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Assessment of the relationship between prognostic risk factors for lower back pain and extent of its interference with daily activities

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Оцінка взаємозв'язку між прогностичними факторами ризику болю в нижній частині спини та ступенем його впливу на повсякденну активність

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Introduction

Disorders and diseases of the musculoskeletal system are quite widespread in modern society [1, 2] causing a significant number of problems, the solution of which requires involving a wide range of specialists [3, 4]. One of such problems is non-specific low back pain (LBP), which is considered one of the biggest health issues in the world [5]. LBP can be a consequence of various pathologies or diseases. However, the symptoms are related to LBP in 90–95% of such cases with serious pathologies being the reason for only < 1% [6]. In most cases, LBP has a positive prognosis and passes within 6 weeks. However, two-thirds of patients may still complain of some pain manifestations after 3 and 12 months. Recurrence of pain is also quite common and can be as high as 33% within 1 year [7].

Prognostic factors for LBP occurrence may include chronic diseases, excessive psychological stress, depression, anxiety, fear, smoking, overweight, low level of physical activity, heavy physical work, and presence of previous painful episodes [8, 9, 10, 11]. It is important for rehabilitation professionals to timely identify risk factors that can lead to long-term pain, because presence of CLBP can significantly affect the level of daily activities and lead to disability [12]. Clinical guidelines mostly recommend using education, self-management, and physical therapy in the treatment for LBP [13, 14]. In its turn, prognostic assessment of patients with LBP allows to understand better their condition, determine and optimize the strategy of therapeutic intervention, taking into account patient's individual characteristics.

The purpose of the study is to assess the relationship between prognostic risk factors for CLBP and extent of its interference with daily activities at the beginning of therapeutic intervention.

Object, materials and research methods

Object of the Study. The present study aimed to explore and characterize the pain syndrome profile among patients with low back pain (LBP), focusing on three core aspects: the intensity of pain, the risk of chronic low back pain (CLBP) development, and the impact of pain on daily functional activities and overall quality of life. The study was conducted over a one-year period, from April 2023 to April 2024, at the rehabilitation center of the Institute of Vertebrology and Rehabilitation in Kyiv, Ukraine.

A total of 146 adult participants were enrolled in the study, comprising 66 males (45.2%) and 80 females (54.8%). All participants were patients of the center who had voluntarily agreed to participate by providing written informed consent. Their consent allowed for the collection, storage, and analysis of the data obtained through clinical assessments and self-reported questionnaires.

To ensure homogeneity of the sample and reliability of results, strict inclusion and exclusion criteria were applied. Only those patients who had completely and accurately filled out the required questionnaires were included. Patients were excluded if they presented with a radicular pain syndrome or exhibited clinical signs of other severe pathologies (e.g., oncological or systemic disorders) that would necessitate specialized medical consultation beyond the scope of this study.

In addition to primary outcomes, the study also assessed how demographic and physiological factors such as age, gender, and body mass index (BMI) influenced the characteristics of pain and its effects on the patients' functional status and risk profiles.

Methods of Research. The collected data underwent rigorous statistical analysis to ensure validity and interpretability of findings.

Data Preprocessing and Distribution Testing:

− The Shapiro–Wilk test was employed to determine whether the continuous variables conformed to a normal distribution. This test was chosen due to its high sensitivity and statistical power, especially suitable for moderate-sized samples ($n < 2000$).

− The test revealed a significant deviation from normality ($p < 0.05$) in the dataset. As a result, the researchers opted to use non-parametric statistical methods for further analysis.

Descriptive and Inferential Statistics:

− To describe the central tendency and variability of the data, the median and interquartile range (IQR) (25th and 75th percentiles) were calculated.

− Spearman's rank correlation coefficient (ρ) was used to assess the strength and direction of relationships between continuous or ordinal variables. A p-value < 0.05 was considered indicative of statistical significance, even in cases where correlations were weak to moderate.

Group Comparisons and Nominal Data Analysis:

− Pearson's chi-squared test (χ^2) was applied to assess: the distribution of patients based on their risk of CLBP development (nominal scale); the degree of pain-related interference with quality of life (nominal scale); gender differences in these distributions.

− In instances where the assumptions for the chi-squared test were not met (i.e., expected frequency in any cell < 5), the Fisher's exact test was used to maintain statistical accuracy.

Precision and Reporting Standards:

− All descriptive statistics were reported to one decimal place, while correlation coefficients and test statistics were presented to three decimal places.

− The p-values were reported to four decimal places, except where values were less than 0.05, in which case the threshold notation "$p < 0.05$" was used.

− The significance level was set at P = 0.95 (95%), though some results were found to be significant at P = 0.99 (99%), indicating a higher degree of reliability.

All statistical analyses were performed using STATISTICA 10.0, a comprehensive software suite for data analysis and visualization.

Ethical Considerations. The study was conducted in accordance with ethical standards. All participants were fully informed about the purpose and procedures of the research and provided written informed consent. The anonymity and confidentiality of all collected data were ensured, and participants had the right to withdraw from the study at any time without consequences. The ethical principles outlined in the Declaration of Helsinki were observed throughout the study.

