

## ORIGINAL ARTICLE

# SOME ASPECTS OF THE POTENTIAL ADHERENCE TO REHABILITATION OF PATIENTS WITH MUSCULOSKELETAL INJURIES

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## ABSTRACT

**The aim:** To investigate and analyse certain aspects of potential adherence to rehabilitation treatment of patients with musculoskeletal injuries.

**Materials and methods:** The study was conducted among 108 patients with musculoskeletal injuries. A questionnaire, containing 25 questions, was used to determine the importance for patients of rehabilitation treatment and their readiness to perform its measures.

**Results:** It was found that for  $98.0 \pm 2.6\%$  of surveyed patients with injuries it is important not to experience limitations in the future functioning of their bodies.  $97.2 \pm 3.1\%$  of the surveyed patients with injuries indicated their readiness to do exercises prescribed by a rehabilitation specialist at home, and  $87.0 \pm 6.3\%$  were ready to perform physical exercises even in case of unpleasant sensations or discomfort. It was determined that  $67.6 \pm 8.8\%$  of the surveyed patients with injuries are ready to attend rehabilitation classes with specialists,  $69.5 \pm 8.7\%$  are ready to record their own achievements at home and  $73.1 \pm 8.4\%$  of the patients consent to maintain regular contact with rehabilitation specialists via the Internet.

**Conclusions:** Patients with musculoskeletal injuries have a high level of understanding of the importance of rehabilitation. The vast majority of them are ready to perform most of the components of rehabilitation, but without significant changes in normal life and with a predominant stay at home. All this requires the development of organizational measures to form the adherence to particular components of rehabilitation.

**KEY WORDS:** rehabilitation, musculoskeletal system, adherence, injuries, restorative care

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## INTRODUCTION

According to the study "Global Burden of Disease" in 2017, diseases of the musculoskeletal system rank second among the factors of disability in the world [1]. Of particular importance are injuries that temporarily or permanently reduce the ability to work and quality of life of patients. At all stages of providing medical and rehabilitation care for musculoskeletal injuries, it is important to achieve the ultimate goal, which is to restore health.

According to the World Health Organization (WHO), low adherence is one of the main reasons for the insufficient therapeutic effect, a significant increase in the likelihood of complications of the underlying disease, which leads to reduced quality of life and increased treatment costs [2]. The effectiveness of rehabilitation depends on the patient's participation in the process, his or her readiness for long-term treatment, proper motivation and mastery of skills necessary in the daily tackling of their disease [3, 4].

The process of restorative care of persons with injuries of the musculoskeletal system requires a comprehensive approach for the purpose of full and effective implementation. At this stage, the available modern methods of treatment and immobilization, the nature of motor disorders, the presence and manifestations of comorbidities, individual characteristics of patients (age, sex, type of employment)

should be taken into account. Proper organization of restorative care is achieved by following the algorithms for providing and interacting with individual means of rehabilitation. It is important to create a partnership between the patient and the health worker (traumatologist, rehabilitation doctor, nurse, physical therapist and his assistant, occupational therapist (ergotherapist)). That is why active participation, conscious attitude, cooperation of the patient with specialists in the rehabilitation process are emphasized among the rehabilitation principles. All this will ensure compliance, or adherence to restorative care, for people with musculoskeletal injuries.

Therefore, at any stage of care for people with musculoskeletal injuries, the patient's commitment to treatment and recovery is important. Recently, many scientists have conducted research on the level of adherence to restorative care and methods to improve it in the rehabilitation of various parts of the musculoskeletal system: upper and lower extremities, spine and others [5-7].

The organization of ensuring the adherence of patients with musculoskeletal injuries to restorative care has a number of obstacles, requires better study and development of improvement measures. To do this, it is important to determine the potential level of adherence to rehabilitation, which will form an algorithm for its increase.

