

Economic Aspects of Physical Medicine and Rehabilitation for Health System

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Abstract

Introduction: The distribution of health money from the budget and health care fund is a special obligation of each country and its government to ensure a healthy population, which will be able to contribute to the economic growth. While the health cake is shared among the branches that give or save life, the percentage given for rehabilitation is very low. The aim of our research has been to represent economic benefits of involving rehabilitation in all stage of health treatment. **Material and Method:** For material, we used several publications by the WHO, and medical researchers about rehabilitation in the 21st century and its economic parameters for the cost of treatment of diseases. **Results:** In the treatment of diseases, PM&Reha can be included in all conditions of the disease, and in all diseases, from the Intensive Care unit to the return home or in a specialized facility for residence. The analysis of spent funds is made taking into account the number of hospital days, occurrence of complications and quality of life with necessary funds for extended care. In all analyses, if rehabilitation is included, the cost of treatment on an annual basis is lower, especially if conservative treatment, which costs less, is used instead of surgery. **Discussion:** PM&Reha is one of the oldest but also one of the most modern branches of medicine, which is developing exponentially due to the advancement of technology from software programs in rehabilitation to robotics in rehabilitation. The commitments of the WHO are until 2030, in all countries of the world, to have PM&Reha implemented in the health systems. From an economic point of view, it is difficult to carry out without international interventions with finances and education of health workers. **Conclusions:** The inclusion of PM&Reha in all levels of health care can reduce the costs of treating the underlying disease by reducing hospital days and preventing complications that will require additional costs for their treatment.

Keywords: rehabilitation, economic benefits

1. Introduction

Health policies are aimed at efficient and modern healthcare that will be available to every member of society, and the stronger the country is economically, the higher the level of health care, but still generally guided by the guidelines of the World Health Organization (WHO), there must be paths towards which will indicate health care and priorities in its implementation. (WHO document, 2021) According to WHO, priorities for health systems or the strategy for the 21st century are: improvement of treatment, prevention, education of the population, palliative care and rehabilitation. As health care experts in the field of Physical Medicine and Rehabilitation (PM&Reha), and Health Management, we will adhere to these commitments, especially with the new opportunities provided by the development of assistive technology and robotics in modern rehabilitation to reduce disability. (Nugraha B, Gutenbrunner C., 2021) The World Association for Physical Medicine and Rehabilitation (ISPRM), in cooperation with the WHO, constantly advocates for the improvement of rehabilitation in the health systems of both developed and low-economic countries. (Gutemberger. C,

Bickenbach, J, Kiekens, C & Stucki G., 2015) The facts that indicate are greater health benefits and better quality of life in which PM&Reha would be involved, because the percentage of disabled people is growing due to the increase in chronic non-communicable diseases and the life expectancy of the population. (WHO Global NCD Action Plan 2013-2020) And while the health cake is shared among the branches that give or save life, the percentage given for rehabilitation is very low. Following this situation, we set ourselves the goal of showing how health money can be used simultaneously for several people who are in acute need, and still have a high level of PM&Reha implementation. That is, shorter hospital treatment of acute care units through early inclusion of rehabilitation, and the other moment early inclusion of rehabilitation in primary, secondary and tertiary health care, which will prevent the occurrence of complications and increase costs.

2. Material and Method

For material, we used several publications by the WHO, and medical researchers about rehabilitation in the 21st century and its importance, economic parameters for the cost of treatment of diseases in specific departments, as well as what are the economic benefits for health finances, how much PM&Reha was involved, in all segments of prevention. We systematized the data into several units, namely: 1) Benefits of the health system when including rehabilitation in all stages of treatment of the disease, 2) Benefits of the health system in how far complications are prevented with PM&Reha interventions.

3. Results

In the treatment of diseases, PM&Reha can be included in all conditions of the disease, and in all diseases, from the stay in Intensive Care to the return home or in a specialized facility for residence. (European Physical and Rehabilitation Medicine Bodies Alliance, 2018)

(1) Economic aspects when including the rehabilitation of the intensive care unit are the following: 1) if the rehabilitation is included, the days of stay in this department are shortened, which reduces the cost of treatment in this department, which due to the treatment, care and equipment is very high per day treatment. 2) complications from being on a respirator and other machines are reduced, and thus the cost of treating complications from them is reduced, 3) costs for the treatment of pressure sores are reduced, which by percentage are the most represented in this department in relation to other hospital treatments. (Katajisto M & Laitinen T, 2017)