Data processing. All collected data were stored securely and processed in compliance with ethical and data protection standards. The information obtained from questionnaires and assessments was anonymized before analysis. Statistical processing was performed using STATISTICA 10.0 software. Non-parametric methods were applied due to the non-normal distribution of most variables. Descriptive statistics (median and interquartile range) and inferential statistics (Spearman's rank correlation, Pearson's chi-squared test, and Fisher's exact test) were used to analyze relationships between variables and assess statistical significance.

Research results

It was revealed that age characteristics and indicators of physical development, as well as the Quetelet index (BMI) did not have a normal distribution: Shapiro-Wilk test for these indicators varied from 0.927 to 0.972 ($p<0.05$). Therefore, these indicators were described using robust statistic: median and interquartile range. Median age of the patients was 33 years (25–75 percentiles: 29-40 years). Median body length and weight were 172 cm (165–179 cm) and 73 kg (59–85 kg), respectively. Median BMI was 24.1 kg·m², which corresponds to a normal weight-to-length ratio.

Characteristics of CLBP development have been determined and are shown in the table 1.

It was revealed that the age of patients does not have a statistically significant impact on the pain syndrome profile: Spearman's ρ varied from -0.07 to 0.087 ($p>0.05$) (Table 2).

Table 1

Characteristics of CLBP development (n=146)

Pain syndrome profile	Shapiro-Wilk test results		Robust statistic		
	W	P	Me	25%	75%
Pain intensity, score	0.960	0.0003	4.0	3.0	5.0
Risk for long-term pain development, score	0.899	<0.05	2.0	1.0	3.0
Impact of pain on the quality of life, %	0.952	0.0001	14.0	8.0	20.0

Table 2

Correlation matrix of the studied indicators (n=146)

Indicators	Age	BMI	Pain intensity	Chronicity risk	Pain impact
Age	1.000	0.297*	-0.074	0.087	0.087
BMI	0.297*	1.000	0.114	0.184*	0.064
Pain intensity	-0.074	0.114	1.000	0.251*	0.273*
Risk of chronic pain development	0.087	0.184*	0.251*	1.000	0.551*
Pain impact	0.087	0.064	0.273*	0.551*	1.000

Note: * in case of a proven statistical significance of the coefficient at the level of 0.05

On the other hand, BMI has a direct weak statistically significant relationship with age (ρ=0.297; p=0.0001) and a direct very weak statistically significant relationship with the risk of chronic pain development (ρ=0.184; p=0.0131). The most statistically significant correlations (p<0.05) are demonstrated by chronicity risk (Fig. 1).

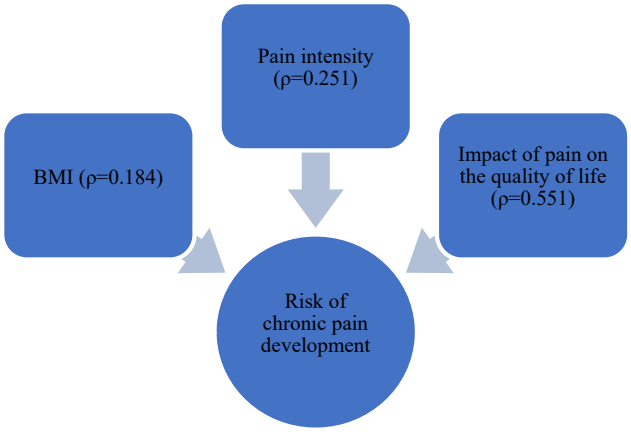

Fig. 1. Interaction between the studied indicators (n=146)

Apparently, the closest interrelation is observed between the assessment of the risk of long-term pain development and the impact of pain on patients' quality of life. The analysis showed a moderate positive correlation between the assessment of the risk of chronic pain development and patients' quality of life (ρ = 0.551). It means that patients with a higher estimated risk of chronic pain development tend to have lower quality of life. Approximately 30.4% (0.551^2*100=30.4%) of the variation in the assessment of quality of life can be explained by the variation in the assessment of the risk of CLBP development.

During the study, the proportions of patients in the clinic who have an average, low, and high risk of CLBP development, as well as their distribution according to the level of pain impact on the quality of life, were determined (Fig. 2).

It was established that the patients diagnosed with a low risk of CLBP development were significantly (χ^2=41.671; p<0.05) prevailing among the examined participants of the study. The same applies to the influence of pain on patients' quality of life: patients with minimal interference with the quality of life under the influence of pain statistically prevailed (χ^2=53.041; p<0.05) among the examined participants. On the other hand, the incidence of high risk of CLBP development and severe level of interference turned out to be insignificant.

In order to increase statistical power of the analysis and taking into account the insufficient number of observations in some categories, we combined the categories with a low incidence in the conjugation tables. This enabled us to reveal more distinct differences between the genders regarding severity of pain and its impact on the quality of life. Although this approach may lead to some loss of details, it provided us with more reliable statistical results.

Visual analysis of conjugation tables indicates that, among both males and females, reduction in the risk of CLBP development is accompanied by reduction in the impact of lower back pain on the quality of life (Fig. 3).