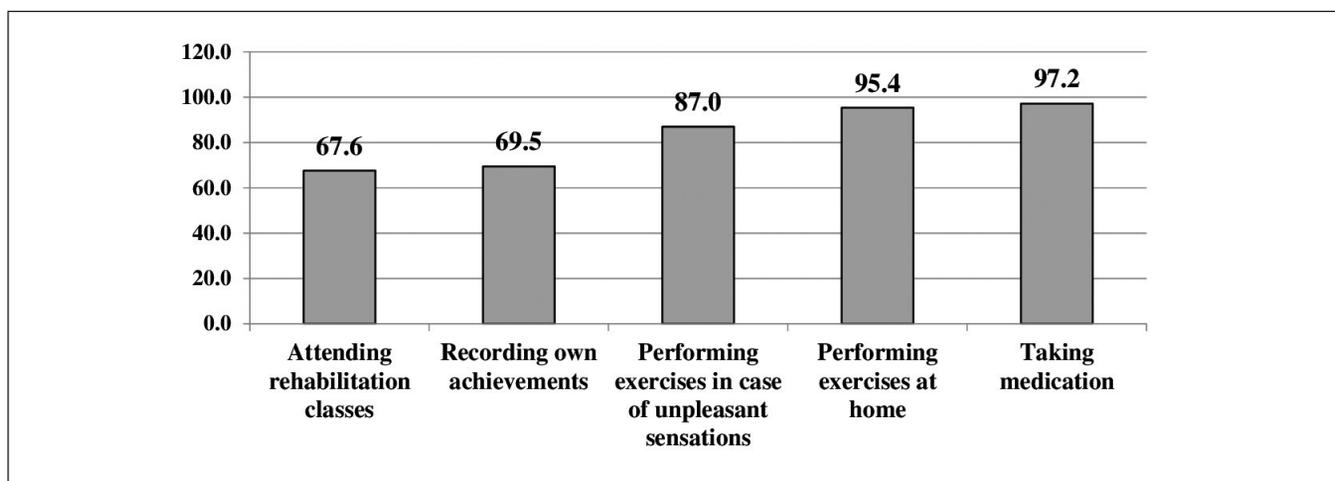


Fig. 1. The level of readiness for the components of rehabilitation, %

## THE AIM

The aim is to investigate and analyse certain aspects of potential adherence to rehabilitation treatment of patients with musculoskeletal injuries.

## MATERIALS AND METHODS

Sociological, graphic and bibliosemantic methods were used during the research. The study was conducted among 108 patients with musculoskeletal injuries on the base of the Public Non-Profit Enterprise «Uzhhorod District Clinical Hospital» of Uzhhorod District Council in Transcarpathian region. The study group consisted of 54% of women and 46% of men. The average age of patients amounted to  $56.5 \pm 12.7$  years. A questionnaire consisted of 25 questions about the importance of rehabilitation and readiness to implement its measures. 6 possible answers were offered to each question. For the questions about the understanding of rehabilitation importance the answers were presented as follows: “Very important”, “Quite important”, “Rather important”, “Rather not important”, “Almost not important”, “Not important”. For the questions about the complexity of rehabilitation measures the answers were presented as follows: “Very difficult”, “Quite difficult”, “Rather difficult”, “Rather not difficult”, “Almost not difficult”, “Not difficult”. For the questions on readiness for rehabilitation measures, the answers were presented as follows: “I definitely will”, “Probably I will”, “Most likely I will”, “Most likely I will not”, “I probably will not”, “I will not”. Questionnaires were offered to patients with injuries after receiving medical care in the acute period. The  $\alpha$ -Cronbach’s coefficient was used in order to determine the reliability of the survey tool.

The licensed program IBM SPSS Statistics and Microsoft Excel were used to calculate the obtained data.

The application of these methods in the study was reviewed and approved by the Committee on Ethics of State Higher Educational Institution «Uzhhorod National University» (Protocol No. 3 of May 19, 2020).

## RESULTS

When analysing the answers of the research participants it was found that only  $26.9 \pm 8.4\%$  of all surveyed patients with musculoskeletal injuries confessed that they had previously received medical rehabilitation services. The majority of participants ( $63.0 \pm 9.1\%$ ) stated that they had no such experience. A small proportion of respondents ( $6.5 \pm 4.6\%$ ) also indicated that they did not remember receiving such services, and  $3.6 \pm 3.5\%$  of patients answered that doctors had previously recommended rehabilitation services, but they considered them not very important for treatment.

