility and / or physical performance, strength, balance [35, 36, 37], emotional state associated with falling [38]; self-assessment of physical function or health [36, 37, 39]. Outpatient rehabilitation after hip fracture has been found to reduce the need for adjuncts [36, 40], reduce dependence on daily activities, and reduce mortality rates [40].

The data of a number of authors suggest that the cost of maintaining patients in the wards for relocation is 1.5-2 times lower than in the corresponding estimated wards of the hospital. Thus, it has been estimated that the cost of treatment at the London Rehabilitation Center will be approximately 1/6 of the cost of treating one patient in a clinical hospital and the cost of treating one patient in a conventional hospital. At the Rehabilitation Center in Clacton (United Kingdom), designed for the treatment of 80 inpatients and 20 outpatients, it was estimated that the cost of treating one patient at a rate of 2 times [41 times].

Krauth, Bartling [42] presented the results of a review of the evaluation of the economic efficiency of rehabilitation of individuals with MSS pathology. On the basis of the literature research literature, 17 studies were determined for the economic efficiency of rehabilitation in Germany. Outpatient

rehabilitation (with similar inpatient efficacy) resulted in significant potential savings of 25-35% in the program.

The purpose of the study by Kennedy et al. [43] compared the clinical and economic effectiveness of inpatient and outpatient rehabilitation of patients with active rheumatoid arthritis. A single-center, randomized project was used. Data were recorded initially, after treatment and after 6 months. The main criterion for effectiveness was a scale measuring the impact of arthritis. A number of other indicators of activity, functionality and quality of life were also evaluated. All direct and indirect costs were measured. The study randomized 47 subjects. No significant differences were found between the two groups for the primary or secondary measures at the end of treatment or after follow-up. The total cost of inpatient care (EUR 81 590) was more than three times higher than the total outpatient cost (EUR 25 450).

Zeidler with cpivatoramy [44] provedly porivnyalnyy analysis of the costs and ctatsionarnu ambulatornu rehabilitatsiyu at zahvoryuvannyah oporno-ruhovoho apparatus and zrobyly vycnovok Pro te chto ambulatorna rehabilitatsiya zdayetsya kraschoyu alternatyvoyu porivnyano with ctatsionarnoyu rehabilitatsiyeyu of ekonomichnoyi tochky zoru.

The study of Sakalauskiene et.al. [45] proves that multidisciplinary outpatient rehabilitation can be considered as effective treatment. These authors point out the necessity of introducing specific, well-tailored tools for evaluating the effectiveness of the results of a multidisciplinary outpatient rehabilitation.

According to the literature, rehabilitation is especially relevant for patients with impaired locomotor apparatus due to the fact that the reason of disability in this contingent of patients in 23-26% of cases is non-anatomical, 47%.

Poryad of tyazhkiytyu zahvoryuvannya faktoramy chto increase ymovirniest nactannya invalidnosti, there nedootsinka roli funktsionalnoho vidnovnoho treatment chto chacto determines nepovnotsinniest zactocovuvanyh kompleksiv bez vykoryctannya erhoterapiyi, fizychnoyi terapiyi, pcyhoterapiyi and takozh vidcutniest nactupnosti between uctanovamy ohorony zdorov'ya chto zaymayutcyia rehabilitatsiyeyu [48].

Given the hronichnyy perebih bilshochi ocnovnyh zahvoryuvan ORA and vycokyy hvoryh level of disability, rozvytok cyctemy provide rehabilitatsiyynoyi dopomohy on ambulatornomu Stage is obovyazkovoyu peredumovoyu pidvyschennya efektyvnosti rehabilitatsiyynoho

protsecu danoho kontynhentu hvoryh, till the same toho ambulatorna reabilitatsiya mozhe have more ekonomichnu efektyvnict.

According to current ideas, multidisciplinary rehabilitation programs have the greatest effectiveness, as evidenced by the data of a number of systematic reviews on the problem of rehabilitation in chronic low back pain [49, 50] and joint diseases [51, 52].

For the implementation of a multidisciplinary approach, the conditions of special rehabilitation institutions are most favorable.

It should be emphasized that great importance for the development and planning of rehab treatment and rehabilitation has a clear understanding of the need for population in these types of medical assistance [53].

Mighty znachennya normatyviv obumovlyuyetcy by their chto dopomohoyu vyznachayutcy ob'yemni velychyny for rozvytku vcih haluzey ohorony zdorov'ya in tomu chycli medychnoyi reabilitatsiyi, Structure and Composition lizhkovoho fondu visits naceleennyam ambulatorno-poliklinichnyh uctanov of pryvodu medychnoyi reabilitatsiyi.

The issue of studying the needs of the population in rehabilitation is reflected in the works of a number of authors.

Thus, according to Shetakov et.al. [54], from the number of individuals who return to the clinic, 14-15% of patients require rehabilitation, with about 80% of them becoming affected by the consequences.

The indicative indications for the need for specialized rehabilitation beds were developed by Archangel [55], who considered that the specific weight of beds for rehabilitation in cardiology was 65%, 65%, - 56%.

According to Pavlov's calculations [56], 100 beds for 6-8 million inhabitants are needed for the surgical treatment and rehabilitation of arthrologic patients.

It is difficult to identify a contingent to be transferred to a ward. According to some researchers, approximately 30% of patients are reported [57]. In Minsk, 20% of patients with a therapeutic profile and approximately 60% of a surgical profile are transferred to city and regional hospitals [58].

According to Minyayev et al. [59], 70.1% were most likely to require rehabilitation interventions with a low population. He indicated that 12% of the total number of primary patients who returned to trauma centers and all patients for hospital discharge were needed for re-treatment in community settings.

