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Sociodemographic and Psychosocial Determinants Associated With Low Back Pain Severity in Ukrainian Sample

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ABSTRACT

Background: Most people have experienced low back pain, which significantly deteriorates their quality of life and causes a financial burden on society. Understanding the associations of low back pain severity with sociodemographic and psychosocial determinants in a sample of Ukrainians experiencing low back pain is essential for improving treatment.

Methods: The cross-sectional study was conducted using convenience sampling ($N = 341$) through an online survey questionnaire among Ukrainian refugees in Czechia. Self-reported physical and mental health, depression (PHQ-9), anxiety (BAI), and sociodemographic factors were measured. Linear regressions were conducted to understand the association between self-reported physical and mental health determinants, anxiety, depression, sociodemographic characteristics, and low back pain.

Results: Most participants with low back pain experienced moderate to concerning levels of anxiety (97.1%) and moderate to severe depression (92%). They estimated their physical and mental health from fair to very bad. The links between low back pain severity and having some limitations in everyday life or being disabled; lifestyle; age; socioeconomic status; and self-reported physical health status were revealed.

Conclusions: The study identified the prevalence of symptoms of depression and anxiety, as well as self-reported physical and mental health statuses, and found psychosocial determinants of health associated with low back pain in the Ukrainian sample.

1 | Background

Most people have experienced low back pain at some point in their lives. Low back pain is a multifaceted sensory and emotional experience commonly localized in the lower back. It may result from various factors such as musculoskeletal strain, structural abnormalities, or underlying medical conditions, significantly impacting an individual's physical and mental well-being. It markedly affects the quality of life and places a heavy financial

strain on society because of labor incapacity. An Austrian study [1] demonstrates the notable direct medical expenses and lost productivity linked to chronic pain. Therefore, social, economic, psychological, and demographic factors may contribute to low back pain and significantly affect daily activities and productivity.

Previous studies have linked low back pain severity outcomes with low social class and socioeconomic status including poverty and low income, as well as low educational levels [2–4]. Moreover,

Abbreviations: BAI, Beck Anxiety Inventory; PHQ, Patient Health Questionnaire; SRMH, self-reported mental health; SRPH, self-reported physical health.

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in terms of well-being and quality of life, the risk of disability typically increases with age; however, due to the long-familiar “well-being” paradox [5], well-being does not always decrease with age. Remarkably, ratings on most well-being markers continue to be relatively high well into advanced age [6].

Additionally, according to previous research, the accumulation of poor lifestyle variables is linked to an increased risk of lower back pain, and this connection holds across all age groups [7].

Furthermore, patients with persistent low back pain often exhibit comorbid psychological symptoms. Numerous studies have demonstrated an increased risk of depression and anxiety in patients with chronic musculoskeletal pain, including low back pain [8–10]. Previous studies revealed that patients with low back pain were more likely than those without it to experience psychological discomfort, including anxiety and depression [8]. Another study also proved that people with chronic low back pain were at high risk of experiencing anxiety and depression [10].

Additionally, it was reported that patients with low back pain respond differently to various conservative and intrusive pain therapies depending on their psychological well-being [11]. Anxiety disorders are often associated with somatic illnesses. Somatic symptoms of anxiety closely resemble clinical manifestations of various diseases, potentially leading to challenges in early diagnosis and appropriate treatment. For doctors, it is crucial to pay attention to the patient’s psychological state during the initial assessment, utilizing questionnaires for diagnosing anxiety disorders. This aids in determining the treatment approach or referring the patient to a psychiatrist [12].