Factors that motivate patients to follow restorative care after musculoskeletal injuries were identified. It was found that for  $98.0 \pm 2.6\%$  of patients to varying degrees it is important not to experience limitations in the functioning of their bodies in the future. That is why the majority of respondents indicated that it will not be difficult for them to take medication for a long time ( $91.5 \pm 5.3\%$ ) and perform exercises prescribed by a rehabilitation specialist ( $87.0 \pm 6.3\%$ ). At the same time,  $43.0 \pm 9.3\%$  of patients with injuries stated that it would be difficult for them to perform the prescribed exercises if they caused pain and discomfort.

It is defined that for  $70.4 \pm 8.6\%$  of the surveyed respondents it will be difficult and very difficult to tolerate restrictions in normal life and active recreation, which may occur due to the consequences of injuries.

It was revealed that maintaining sexual activity is not a motivation to restore health – only  $29.6 \pm 8.6\%$  of patients said that it is important for them to maintain sexual activity after an injury. This may be due to the age of the patients interviewed. Therefore, we determined the presence of a correlation between the age and the result. A strong inverse correlation was found between the importance of maintaining sexual activity and the age of the research participants (Pearson’s Correlation Coefficient  $r = -0.724$ ,  $p < 0.001$ ), which indicates that the importance of maintaining sexual activity is inversely proportional to age – the older patients are the less this issue is important for them. The obtained result should be taken into account when developing mea-

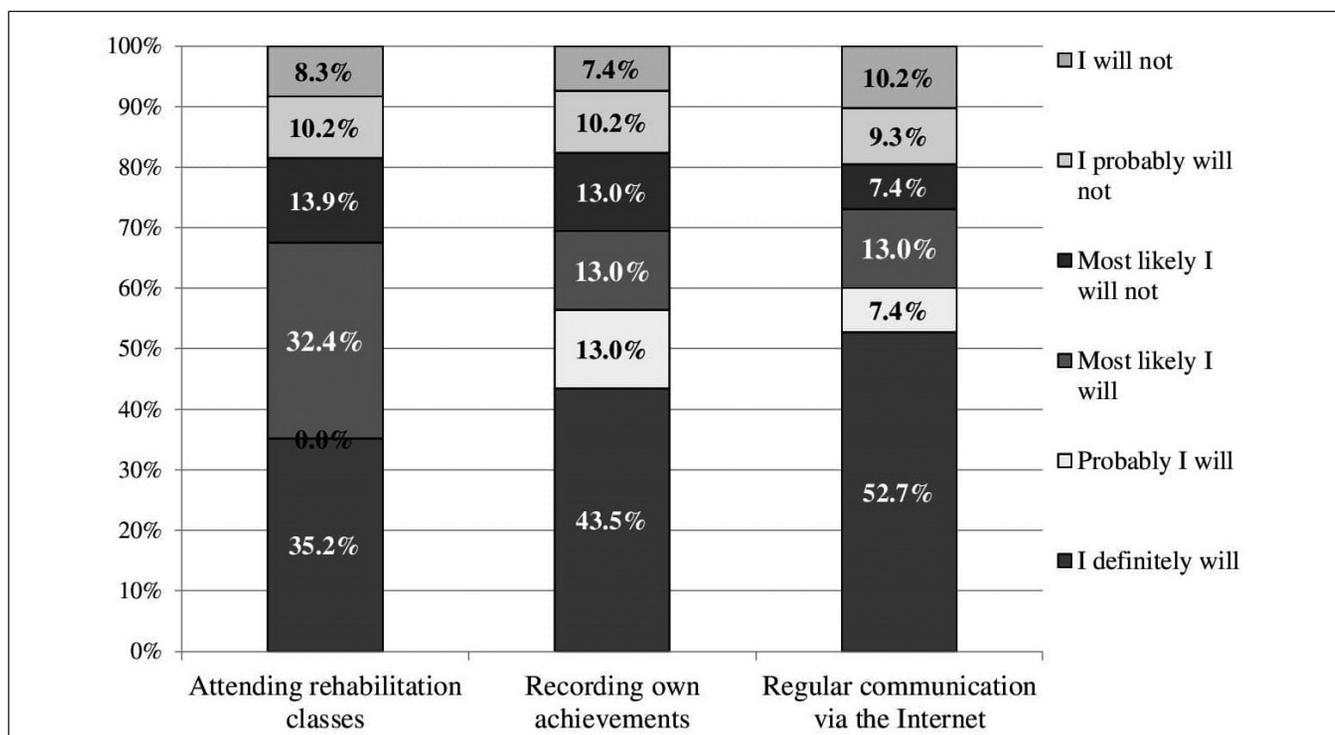


Fig. 2. Distribution of answers to questions on readiness to perform certain measures of rehabilitation, %