The analysis revealed that the differences between males and females with low risk of CLBP development regarding the frequency of minimal quality of life disruptions are not statistically significant (p=0.1741). At the same time, despite some differences, patients with an average and high risk of chronic pain development did not show any statistically significant differences (χ^2=1.943; p=0.1633) by gender regarding the frequency of minimal quality of life disruptions caused by pain.

Comparison of patients with body weight deficiency, normal weight, overweight and obesity did not reveal statistically significant (χ2=0.015; p=0.9025) differences

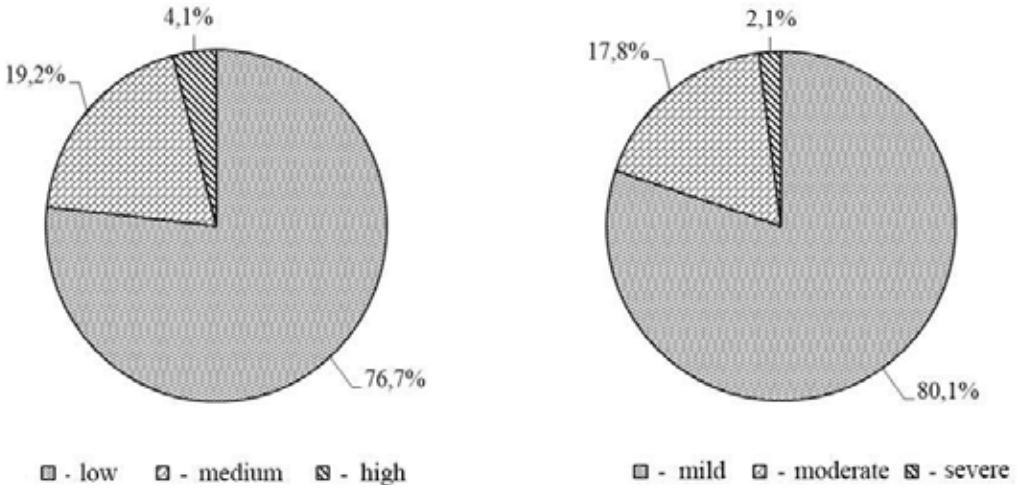

Fig. 2. Distribution of patients (n=146): a) by the risk of chronic back pain development; b) by the extent of interference with the quality of life under the influence of pain

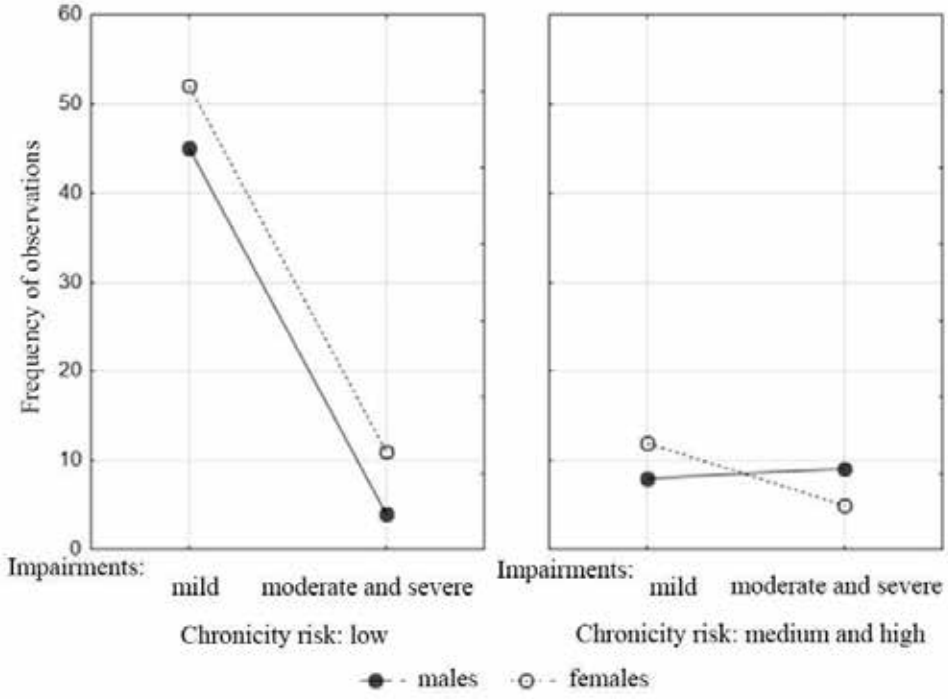

Fig. 3. Graph of interaction of frequencies between cases of risk of CLBP development and the level of quality of life disorders and gender (n=146)

in the frequency of CLBP development. For example, underweight and obese patients in total had 22 low-risk cases and 7 medium- and high-risk cases, while among normal-weight and overweight patients there were 90 and 27 such cases, respectively. These results show lack of relation between body weight and the risk of chronic pain development (Fig. 4).

The most significant differences were revealed between the proportions of obese patients, among which 7.8% more patients demonstrate medium and high risk of CLBP development as compared with the others. However, the distribution of obese patients by the risk of CLBP development did not differ from the equal distribution ($\chi 2$=1.471; p=0.2253). These results, along with the data from the other groups, indicate the lack of statistically significant (p>0.05) differences in the risk pattern within each body weight group.