Moreover, previous literature indicates that migration by itself along with anxiety and depression is associated with a higher risk for all types of chronic pain outcomes [13–15]. The refugee status correlation with mental health and pain outcomes was previously studied in Syrian refugees in Europe. Several relocation-related stressors were reported to be associated with chronic pain and mental health problems. Moreover, poor mental health is reported as a predictor of chronic pain based on the follow-up studies among refugees who have not reported any pain-related states at the moment of the relocation [16–20]. Since the start of the full-scale invasion of Ukraine, studies dealing with stress, anxiety, and mental health evaluation started to emerge [21–23], along with research on the effects of chronic and acute stress on health and pain perception in Ukraine and outside of the country (based on the refugees’ studies). One of the most recent works connects the high level of stress with the phenomenon of stress-induced analgesia [24]. With the use of Flo (a women’s health and well-being mobile app and menstrual cycle tracker), women in Ukraine were monitored for their reporting of stress, pain, and affective symptoms before, and immediately after, the onset of the Russian–Ukrainian conflict. High levels of stress promoted an analgesic effect, an effect that declined as acute stress levels decreased. Further, the relationship between stress and pain was greatest in individuals based in Ukraine, demonstrating this pain-induced analgesic effect was greatest in individuals most impacted by the conflict.

Therefore, it is of high importance to have validated tools for assessing the psychoemotional state of vulnerable chronic low

back pain patients to prevent implications concerning mental health. The issue of pain and emotional state is especially important for those who are going through traumatic events, which is highly relevant for Ukrainian citizens and also for the refugees.

Chronic pain results in brain structure and function changes, affecting regions involved not only in pain sensing but also in other sensory and cognitive tasks [25]. It was also reported that the perception of pain could be influenced by diverse factors, among which are several psychological ones such as depression, anxiety, or even adverse childhood experiences [26]. Chronic pain and mental health-associated disorders have common molecular mechanisms as well, such as inhibitory and excitatory neurotransmission disbalance, 5-HT transporter polymorphism, and some inflammatory cytokines [27]. Therefore, a back pain study should be conducted paired with a mental health assessment to understand the problem better.

The study aimed (1) to identify the prevalence of depression, anxiety, and self-reported physical and mental health statuses as well as (2) to examine the associations of low back pain severity with sociodemographic, physical, and mental health determinants in the sample of Ukrainian refugees in Czechia experiencing low back pain.

2 | Methods

2.1 | Participants and Data Collection

This cross-sectional study was conducted among Ukrainian adults using a convenient sample selection. The inclusion criteria were an age of 18 or more and low back pain due to any cause. Participants were adults in their first or subsequent consultation in clinics/hospitals. Data were collected via a Ukrainian-language online survey that included questions about self-reported physical and mental health, depression, anxiety, and demographic information. All data were anonymized and processed in accordance with the General Data Protection Regulation. Participants in the study were required to sign an online consent form before completing the questions. They were also informed that participation was entirely voluntary and that they could stop at any time. The information was gathered during the full-scale Russian invasion of Ukraine between August and November 2023. The sampling was conducted by a second author in a hospital department specifically organized to address the medical needs of Ukrainian refugees in Brno, the Czech Republic (referred to as the UA point). The UA point offers a wide range of consultations and serves as a hub for gathering information on medical needs. It provides on-the-spot medical consultations and treatments whenever possible and redirects patients to specific medical departments with interpreter support when necessary.

A questionnaire was distributed to patients at the UA point during their visits. This questionnaire was created using Google Forms. Each patient received a brochure containing a QR code link to the questionnaire, along with a comprehensive description of the research in Ukrainian. Patients were instructed to complete the questionnaire by scanning the QR code and responding via their mobile devices or computers after leaving the UA point. A total of

800 printout brochures were distributed among patients during the sampling period. This approach ensured that Ukrainian patients, only those holding temporary protection visas in the Czech Republic (refugees), could participate in the research.

The study was conducted according to the principles and agreements of the Helsinki Agreement. Ethical approval was obtained from the Bioethics Commission of Uzhhorod National University, Uzhhorod, Ukraine (No. 247/01-14) by the author Nataliya Fister.

2.2 | Measures

2.2.1 | Online Survey

The online survey included (1) a sociodemographic questionnaire with general questions regarding age, education, and financial and employment statuses; (2) questions related to physical health determinants: self-reported physical health (SRPH), the necessity of continuous medical supervision, lifestyles, limitations in daily activities due to low back pain, chronic diseases, duration of low back pain, and methods of treatment; and (3) questions related to mental health determinants: self-reported mental health (SRMH), depression (Patient Health Questionnaire—nine items [PHQ-9]), and anxiety (Beck Anxiety Inventory [BAI]) scales.