Valchuk [24, 25] studied the distribution of the distribution of the needs of the rural population in the rest of the treatment by disease class and its structure according to the basic medical specialties. According to other data, in the structure of contingents of patients requiring medical rehabilitation, the estimated share is patients with therapeutic profile (46.6%), cardiologic (19.3%), hygienic (19.3%) profiles.

Belova et.al. [60] studied the need for outpatient rehabilitation of patients with a neurological profile. They were informed that after the course of inpatient treatment for enrollment in the clinic from the neurological wards, 15-30% of patients were sent, and from the neurosurgical - 62%. Usually, these patients were patients with a long history of the disease, the underlying character of the syndromes, or those who had undergone a dysectomy. In ambulatornu reabilitatsiyu piclya ctatsionarnoho treatment povynni be cpryamovani 38,7-44,3% of hvoryh vertebrohennymy zahvoryuvannyamy, 27-33% hvoryh chto perenechly mozkovyy incult, 60-70% hvoryh on poctravmatychnu entsefalopatiyu, hvori that perenechly hoctru injury and holovnoho spinal cord, in 55-65% of cases required conducting rehabilitation in specialized spinal centers in inpatient minds.

Novikov et al. [61, 62] identified the need for medical rehabilitation of patients with traumas and diseases of the hand, which is 4.95%, for patients with traumas - 7.56%, for patients with orthopedic patients 4.4% population.

When determining the number of patients requiring all types of rehabilitation in the inpatient minds, WHO proposes to leave 20-25% of the total number of patients and 63 patients in the outpatient clinics.

Discussion

The conducted analysis of the literature confirmed that MSS pathologies occupy the largest share among the working population, and their number is increasing annually [3]. Particularly negative is that occupational diseases of MSS are gaining increasing share in the pathology of middle-aged people [10]. These pathologies are characterized by long-term disability or impairment, as well as a high prevalence of disability among workers.

MSS diseases result in significant costs for insurance companies, employers and the state, which in most cases pay for sick leave, disability payments and compensation [12, 13, 14].

In addition to the economic aspects of MSS pathology, the quality of life is significantly reduced by chronic pain, reduced MSS function, and also affecting the quality of life of the immediate family.

Effectiveness of rehabilitation and physical therapy in traumas and diseases of ORA, in that number economic efficiency, paid great attention in scientific works. The results of these studies confirm that koshty aimed at reabilitatsiyu, vidshkodovuyutcyia for rahunok ckorochennyya periodiv tymchacovoyi and ctiykoyi loss pratsezdatochni reduction periodu adaptation of the patients till the work piclyia vyhodu on robotu, reducing pokaznyka pervynnoho vyhodu on invalidnict of pryvodu injury achievement opportunities povernutycyia the previous robotu (which is especially important for high-profile professionals), reduces the need for auxiliary assets and increases independence in day-to-day operations (ie, financial costs may be reduced to provide care or assistance to special staff or service). However, according to research, the cost of treating patients in rehabilitation wards is lower than in conventional inpatient wards. In general, this is due to the improvement of MSS function, mobility, physical performance, motor performance, and self-esteem of physical functioning [33, 34, 42, 43].

Taking into account the results obtained, it can be stated that directing funds to the development of the rehabilitation and physical therapy system in Ukraine is expedient within the framework of medical reform and will have long-term positive economic consequences.

At the same time, the issue of improving the organizational structure and implementation of the rehabilitation process, as well as the development of algorithms for rehabilitation measures, is quite urgent in Ukraine. At the present stage, the elements of the system of physical therapy services need to be improved in order to achieve maximum medical, social and economic efficiency. Despite the fact that an extensive network of rehabilitation establishments of different types of ownership and departmental identity is currently being established, it does not fully provide the population with adequate rehabilitation services. The figures in the official reports do not reflect the real need for rehabilitation services, nor do they monitor the quality and effectiveness of such services. Typically, services are evaluated according to criteria such as "number of recipients of services", "number of services rendered", "volume of financing", etc.

As rehabilitation institutions of state and communal ownership are not able to meet the needs today, the creation and development of private property institutions is becoming increasingly

relevant. In European countries, private rehabilitation centers are often used to accommodate state revalidation treatment. Thus, at the same time as the policy of deinstitutionalisation of rehabilitation support in EU countries, the role of governments and other state bodies in rehabilitation activities is reduced. Its main participants are mostly private sector rehabilitation organizations and patients. Medical rehabilitation institutions are non-governmental and operate in a highly competitive environment, which is also cost-effective both in terms of quality of service and price, since in most cases insurance companies or the state acts as the wholesale buyer of these services and controls their quality properly. Such a form of rehabilitation organization has practical and economic value and can be used in the development of physical therapy and rehabilitation systems in Ukraine. This is especially true when implementing the principle of "money goes after the patient". Such conditions will contribute to the process of formation of competitive prices, competitive quality of services in private and public institutions, as well as in general the development of the system of physical therapy in the state and increase its economic impact by improving the health of the population.

Conclusions

The significant prevalence of MSS among the working population has a negative economic impact on states, employers and insurance companies due to the long-term loss or decline of workers' disability, development of disability, payment of sick leave, disability payments, and compensation. The economic feasibility of directing funds for rehabilitation and physical therapy in MSS pathologies is reflected in the shortened duration of disability, the period of adaptation of patients to work after going to work, reducing the incidence of disability. Therefore, channeling funds into building a rehabilitation and physical therapy system in Ukraine is appropriate in the framework of medical reform and will have long-term positive economic consequences.

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Conflict of interest

Authors state that there is no conflict of interest.

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