(2) Application of the rehabilitation of the home department according to the medical branch, in the acute stage of the disease: 1) prevents complications and treatment of pressure ulcers, especially in elderly patients, -prevents stagnant changes in the lungs and costs for their treatment, 2) prevents the occurrence of stagnant changes in the limbs, occurrence of thrombosis and expenses for the treatment of thrombosis or expenses for the occurrence of thromboembolism and its treatment, 3) prevents the occurrence of contractures, which, if they occur, slow down the treatment and increase the number of hospital days in the subacute and chronic phases of rehabilitation. (Thomas E, Lotfaliany M & Grace SL., 2019)

(3) Rehabilitation in the subacute phase of the PM&Reha department, it reduces the days of immobility, the need for prolonged care and a faster return to the state before the illness. With the assistive technology that is prescribed, the patient becomes independent in a shorter time together with the training. (Stucki G, Stier-Jarmer M, Grill E, Melvin J.2005; Prvu Bettger JA & Stineman MG., 2007)

(4) Rehabilitation in the chronic stage, gets the most out of the patient, carries out professional rehabilitation and prepares the patient for functional assessment. Depending on the remaining or restored potential of physical and mental function, comorbidity and age, the patient returns home or to the workplace in a shorter time. (Howard-Wilsher S, Irvine L & Fan H., 2016)

We shall show this most explicitly with the example of an athlete's injury. The athlete with every injury and past day out of the game is a pure loss for himself, his career and the team he plays for. That's why they use all the possibilities of modern rehabilitation, apply stimulating physical procedures, which will quickly lead to the return of the trophicity of the damaged tissue and prevent inactive hypotrophy. The musculature for 10 days of rest spreads up to 50%, and it cannot return for up to 6 months after that. But athletes also have great financial support, for them only time is money. (Vuurberg.G, Hoorntje.A, Wink.M.L, et al., 2018)

In conditions of a disease that acts on the motility, and reduces its function of any nature, the inclusion of rehabilitation early reduces the overall cost of treating the disease, because if it is not included early, the treatment will last longer due to complications from prolonged inactivity and more days will be spent for treatment, there will be longer absence from work, greater burden on health care.

4. PM&Reha and Prevention

This branch of medicine is located in the health system in secondary and tertiary health care, because rehabilitation comes to an end after all. Today it is not like that, and we will try to confirm it through the given

examples.

4.1 Primary Prevention

Primary prevention—there are diseases, which are precisely known to be preventable if functional signs are noticed in time. Postural deformities of the spinal column are more and more represented due to the increased use of video terminals and according to one of our researches they can be represented by up to 60% in the school population. (Yang.L, Lu.X, Yan.B & Yeen Huang.Y., 2020) If they are detected early with quantitative skin surface measurements, exercises can be included, and in 6 weeks there will be excellent results. (Hurriyet H.Y, Coskun. Z, Aslihan K.O et al., 2020) But if they are not detected, monitored and treated during a period of intensive growth for 7-10 years age, they can increase up to 50% in 6 months. For 6 months, including educational exercises according to our health system, it cost 200 Euros. When the curvature is not treated and grows due to other internal and external factors, there is an indication for a brace, which can be changed by our Health Care without participation, twice a year and costs 400-500 Euros. The percentage of such structural deformities for luck is as low as 2.5 percent by all scoliosis. This children from total with structural scoliosis (2%), the curve has progression, and they have indication for operative treatment. Spine Surgery costs up to 200,000 Euros. (Schupper.J.A, Shuman.H.W, Baron.B.R et al., 2021)

Another example is the increased body weight in children, due to inactivity and unhealthy diet. In the diet and weight reduction program, relevant experts in the field of nutrition are involved. But in these children, apart from postural changes, functional difficulties also occur early, and without a proper pediatric examination and assessment, they must not be referred to increased physical activity. The program of exercises and the type of sport with load should be given by the physiatrist or sports medicine doctor. Inadequate physical fitness with a disproportionate load can cause injuries and strains on the circulation. (Kumar.S, Aaron.S & Kelly.S.A., 2017) We had a patient, 21 years old, with increased body weight. He had been diagnosed with heart changes by cardiologist. He exercised in the gym without supervision and a program from a physiatrist doctor, and complications occurred.