The analysis of adverse factors that can increase pain syndrome showed that anxiety is the most dangerous factor that increases the risk of CLBP development (Fig. 5).

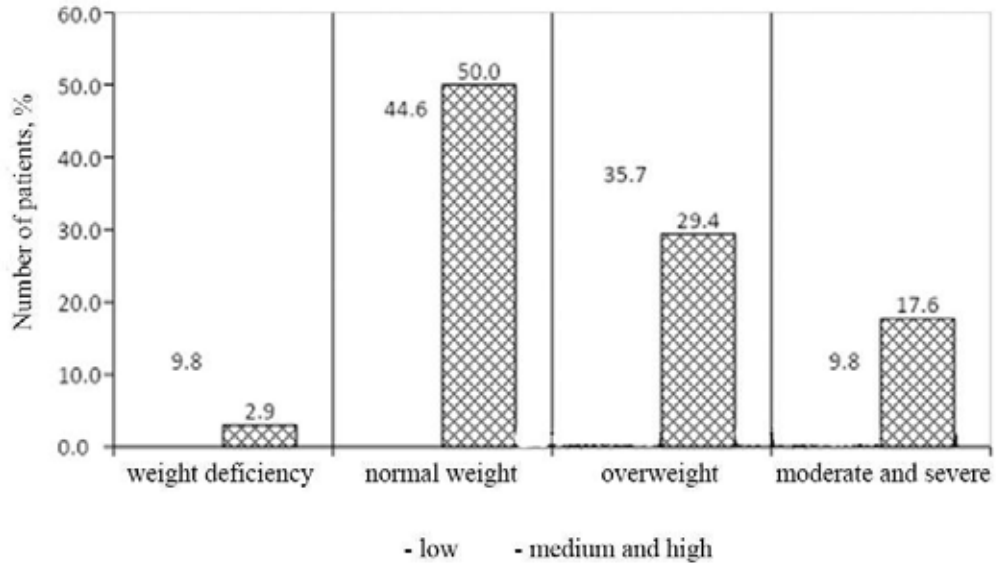

Fig. 4. Distribution of patients according to weight-for-length ratio depending on the risk of chronic pain development (n=146)

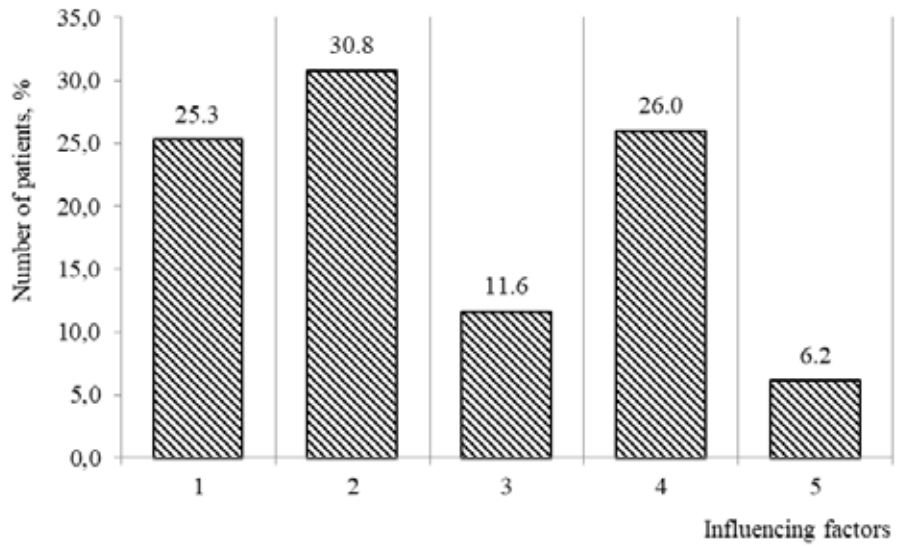

Fig. 5. Analysis of adverse factors that may aggravate pain syndrome (n=146), where: 1 – fear; 2 – anxiety; 3 – catastrophizing; 4 – depression; 5 – concern

Comparison of the frequency of cases when patients indicated the triad «fear-anxiety-depression» and other factors showed a statistically significant advantage of the former (χ^2=60.521; p<0.05).

Analysis of the frequency of cases when the risk of CLBP development was increased by psychological factors showed that males and females are equally susceptible to their influence. However, a detailed analysis of p-values revealed an interesting trend: in contrast to other studied factors, such as stress, anxiety, catastrophizing, and concern, where p-values ranged from 0.1023 to 0.9643, there is a trend toward an increased impact of depression on CLBP development (p≥0,05) (Table 3).

Although this value does not reach the traditional level of statistical significance (p<0.05), it indicates a potentially important relationship and requires further investigation with a larger sample.

Discussion of research results

The findings of this study highlight the multifactorial nature of chronic low back pain (CLBP) and reinforce the importance of early identification of prognostic risk factors that contribute to its persistence and impact on daily functioning. The use of validated tools such as the STarT Back Screening Tool (SBST), Numerical Rating Scale (NRS), and Oswestry Disability Index (ODI) allowed for a comprehensive assessment of both physical and psychological dimensions of the pain experience.