2.2.2 | Self-Reported Low Back Pain

Low back pain intensity was self-reported and measured on a scale of 0–3 (mild pain), 4–5 (moderate pain), 6–7 (moderately severe pain), and 8–10 (severe pain).

2.2.3 | Self-Reported Physical and Mental Health Status

Self-reported health (SRH) is recommended by the World Health Organization and frequently used as a general health indicator when more comprehensive health measurements are not feasible. In this study, SRH was used as an indicator of the participants' perceived physical health. The SRH asked the following question: "Please estimate your physical health today." The respondents were asked to choose one of the 5-point options: "very bad," "bad," "fair," "good," or "very good." Similarly, a question about their emotions and psychological status was asked, with the option to answer from "very bad" to "very good."

2.2.4 | Anxiety Measurement (BAI)

The BAI is a 21-item self-report questionnaire developed by Beck and colleagues [28] to measure typical anxiety symptoms. The respondent is asked to indicate the degree to which each symptom has disturbed them in the previous week. Each question is scored on a 4-point scale, with the total score ranging from 0 to 63, where 0 indicates no anxiety and 63 indicates extreme anxiety. The sum of the 21 items is used to determine the overall score. A score of 0–21 indicates low anxiety, 22–35 indicates moderate anxiety, and 36 and above indicates potentially concerning levels of anxiety. Beck et al. presented a two-factor model for these

21 items: somatic symptoms and affective–cognitive symptoms. The BAI was created to evaluate anxiety symptoms separately from depressive symptoms [29]. The instrument was forward and backward translated from English to Ukrainian for use in the previous study by the first author, and it was reported that the Ukrainian version of BAI was valid and reliable.

2.2.5 | Depression Measurement (PHQ-9)

The PHQ-9 is the depression module and was developed as a screener for depression in primary care, assigning a score of "0" (not at all) to "3" (almost every day) for each of the nine items (PHQ-9 [30]). A score of 5–9 points indicates mild depression, 10–14 points moderate depression, 15–19 points moderately severe depression, and 20 points or more severe depression [31].

2.3 | Statistical Analysis

IBM SPSS Statistics 29 was utilized to perform descriptive statistics of mean, absolute, and relative frequency to display the respondents' responses. Jamovi statistic software version 2.2.5 was used to perform linear regression analysis [32–34].

2.4 | Demographic Characteristics

There were 341 survey responses from Ukrainian respondents, and 84% of them were females. The average age of participants was 40.6 years (SD = 13.5 years, range: 18–86 years). More than 45% had a manual labor job, 22% reported a very active lifestyle, and 13% reported having a sedentary lifestyle. SRPH indicated that 32% estimated their health as good, 52% as fair, and 14% as bad or very bad combined. Moreover, the emotional and psychological well-being (referred to as mental health) of patients was rated as fair by 44% and bad or very bad combined by 19%. The responses from participants were displayed using descriptive statistics of absolute and relative frequency (Table 1).

3 | Results

3.1 | Low Back Pain, Anxiety, and Depression Scores

The rate of moderate low back pain in the current study is 50.4%, and the rate of moderately severe to severe low back pain is 28.6%. Almost all participants experienced moderate to concerning levels of anxiety (97.1%) as well as moderate to severe depression levels (92%). The exact rates are displayed in Table 2.

Linear regressions (Table 3) were conducted to understand the association between SRPH, sociodemographic characteristics, and low back pain (Model 1) as well as anxiety, depression, SRMH, sociodemographic characteristics, and low back pain (Model 2). All statistical analyses were performed at a 5% level of significance. The scatterplots generated to assess linearity indicated linear relationships. Both models were statistically significant.

TABLE 1 | Sociodemographic characteristics and self-reported physical and mental health determinants of Ukrainian participants with low back pain in both genders ($n = 341$).