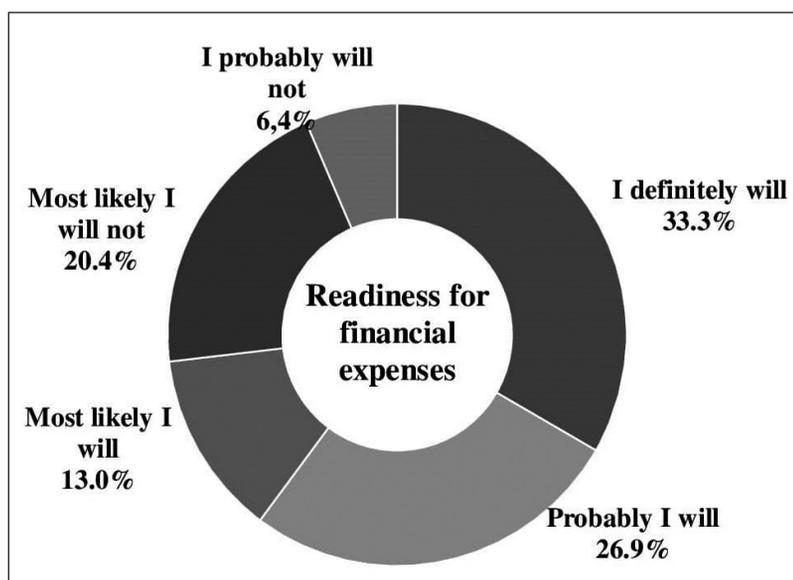


Fig. 3. Distribution of answers to questions on the willingness to spend their own money on rehabilitation, %

asures for the modeling of motivation and commitment to rehabilitation care in different age groups. When analysing the answers to the questions on readiness for rehabilitation, it was found that most of the surveyed participants of the research were willing to take medication prescribed by a doctor ( $97.2 \pm 3.1\%$ ), a slightly smaller amount – to perform physical exercises prescribed by rehabilitation specialists at home ( $95.4 \pm 3.9\%$ ), even fewer patients are ready for this if these exercises cause discomfort ( $87.0 \pm 6.3\%$ ) (Fig. 1).

It should be noted that the vast majority of patients with injuries ( $87.0 \pm 6.3\%$ ) are ready to exercise even in case of unpleasant sensations:  $65.7 \pm 8.9\%$  of people indicated that they will definitely exercise,  $21.3 \pm 7.7\%$  – most likely exercise. But  $13.0 \pm 6.3\%$  of the surveyed patients were also not

categorical and stated that they were unlikely to perform the exercises.

$97.2 \pm 3.1\%$  of the surveyed patients with injuries indicated their readiness to do exercises prescribed by a rehabilitation specialist at home. But a detailed analysis of the answers on the readiness to perform the components of rehabilitation process found that fewer people are ready to perform the proposed tasks:  $67.6 \pm 8.8\%$  of interviewed patients with injuries will attend rehabilitation classes with specialists,  $69.5 \pm 8.7\%$  of respondents will record their own achievements at home (Fig. 2). It was determined that  $73.1 \pm 8.4\%$  of all persons in the study group were ready to maintain regular contact with specialists in rehabilitation treatment via the Internet.

At the same time, a large proportion of study participants indicated that they were not ready to implement the proposed measures: one third would not attend rehabilitation measures in health care facilities ( $32.4 \pm 8.8\%$ ) and would not record their own achievements at home ( $30.6 \pm 8.7\%$ ), and  $26.9 \pm 8.4\%$  do not even want to keep in touch with specialists providing and controlling the rehabilitation process.