A moderate positive correlation (ρ = 0.551) was found between SBST scores and the degree of disability as measured by the ODI, suggesting that individuals at higher risk of developing chronic pain also tend to experience greater disruption in daily activities. This finding is consistent with previous literature emphasizing

Table 3

Analysis of the impact of psychological factors on pain development depending on gender (n=146)

Factors of influence		Conjugation table		Comparative analysis	
		Males	Females	χ^2	P
Fear	0	45	64	2.670	0.1023
	1	21	16		
Anxiety	0	45	58	0.916	0.3385
	1	23	22		
Catastrophizing	0	59	70	0.126	0.7226
	1	7	10		
Depression	0	44	64	3.339	0.0677
	1	22	16		
Concern	0	62	75	0.002	0.9643
	1	4	5		

Note: 0 – the factor has no influence; 1 – the factor has some influence

the strong interplay between psychological factors and functional outcomes in musculoskeletal disorders.

Among psychological predictors, anxiety and depression were identified as the most influential, with the triad of fear-anxiety-depression showing a statistically significant predominance over other factors ($\chi^2 = 60.521$; $p < 0.05$). Interestingly, while both men and women reported psychological distress, no significant gender differences were found in its effect on CLBP development, indicating a universal vulnerability across sexes during periods of increased psychosocial strain, such as wartime.

Anthropometric variables like BMI showed only weak correlations with pain intensity and chronicity risk, suggesting that body composition plays a limited role in predicting disability related to LBP in this population.

These results support the clinical utility of a stratified care approach based on psychological screening and risk profiling, as recommended in international guidelines. Integrating psychometric screening into rehabilitation planning may enhance outcomes by enabling targeted interventions. Given the unique wartime context in which this study was conducted, the psychological burden appears to be a particularly critical factor, warranting further investigation and attention in future rehabilitation strategies for civilian populations exposed to chronic stress.

Prospects for further research

The results of this study open several avenues for future investigation aimed at improving the management and prevention of chronic low back pain (CLBP), particularly in populations exposed to prolonged psychosocial stress. One of the most important directions is the longitudinal assessment of psychological factors such as anxiety, depression, and catastrophizing, to determine their dynamic influence on pain chronicity and functional outcomes over time. Tracking these indicators throughout rehabilitation could help refine individualized treatment plans and improve patient adherence.

Additionally, further studies should explore the effectiveness of stratified rehabilitation interventions based on the STarT Back Screening Tool (SBST) risk levels. Randomized controlled trials comparing tailored therapeutic approaches (e.g., cognitive-behavioral therapy, physical activity programs, educational interventions) across different SBST subgroups could validate the predictive utility of this model in real clinical settings.

Given the study was conducted during wartime, future research should also investigate the contextual factors associated with armed conflict, such as displacement, trauma exposure, and socio-economic instability, and how they interact with musculoskeletal disorders. Comparing civilian and military populations or assessing pain outcomes in post-conflict settings could yield important insights into resilience and vulnerability mechanisms.

Moreover, expanding the sample size and including biomarkers of stress and inflammation could help deepen the understanding of the physiological pathways linking psychological distress to chronic pain. Finally, the development of digital screening tools and telerehabilitation platforms may enhance access to early risk assessment and intervention, especially in low-resource or crisis environments.

These perspectives underscore the need for interdisciplinary and patient-centered research, combining physical therapy, psychology, and public health approaches to optimize outcomes for individuals suffering from CLBP.

Conclusions

LBP is a multifactorial condition that requires professionals to assess physical, social, and psychological factors in order to design an effective therapy program. Identifying prognostic factors of LBP is, in turn, an essential component in reducing the risk of developing CLBP [11], as well as in improving quality of life and the level of daily functioning. Special attention is given to psychological prognostic factors, which may be key contributors to the development of persistent symptoms and prolonged pain. The stratified approach of the STarT Back Screening Tool (SBST) not only supports clinical decision-making regarding therapeutic interventions by considering individual risk factors but also serves as a useful tool for screening psychological distress [18].

This is the first study in Ukraine to assess the risk level of developing persistent pain using the STarT Back Screening Tool (SBST) among patients with non-specific back pain and to determine the relationship between SBST scores and the degree of functional disability in daily activities (ODI). The obtained data suggest that the assessment of prognostic risk factors for persistent pain using SBST shows a moderate positive correlation with impairment in daily activities and quality of life as measured by the Oswestry Disability Index (ODI) ($\rho = 0.551$). Among the most critical prognostic psychometric factors in the civilian population during wartime are anxiety and depression.

The analysis of prognostic psychometric factors showed that anxiety is the most critical factor increasing the risk of developing CLBP. A comparison of the frequency of cases in which patients reported the triad of "fear-anxiety-depression" versus other factors revealed a statistically significant predominance of the former ($\chi^2 = 60.521$; $p < 0.05$). In terms of frequency, both men and women showed equal susceptibility to the intensified impact of psychological factors on the development of CLBP. However, a detailed analysis of p-values among psychometric factors indicated a trend toward a stronger influence of depression on the development of CLBP ($p \geq 0.05$). The study supplemented and confirmed existing evidence indicating the significant impact of prognostic psychological factors on pain intensity, level of daily activity, and quality of life. It also supported the findings of our colleagues [17], which showed an association between medium and high SBST risk levels and higher ODI scores at the beginning of therapy.