	Frequency	%
Sociodemographic characteristics:		
Economic financial status		
Not enough money for food	3	0.9
Enough money for food, buying clothes was difficult	122	36.1
Enough money for food, clothes, making savings	198	58.6
May buy expensive things, make big savings	15	4.4
Highest Level of Education		
Secondary/vocational	106	31.3
Undergraduate/bachelor	63	18.6
Graduate/PhD	170	50.1
Employed		
Desk/office	112	33.0
Manual	152	44.8
Housewife	29	8.6
Pension	27	8.0
Unemployed	19	5.6
Physical health determinants:		
Self-reported physical health (SRPH)		
Very Good	11	3.2
Good	107	31.6
Fair	175	51.6
Bad	43	12.7
Very bad	3	0.9
Lifestyle		
Very active	73	21.5
Moderately active	200	59.0
Sedentary	45	13.3
Difficult to say	21	6.2
Necessity of continuous medical supervision		
Yes	37	10.9
No	244	72.0
Difficult to say	58	17.1
Limited in daily activities due to ill health		
No	117	34.5
Yes, to some extent	176	51.9
Yes, much	37	10.9
Disability	9	2.7
Low back pain		
Diagnosed first time	165	48.7

(Continues)

TABLE 1 | (Continued)

	Frequency	%
Chronic disease	174	51.3
Chronic diseases		
No	148	43.7
Yes, one	104	30.7
Yes, two	57	16.8
Yes, three or more	30	8.8
Self-reported emotional and psychological status (SREPS)		
Very good	13	3.8
Good	112	33.0
Fair	150	44.2
Bad	58	17.1
Very bad	6	1.8

3.2 | Relationship Between Physical and Mental Health Determinants and Severity of Low Back Pain

Model 1 demonstrated that physical health determinants could statistically significantly predict the severity of perceived low back pain and accounted for 51.7% of the variance in low back pain severity measured by SRPH, the necessity of continuous medical supervision, lifestyle, limitations in daily activities due to ill health, chronic diseases, longevity of low back pain, and methods of treatment. Model 2 established that factors related to mental health conditions could statistically significantly predict the severity of perceived low back pain and accounted for 22.8% of the variance in low back pain severity measured by SRMH, depression (PHQ-9), and anxiety (BAI) scores. Both models included participants of both genders and were adjusted for age and socioeconomic variables (education, employment, and financial status).

Linear regression analysis showed that increasing perceived low back pain severity was statistically significantly associated with the worsening of SRPH status from very good ($\beta = 1.17$) to very bad ($\beta = 4.84$). Also, increasing low back pain severity is positively associated with having some ($\beta = 1.10$) or many ($\beta = 3.32$) limitations in everyday life or being disabled ($\beta = 2.81$) because of low back pain. It was found that perceived low back pain severity was also positively associated with chronic low back pain ($\beta = 0.48$), anxiety ($\beta = 0.03$), and age ($\beta = 0.03$ for Model 1 and $\beta = 0.07$ for Model 2). Moreover, analysis demonstrates that increasing perceived low back pain severity was statistically significantly associated with a moderately active lifestyle ($\beta = -0.72$) compared to a very active one as well as being a pensioner ($\beta = -1.15$ for Model 1 and $\beta = -1.59$ for Model 2). Additionally, it was found that low back pain severity was statistically significantly negatively associated with the better financial status of participants ($\beta = -2.21/-2.11$) compared to the lowest one. No significant difference in the scores of depression was found with the severity of low back pain in this sample.

TABLE 2 | Distribution of participants according to low back pain, anxiety, and depression scores.