We determined the readiness of the interviewed patients with musculoskeletal injuries to spend their own money on rehabilitation:  $73.2 \pm 8.3\%$  of respondents are willing to spend some money on rehabilitation care and only  $26.8 \pm 8.3\%$  of patients said they are rather not ready for this (Fig. 3).

Cronbach's alpha was calculated (0.801) in order to determine the reliability of the survey tool. Its result indicates a good level of reliability of the tool used.

## DISCUSSION

In order to ensure full restorative care of patients with musculoskeletal injuries, their potential adherence to rehabilitation treatment should be determined before developing individual rehabilitation plans. Barriers may arise during rehabilitation, as indicated in separate studies [8, 9]. To prevent this, it is important to establish patients' understanding of the importance of following all prescribed measures, their motivation to restore the previous state of health and functioning of the body, readiness to perform the prescribed rehabilitation measures not only during meetings with specialists but also at home. This is especially important during the introduction of quarantine due to the spread of coronavirus disease.

When analysing the answers to the question about understanding the importance of rehabilitation, it was found that the interviewed patients with injuries understand the importance of rehabilitation treatment and do not want to experience limitations, but admit that they will find it difficult to tolerate pain and discomfort during rehabilitation. According to research, pain is often the reason of reduced commitment to rehabilitation [8, 10, 11]. But at the same time quite a large proportion of our respondents said that they will perform the prescribed exercises, despite the inconvenience. This allows us to predict a high level of adherence to rehabilitation treatment.

With a significant level of understanding the importance of rehabilitation by the participants of research, the vast majority of them are ready to perform most of the components, but without significant changes in normal life and in case of predominant stay at home. It should be considered that the performance of exercises at home is influenced by reduced attachment [12-15]. Before prescribing such exercises, it is necessary to provide the necessary comprehensive information, as it has been proven that this can have a decisive impact on patients' performance [10].

WHO identifies "Social and economic factors", where an important role is played by the financial security of the population, as one of the five groups of factors influencing adherence to treatment [2]. Studies have shown that one of the barriers to rehabilitation treatment may be the necessity

to spend money, which is why patients are not ready for that [8, 16]. Therefore, we paid special attention to the readiness of the interviewed patients with musculoskeletal injuries to spend their own money on rehabilitation. In the current unstable situation of the population in Ukraine, where almost half of the income citizens spend on food (45-47% according to the State Statistics Service), the readiness of  $73.2 \pm 8.3\%$  of surveyed patients with injuries to bear financial costs in order to restore health was unexpected.

All this indicates a significant level of motivation for rehabilitation after injuries of the musculoskeletal system. But the results of the research indicate the need to develop organizational measures to form a commitment to certain components of restorative care: attending rehabilitation classes, recording patients' own achievements, regular contact with specialists to monitor the process of recovery.

## CONCLUSIONS

Determining the initial adherence or potential compliance of the patient to rehabilitation treatment is necessary to properly build a dialogue with the patient and develop an individual rehabilitation plan to work with. It has been established that patients with musculoskeletal injuries are characterized by a high level (over 90%) of understanding of the importance of rehabilitation treatment. The majority of them (97.2%) indicates readiness for rehabilitation at home, to a lesser extent they are ready to attend rehabilitation classes, record their own achievements, maintain contact through information and communication channels. The study showed that people after musculoskeletal injuries are ready for rehabilitation, but without significant changes in normal life and with a predominant stay at home. All this requires the development of organizational measures to form a commitment to individual components of rehabilitation, taking into account the obtained results.

## REFERENCES

1. James S.L., Abate D., Abate K.H. et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018; 392(10159):1789-1858. doi: 10.1016 / S0140-6736 (18) 32279-7.
2. Adherence to long-term therapies: Evidence for action. Geneva: World Health Organization. 2003; 212 p. [https://www.who.int/chp/knowledge/publications/adherence\\_full\\_report.pdf?ua=1](https://www.who.int/chp/knowledge/publications/adherence_full_report.pdf?ua=1) [date access 16.08.2021]
3. Kotel'nikova A.V., Kukshina A. A. Psikhodiagnosticheskie aspekty priverzhennosti k lecheniyu v protsesse meditsinskoj reabilitatsii [The psychodiagnostic aspects of the compliance with treatment in the course of medical rehabilitation]. *Problems of Balneology, Physiotherapy, and Exercise Therapy*. 2016;93(3):4-9. doi: 10.17116/kurort201634-9. (In Russian).
4. Aravitska M.G., Lazareva O.B. Pryntsy py stvorennia ta vyznachennia efektyvnosti systemy zakhodiv dlia podolannia reabilitatsiinoho non-komplaiensu patsientiv z ozhyrinniam [Principles of creating and determining the effectiveness of a system of measures to overcome the rehabilitation non-compliance of obese patients]. *Sportyvna medytsyna i fizychna reabilitatsiia*. 2019;2:51-58. (In Ukrainian)