It is important to note that the results of this study are the first obtained under wartime conditions. Based on the collected data, it can be hypothesized that anxiety and depression are the most critical psychological factors contributing to CLBP among the civilian population during wartime. These factors require the identification of optimal therapeutic intervention strategies to reduce the risk of developing CLBP in wartime conditions.

Bibliography

1. Fedorenko S, Balazh M, Vitomskyi V, et al. 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. Health, sport, rehabilitation. 2020;1:59–67. DOI: 10.34142/HSR.2020.06.01.07.

2. Dereka T. Dependence of public health on country's economic indicators. Zdravotnicke Listy. 2020;2:82–90. DOI: 10.32782/1339-3022/2020/2.8.13.

3. Fedorenko S, Vitomskyi V, Lazarieva O, et al. The results of the analysis of the criteria of therapeutic alliance of patients orthopedic profile of outpatient physical therapy program. Health, sport, rehabilitation. 2019;5(3):15–23. DOI: 10.34142/HSR.2019.05.03.02.

4. Vitomskyi V, Lazarieva O, Fedorenko S, et al. Methods of management and motivation in personnel management of the center of physical therapy and improving the quality of services for patients with orthopedic profile at the outpatient stage. Health, sport, rehabilitation. 2019;2:17–27. DOI: 10.34142/HSR.2019.05.01.02.02.

5. Balagué F, Mannion A, Pellisé F, et al. Non-specific low back pain. Lancet. 2012;379(9814):482–491. DOI: 10.1016/S0140-6736(11)60610-7.

6. Bardin L, King P, Maher C. Diagnostic triage for low back pain: a practical approach for primary care. Med J Aust. 2017;206(6):268–273. DOI: 10.5694/mja16.00828.

7. Costa M, Maher C, Hancock M, et al. The prognosis of acute and persistent low-back pain: a meta-analysis. CMAJ. 2012;184(11):E613–E624. DOI: 10.1503/cmaj.111271.

8. Hartvigsen J, Hancock M, Kongsted A, et al. What low back pain is and why we need to pay attention. Lancet. 2018;391(10137):2356–2367. DOI: 10.1016/S0140-6736(18)30480-X.

9. Згурський А, Закаблуцький Ю, Федоренко С. Аналіз впливу психосоціальних чинників на результат фізіотерапевтичного втручання при болю в нижній частині спини. Спортивна медицина, фізична терапія та ерготерапія. 2021;(2):106–109.

10. Nieminen K, Pyysalo L, Kankaanpää M, et al. Prognostic factors for pain chronicity in low back pain: a systematic review. Pain Rep. 2021;6(1):e919. DOI: 10.1097/PR9.0000000000000919.

11.Otero-Ketterer E, Peñacoba-Puente C, Pinheiro-Araujo C, et al. Biopsychosocial factors for chronicity in individuals with non-specific low back pain: an umbrella review. Int J Environ Res Public Health. 2022;19(16):10145. DOI: 10.3390/ijerph191610145.

12. Hoy D, March L, Brooks P, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. Ann Rheum Dis. 2014;73:968–974. DOI: 10.1136/annrheumdis-2013-204428.

13. Foster N, Anema J, Cherkin D, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. Lancet. 2018;391(10137):2368–2383. DOI: 10.1016/S0140-6736(18)30489-6.

14. Maughan E, Lewis J. Outcome measures in chronic low back pain. Eur Spine J. 2010;19(9):1484–1494. DOI: 10.1007/s00586-010-1353-6.

15. Hill J, Whitehurst D, Lewis M, et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. Lancet. 2011;378(9802):1560–1571. DOI: 10.1016/S0140-6736(11)60937-9.

16. Lemmers G, Melis R, Pagen S, et al. The association of the STarT Back Screening Tool and type of leg pain with low back pain disability trajectories: a prospective cohort study. BMC Musculoskelet Disord. 2024;25:193. DOI: 10.1186/s12891-024-07301-8.

17. Beneciuk J, et al. Subgrouping for patients with low back pain: a multidimensional approach incorporating cluster analysis and the STarT Back Screening Tool. J Pain. 2015;16(1):19–30. DOI: 10.1016/j.jpain.2014.10.004.

18. Павлова ЮО, Федорович ОБ, Передерій АВ, Тимрук-Скоропад КА. Розроблення української версії індексу інвалідності Освестрі: міжкультурна адаптація та валідація інструменту. Український журнал медицини, біології та спорту. 2021;6(3):307–314. DOI: 10.26693/jmbs06.03.300.

References

1. Fedorenko S, Balazh M, Vitomskyi V, et al. 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. Health, Sport, Rehabilitation. 2020;1:59–67. DOI: 10.34142/HSR.2020.06.01.07.

2. Dereka T. Dependence of public health on country's economic indicators. Zdravotnicke Listy. 2020;2:82–90. DOI: 10.32782/1339-3022/2020/2.8.13.