	Low back pain			Anxiety			Depression	
	Frequency	%		Frequency	%		Frequency	%
Mild	71	20.9	Low	10	2.9	Mild	26	8.0
Moderate	171	50.4	Moderate	186	54.9	Moderate	138	42.7
Moderately severe	84	24.8	Concerning	143	42.2	Moderately severe	99	30.7
Severe	13	3.8				Severe	60	18.6

4 | Discussion

Low back pain is a health issue that is becoming one of the main causes of disability and has a considerable financial impact on both medical costs and lost productivity. The objectives of this cross-sectional study were (1) to identify the prevalence of depression, anxiety, and self-reported physical and mental health statuses as well as (2) to examine the associations of low back pain severity with sociodemographic, physical, and mental health determinants in the sample of Ukrainian refugees in Czechia experiencing low back pain.

The study included a predominantly female sample (84%), with an average age of 40.6 years. Many participants engaged in manual jobs and reported moderate to low financial stability. The present study found that a significant number of Ukrainian participants with low back pain had issues with mental health (see Table 2). Furthermore, among participants with low back pain, 42.7% had moderate depression, 30.7% had moderately severe depression, and 18.6% had severe depression. There were similar findings with anxiety, with 54.9% having moderate and 42.2% having concerning levels of anxiety. Previous studies reported higher levels of depression and anxiety in back pain patients in Ukraine compared to control groups [35]. This study presents an increase in depression and anxiety levels in similar groups of patients based on data collected during the full-scale Russian invasion of Ukrainians who were forcibly displaced. Comparison with a study conducted just before the invasion confirms this; the level of depression in groups of patients experiencing different types of back pain was drastically lower [36]. These findings support reports on the additive negative influence of adverse experiences on mental and physical health consequences [26, 37]. At the same time, this study adds a new dimension to existing literature [16–20] and provides valuable insights into determinants associated with low back pain severity and the prevalence of mental health conditions in the Ukrainian sample experiencing significant distress due to displacement.

Like other studies that have connected poor socioeconomic class and low back pain severity level [2–4], it was found that low back pain severity decreases as the financial status of participants increases.

Additionally, the study revealed that a moderately active lifestyle compared to a very active one decreased low back pain severity, as did being a pensioner. This aligns with previous studies conducted in Ukraine, especially concerning elderly women [38,

39]. These outcomes do not contradict previous research evidence on lifestyle risk factors for low back pain [7] and a “paradoxical” pattern of age effects in low back pain patients [6].

Furthermore, it was found that increasing low back pain severity was associated with higher levels of anxiety. These findings parallel those of other studies [8–10]. Azfar and colleagues compared the severity of depression and anxiety and discovered that patients with low back pain experience higher stress and anxiety levels compared to those with depression. This research suggested that stress and anxiety brought on by low back pain, if left untreated, may develop into depression [40]. In our study, no significant association was found between depression levels and the severity of low back pain.

Additionally, the study outcomes showed that increasing low back pain severity was associated with the worsening of SRH status and having limitations in everyday life or being disabled, which caused a deterioration in quality of life.

The present study is one of the few to provide empirical evidence about the prevalence of anxiety and depression as well as physical and mental health determinants in a sample of Ukrainian refugees with low back pain, and it is the first to show the association between self-reported physical and mental health determinants and low back pain severity. The findings have practical implications for policymakers and clinicians, as they highlight the need for mental health support in low back pain and chronic treatment programs, particularly for populations in distress, including forcibly displaced individuals and refugees. This can influence health policy to allocate resources for comprehensive care that includes mental health services. Further research is needed to explore the longitudinal effects of distress and forced displacement on low back pain as well as chronic pain and pain perception, the effectiveness of integrated care models, and the role of specific socioeconomic interventions.

However, the study has some limitations. The small number of participants did not allow for a gender difference analysis. The use of online questionnaires might restrict the participation of educated participants with good digital skills. Future research should include older participants with low digital literacy. Additionally, social desirability bias may exist to some extent in self-reporting; however, the current study employed several techniques to mitigate this bias, including forced-choice items, anonymity, and self-administered surveys.

TABLE 3 | Physical and mental health determinants and demographic characteristics associated with the severity of low back pain.