4.2 Secondary Prevention

Here we are talking about the inclusion of PM&Reha in patients who have already been diagnosed with a disease, and over time, if interventions are not implemented on our part, complications from the disease itself may occur, which not only cause complications but are also life-threatening. Diabetes is present in about 1 in 11 adults worldwide now have diabetes mellitus, 90% of whom have type 2 diabetes mellitus (Zheng.Y, Ley.H.S & Hu.B.F., 2018) The huge number of representation also consumes a large part of the assets of the health funds for the treatment of the disease. But after a certain time, complications of the muscles skeletal system, circulation and nervous system occur, which end in amputation. (Hicks.W.C & Selvin.E., 2019) Amputation increases the need for the application of a prosthesis, which burdens the health fund with its cost. In the primary prevention of this disease, the education of population to reduce body weight, with diet and increase physical activity are crucial aspects of the statement that prevention is better than cure. Here, according to the individual abilities of the individual, physical activities can be promoted outside the health system. When diabetes is diagnosed, with a specific program for daily physical activity, as well as with occasional applications of physical procedures and spa treatment, it is possible to prevent the occurrence, but also to treat the wound or neuropathy that has already occurred. (Taha.M.M, El-Nagar.M.M & Elrefaey.H.B., 2022) This will allow, according to the patient's attitude and his behavior towards the disease, to have a quality life for a longer time.

4.3 Tertiary Prevention

Tertiary prevention is a period when the patient has gone through all stages of treatment and has now returned home, with permanent consequences of the disease, which may worsen over time. This is primarily for the category of patients with spinal cord injuries and amputation of the limbs, stroke survivors, after extensive operations with the removal of lymph glands, in chronic progressive diseases. For this category of patients, the healthcare system has provided them with everything possible and the maximum has been achieved in rehabilitation. According to the right to health care, they have the right to rehabilitation for 2-4 weeks, 2-3 times a year. During the period when they are not in rehabilitation, they are at home and their condition deteriorates. Everything that has been achieved, if it is not maintained in continuity, will be reversed in a month. (Fieten.B.K, John.M.S & Nowak.D., 2022) Several months may pass before the next rehabilitation. Now neither the health system can serve such patients continuously, nor can they be left without it, due to regression and emergence of complications. That's why in developed countries it is solved with a continuous 1-2 times a week visit to a physiotherapy studio (working with a physiotherapist according to a long-term program determined by a doctor), all at the expense of the health fund. In our country, patients opt for occasional visits from a physiotherapist, at personal expense, or if they are unable to wait until the next referral for specialized rehabilitation. Here in our country, we are faced with the problem of illegal operation, independent activity of the physiotherapist, which does not exist and charging for the services without any responsibility for a possible mistake, as well as income

tax evasion. The economic damage here is double for the patient and the state.

5. Discussion

Physical medicine and rehabilitation is one of the oldest but also one of the most modern branches of medicine, which is developing exponentially due to the advancement of technology from software programs in rehabilitation to robotics in rehabilitation. (Klamroth-Marganska V., 2018) PM&Reha, is included in the modern health system as a separate branch after 1931 year. Today in the 21st century, the number of disabled people is 10% of the world's population. The 80% are in countries with low economic growth, where health services are unavailable for primary and life-threatening conditions, let alone for rehabilitation. The commitments of the WHO are until 2030, in all countries of the world, to have PM&Reha implemented in the health systems. (Ye X, Zhu D, Chen S, et al., 2021) From an economic point of view, it is difficult to carry out without international interventions with finances and education of health workers.

In developed countries, demographic changes and the growing number of the elderly population as opposed to those able to work, will increasingly burden the health system with needs for hospital treatment and care. Only with interventions in the field of PM&Reha can the quality of life of these patients be improved, their long-term independence can be increased, and thus the pressure on the health system and the request for more beds in hospitals. (Eklund K, Stålnacke BM, Stenberg G et al., 2020; Veronese N & Maggi S., 2018) That the capacities of hospital treatment are insufficient was also shown by the pandemic, because in modern and economically well-standing countries, the number of beds decreased, as a result of rapid outpatient interventions and returning home. In modern countries patients who are unable to care for themselves, or their loved ones, there are different levels of care, which can be cared for by medical staff in the patient's home or in resident homes. In low-economic countries, this is not possible due to the prices of the services and the patient's income. There are even abuses, when the allowance for care and pension is used by the family for purposes other than the patient. Social protection services should be more active here.

6. Conclusion

The inclusion of PM&Reha in all levels of health care can reduce the costs of treating the underlying disease and its complications, by reducing hospital days and preventing complications that will require additional costs for their treatment. In low-economic countries, where there are not enough funds and medical personnel to organize life-threatening interventions, and preventive measures-such as vaccination, it is difficult to implement PM&Reha, and it would only be for people with severe disabilities that occurred during life, before are for improving mobility and transport. Where there are no roads, even a wheelchair cannot be used, even though it was donated by humanitarian organizations.

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