3. Fedorenko S, Vitomskyi V, Lazarieva O, et al. The results of the analysis of the criteria of therapeutic alliance of patients orthopedic profile of outpatient physical therapy program. Health, Sport, Rehabilitation. 2019;5(3):15–23. DOI: 10.34142/HSR.2019.05.03.02.

4. Vitomskyi V, Lazarieva O, Fedorenko S, et al. Methods of management and motivation in personnel management of the center of physical therapy and improving the quality of services for patients with orthopedic profile at the outpatient stage. Health, Sport, Rehabilitation. 2019;2:17–27. DOI: 10.34142/HSR.2019.05.01.02.02.

5. Balagué F, Mannion A, Pellisé F, et al. Non-specific low back pain. Lancet. 2012;379(9814):482–491. DOI: 10.1016/S0140-6736(11)60610-7.

6. Bardin L, King P, Maher C. Diagnostic triage for low back pain: a practical approach for primary care. Med J Aust. 2017;206(6):268–273. DOI: 10.5694/mja16.00828.

7. Costa M, Maher C, Hancock M, et al. The prognosis of acute and persistent low-back pain: a meta-analysis. CMAJ. 2012;184(11):E613–E624. DOI: 10.1503/cmaj.111271.

8. Hartvigsen J, Hancock M, Kongsted A, et al. What low back pain is and why we need to pay attention. Lancet. 2018;391(10137):2356–2367. DOI: 10.1016/S0140-6736(18)30480-X.

9. Zgurskyi A, Zakablutskyi Y, Fedorenko S. Analiz vplyvu psykhosotsial′nykh chynnykiv na rezul′tat fizioterapevtychnoho vtruchannya pry bolyu v nyzhniy chastyni spyny [Analysis of the influence of psychosocial factors on the outcome of physical therapy intervention for lower back pain]. Sports Medicine, Physical Therapy and Occupational Therapy. 2021;(2):106–109. (in Ukrainian).

10. Nieminen K, Pyysalo L, Kankaanpää M, et al. Prognostic factors for pain chronicity in low back pain: a systematic review. Pain Rep. 2021;6(1):e919. DOI: 10.1097/PR9.0000000000000919.

11.Otero-Ketterer E, Peñacoba-Puente C, Pinheiro-Araujo C, et al. Biopsychosocial factors for chronicity in individuals with non-specific low back pain: an umbrella review. Int J Environ Res Public Health. 2022;19(16):10145. DOI: 10.3390/ijerph191610145.

12. Hoy D, March L, Brooks P, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. Ann Rheum Dis. 2014;73:968–974. DOI: 10.1136/annrheumdis-2013-204428.

13. Foster N, Anema J, Cherkin D, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. Lancet. 2018;391(10137):2368–2383. DOI: 10.1016/S0140-6736(18)30489-6.

14. Maughan E, Lewis J. Outcome measures in chronic low back pain. Eur Spine J. 2010;19(9):1484–1494. DOI: 10.1007/s00586-010-1353-6.

15. Hill J, Whitehurst D, Lewis M, et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. Lancet. 2011;378(9802):1560–1571. DOI: 10.1016/S0140-6736(11)60937-9.

16. Lemmers G, Melis R, Pagen S, et al. The association of the STarT Back Screening Tool and type of leg pain with low back pain disability trajectories: a prospective cohort study. BMC Musculoskelet Disord. 2024;25:193. DOI: 10.1186/s12891-024-07301-8.

17. Beneciuk J, et al. Subgrouping for patients with low back pain: a multidimensional approach incorporating cluster analysis and the STarT Back Screening Tool. J Pain. 2015;16(1):19–30. DOI: 10.1016/j.jpain.2014.10.004.

18. Pavlova I, Fedorovych O, Perederiy A, et al. Rozroblennya ukrayins′koyi versiyi indeksu invalidnosti Osvestri: mizhkul′turna adaptatsiya ta validatsiya instrumentu [Development of the Ukrainian version of Oswestry Disability Index: intercultural adaptation and validation of the tool]. Ukr J Med Biol Sport. 2021;6(3):300–309. DOI: 10.26693/jmbs06.03.300 (in Ukrainian).

Purpose. Chronic lower back pain (CLBP) disrupts daily activities and negatively affects work capacity and socio-economic well-being worldwide. This study aimed to explore the relationship between prognostic physical and psychosocial risk factors and interference with daily activities in patients with non-specific back pain using the stratified approach of the STarT Back Screening Tool.

Materials and methods. The study was conducted at the «Institute of Vertebrology and Rehabilitation» in Kyiv, Ukraine, involving 146 participants (66 males and 80 females) with lower back pain complaints. Assessment tools included: Numerical Rating Scale (NRS) for pain intensity, STarT Back Screening Tool (SBST) for chronic pain risk stratification, Oswestry Disability Index (ODI) for evaluating the impact of pain on daily activities. Patients were categorized into low (112 patients, 76.7%), medium (28 patients, 19.2%), and high-risk groups based on the SBST.