5. Smith-Forbes E.V., Howell D.M., Willoughby J. et al. Adherence of Individuals in Upper Extremity Rehabilitation: A Qualitative Study. *Arch Phys Med Rehabil.* 2016; 97(8):1262-1268. doi: 10.1016/j.apmr.2015.11.008.
6. Peek K., Carey M., Mackenzie L., Sanson-Fisher R. Patient adherence to an exercise program for chronic low back pain measured by patient-report, physiotherapist-perception and observational data. *Physiother Theory Pract.* 2019; 35(12):1304-1313. doi: 10.1080/09593985.2018.1474402.
7. Dhondt E., Van Oosterwijck J., Cagnie B. et al. Predicting treatment adherence and outcome to outpatient multimodal rehabilitation in chronic low back pain. *J Back Musculoskelet Rehabil.* 2020; 33(2):277-293. doi: 10.3233/BMR-181125.
8. Conti A., Dimonte V., Rizzi A. et al. Barriers and facilitators of education provided during rehabilitation of people with spinal cord injuries: A qualitative description. *PLoS One.* 2020; 15(10):e0240600. doi: 10.1371/journal.pone.0240600.
9. Naqvi A.A., Naqvi S.B.S., Shahid S., Yazdani N. Barriers to rehabilitation treatment among poliomyelitis infected patients in Karachi, Pakistan: a mix-methods study. *Khyber Medical University Journal.* 2016; 8(1):12-21.
10. Peek K., Carey M., Mackenzie L., Sanson-Fisher R. Patient-perceived barriers and enablers to adherence to physiotherapist prescribed self-management strategies. *New Zealand Journal of Physiotherapy.* 2018; 46(3):105-112. doi:10.15619/NZJP/46.3.03.
11. Thompson E.L., Broadbent J., Bertino M. D., Staiger P. K. Do pain-related beliefs influence adherence to multidisciplinary rehabilitation?: A systematic review. *The Clinical journal of pain.* 2016; 32(2):164-178. doi:10.1097/AJP.0000000000000235.
12. Medina-Mirapeix F., Escolar-Reina P., Gascón-Cánovas J.J. et al. Predictive factors of adherence to frequency and duration components in home exercise programs for neck and low back pain: an observational study. *BMC Musculoskelet Disord.* 2009;10:155. doi:10.1186/1471-2474-10-155.
13. Essery R., Geraghty A.W., Kirby S., Yardley L. Predictors of adherence to home-based physical therapies: a systematic review. *Disability and rehabilitation.* 2017;39(6):519-534. doi:10.3109/09638288.2016.1153160.
14. Hügli A.S., Ernst M.J., Kool J. et al. Adherence to home exercises in non-specific low back pain. A randomised controlled pilot trial. *J Bodyw Mov Ther.* 2015;19(1):177-85. doi:10.1016/j.jbmt.2014.11.017.
15. Mourad S., Eddine H.K., Karaki H., Hassan K. H. Patient's adherence to prescribed home exercises: Barriers and interventions. *Genetics and Molecular Research.* 2018; 17(1). doi:10.4238/gmr16039898.
16. Naqvi A.A., Hassali M.A., Naqvi S.B.S. et al. Development and validation of the General Rehabilitation Adherence Scale (GRAS) in patients attending physical therapy clinics for musculoskeletal disorders. *Musculoskelet Disord.* 2020;21(1):65. doi:10.1186/s12891-020-3078-y.

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#### Conflict of interest:

*The Authors declare no conflict of interest.*

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