	Model 1(physical health determinants) B (SE)	Model 2(mental health determinants) B (SE)
R^2	0.517	0.228
Physical health determinants:		
Self-reported physical health (SRPH)		
Very good	Ref	
Good	1.17 (0.56)**	
Fair	1.90 (0.58)***	
Bad	2.03 (0.66)**	
Very bad	4.84 (1.15)***	
Necessity of continuous medical supervision		
Yes	Ref	
No	0.16 (0.39)	
Difficult to say	0.40 (0.43)	
Limited in daily activities due to low back pain	0.33 (0.53)	
No	Ref	
Yes, some	1.10 (0.24)***	
Yes, much	3.32 (0.42)***	
Disability	2.81 (0.73)***	
Low back pain		
Diagnosed first time	Ref	
Chronic	0.48 (0.22)*	
Chronic diseases	-0.09 (0.36)	
No	Ref	
Yes, one	-1.05 (0.24)	
Yes, two	0.47 (0.33)	
Yes, three and more	0.26 (0.47)	
Treatment methods		
Medicines	Ref	
Injections	0.48 (0.31)	
Surgery	-0.81 (0.85)	
Alternative/traditional	-0.39 (0.33)	
Physiotherapy	-0.08 (0.23)	
Lifestyle		
Very active	Ref	
Moderately active	-0.72 (0.25)**	
Sedentary	-0.33 (0.36)	
Difficult to say	-0.75 (0.46)	

(Continues)

TABLE 3 | (Continued)

	Model 1(physical health determinants) B (SE)	Model 2(mental health determinants) B (SE)
Mental health determinants:		
Self-reported mental health (SRMH)		
Very good		Ref
Good		0.76 (0.64)
Fair		0.93 (0.65)
Bad		1.38 (0.74)
Very bad		1.62 (1.15)
Depression (PHQ-9)		0.02 (0.03)
Anxiety (BAI)		0.03 (0.01)*
Sociodemographic characteristics:		
Age	0.03 (0.01)**	0.07 (0.01)***
Employment		
Manual	Ref	Ref
Desk/office	-0.16 (0.27)	-0.54 (0.30)
Housewife	0.22 (0.37)	0.06 (0.44)
Unemployed	-0.85 (0.46)	-0.95 (0.53)
Pensioner	-1.15 (0.47)*	-1.59 (0.55)**
Financial status		
Not enough money for food	Ref	Ref
Enough money for food but not enough for clothes	-2.21 (1.06)*	-1.62 (1.27)
Enough money for food and clothes, some savings	-2.11 (1.06)*	-1.82 (1.27)
Expensive purchases and significant savings	-1.78 (1.16)	-1.69 (1.38)
Highest level of education		
Secondary/vocational	Ref	Ref
Undergraduate/bachelor	0.03 (0.30)	-0.17 (0.36)
Graduate/PhD	-0.08 (0.25)	-0.11 (0.30)

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

5 | Conclusion

Half of the participants of both genders with low back pain in the current study experienced a moderate rate of low back pain, while a third experienced a moderately severe to severe rate. The study highlights the high prevalence of anxiety and depression among Ukrainians suffering from low back pain. Almost all participants

experienced moderate to concerning levels of anxiety as well as moderate to severe depression levels. Most of the respondents estimated their physical and mental health from fair to very bad. The research shows that socioeconomic factors, perceived physical health, and lifestyle are significantly associated with low back pain severity. The findings indicate that participants with poorer SRH, greater limitations in daily activities, and chronic conditions report higher low back pain severity. Additionally, higher levels of anxiety are associated with increased low back pain severity, although no significant correlation was found with depression levels. The study also reveals that a moderately active lifestyle and better financial status correlate with reduced low back pain severity, and pensioners report lower severity compared to other employment statuses. These insights can inform healthcare policies and treatment approaches, particularly for displaced populations experiencing high levels of distress. To effectively address the needs of low back pain patients, healthcare providers should integrate mental health assessments and interventions into their treatment plans.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data will be available upon reasonable request. Third parties may not be provided access to data if doing so would violate applicable EU data protection laws as well as national data protection laws in the project's member nations. The process can be started by interested researchers contacting Nataliya Fister.

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