Results. A moderate positive correlation between SBST and ODI scores was observed ($\rho = 0.551$). Fear, anxiety, and depression were statistically predominant among psychometric factors ($\chi^2 = 60.521$; $p < 0.05$). Anxiety and depression were the most frequently reported psychological risks contributing to chronic pain. Demographic and anthropometric indicators (such as age and BMI) showed only weak or no correlation with pain characteristics. Psychological factors were dominant predictors of pain chronicity, regardless of gender.

Conclusions. This is the first study in Ukraine to assess the relationship between SBST and functional disability in patients with non-specific back pain during wartime. The findings highlight the importance of integrating psychological risk factor screening (particularly anxiety and depression) into rehabilitation strategies to enhance functional outcomes.

Key words: rehabilitation, physical therapy, rehabilitation evaluation, back pain, daily activities, quality of life, client-centeredness, restoration of functional independence.

Метою дослідження було оцінити взаємозв'язок між прогностичними фізичними та психосоціальними факторами ризику розвитку хронічного болю у нижній частині спини та ступенем його впливу на повсякденну активність пацієнтів. Додатково досліджувалася частота виявлення ключових психоемоційних предикторів (зокрема, тривоги, депресії та катастрофізації) у пацієнтів із різними рівнями ризику за шкалою STarT Back Screening Tool. Також було вивчено роль соціально-демографічних характеристик, таких як вік, індекс маси тіла, стать, у формуванні загального ризик-профілю пацієнтів. Особливу увагу приділено виявленню психологічних чинників, що підвищують ризик хронізації болю, в умовах воєнного часу серед цивільного населення.

Матеріали та методи. У дослідженні взяли участь 146 пацієнтів (66 чоловіків і 80 жінок) із неспецифічним болем у нижній частині спини, які проходили лікування в Інституті вертебрології та реабілітації (м. Київ) у період із квітня 2023 по квітень 2024 р. До дослідження включалися лише пацієнти без симптомів радикулопатії, онкологічних, системних або психіатричних захворювань. Застосовувалися валідизовані інструменти: Numerical Rating Scale (NRS) для визначення інтенсивності болю, STarT Back Screening Tool (SBST) для стратифікації ризику розвитку хронічного болю у нижній частині спини, Oswestry Disability Index (ODI) для оцінки ступеня впливу болю на повсякденне життя. Пацієнти були розподілені на групи за рівнем ризику: низький (76,7%), середній (19,2%) та високий (4,1%). Для обробки даних використовувалися описова статистика, коефіцієнт рангової кореляції Спірмена, χ^2-критерій Пірсона та тест Фішера.

Результати. Результати засвідчили, що вікові та антропометричні показники (вік, індекс маси тіла) не мали значущого впливу на інтенсивність болю чи ризик його хронізації ($\rho < 0,2$; $p > 0,05$). Водночас було виявлено помірний позитивний кореляційний зв'язок між показниками SBST та рівнем обмеження повсякденної активності за шкалою ODI ($\rho = 0,551$; $p < 0,05$), що свідчить про те, що зростання ризику розвитку хронічного болю у нижній частині спини супроводжується погіршенням

якості життя. Особливу увагу було приділено психосоціальним факторам. Статистично значущою (χ^2 = 60,521; p <0,05) виявилася перевага тріади «страх – тривога – депресія» у пацієнтів із вищим ризиком хронізації болю. Найбільш вагомими з них виявилися тривога та депресія, які частіше вказувалися пацієнтами як причини погіршення стану. Гендерні відмінності у сприйнятті та впливі цих факторів не були статистично значущими, що вказує на однакову уразливість до психологічного навантаження у чоловіків та жінок. Додатково аналіз показав, що наявність ожиріння не була пов'язана зі зростанням ризику хронічного болю у нижній частині спини (χ^2 = 0,015; p = 0,9025), хоча у пацієнтів із надмірною вагою частіше спостерігалися вищі показники SBST, проте без статистичної достовірності. Отримані дані вказують, що соматичні показники відіграють другорядну роль у формуванні ризиків хронізації болю на відміну від психоемоційних чинників, які мають суттєвий вплив на рівень повсякденного функціонування.

Висновки. Результати дослідження підтверджують доцільність застосування стратифікованого підходу до реабілітації пацієнтів із болем у спині на основі SBST. Найбільш критичними предикторами хронізації болю в умовах підвищеного психоемоційного навантаження, зокрема у воєнний час, є тривога та депресія. Урахування цих чинників у реабілітаційних стратегіях сприяє покращенню функціональних результатів та якості життя. Дослідження є першим в Україні, що аналізує зв'язок SBST з обмеженням життєдіяльності у цивільного населення під час війни та підкреслює потребу в міждисциплінарному підході до відновлення. Отримані результати можуть бути використані для вдосконалення клінічних маршрутів пацієнтів із болем у спині, упровадження скринінгових інструментів на ранніх етапах утручання, а також для формування освітніх програм для фахівців у галузі фізичної та реабілітаційної медицини.

Ключові слова: реабілітація, фізична терапія, реабілітаційне обстеження, біль у спині, повсякденна активність, якість життя, клієнтоорієнтованість, відновлення функціональної незалежності.

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