

Research Paper

Assessment of the mental and physical condition of Polish physiotherapy students: A cross-sectional study

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ABSTRACT

Introduction: Physiotherapy is a profession that requires both high physical fitness and psychological resilience, as practitioners are exposed to multiple occupational and educational stressors. Recent studies have shown increasing levels of stress, anxiety, and musculoskeletal complaints among physiotherapy students, which may affect their overall well-being and professional preparedness.

Aim: The aim of the study is to assess the impact of the duration of studies on the intensity of symptoms of reduced mental and physical health and selected correlates related to this impact.

Material and methods: The study was conducted using an online questionnaire from October 2024 to January 2025. The questionnaire included demographic questions and a standardized General Health Questionnaire – 28 (GHQ-28) and Oswestry Disability Index (ODI). The criteria for inclusion in the study required active status as a physiotherapy student and informed consent to participate in the study.

Results and discussion: Analysis showed a correlation between increased spinal pain (ODI) and the occurrence of chronic diseases among the respondents ($p < 0.05$). Similarly, a correlation was found between deteriorated mental health (GHQ-28) and the occurrence of chronic diseases ($p < 0.05$). The study also showed that a higher BMI was associated with lower spinal pain ($p < 0.05$).

Conclusions: The duration of studies does not have a significant impact on the mental and physical health of students. The presence of chronic diseases has a negative impact on the mental and physical health of physiotherapy students, leading to more frequent pain and reduced mental well-being.

1. INTRODUCTION

Physiotherapy is a medical discipline focused on developing, maintaining, and restoring optimal movement and functional abilities throughout the lifespan. In Poland, it is regarded as one of the key professions within the rehabilitation sector and has gained increasing interest among young people in recent years.^{1–3} Since October 1, 2017, physiotherapy education in Poland has been provided as a uniform five-year master's degree program, integrating theoretical knowledge with extensive practical and clinical training from the early stages of education.^{4,5} This structure is intended to prepare students comprehensively for professional practice; however, it also exposes them to substantial physical and psychological demands during their studies, even before entering their chosen career.

The profession of physiotherapy requires not only a high level of theoretical competence but also considerable physical fitness, manual skills, and the ability to cope effectively with stress. During clinical training and practical classes, students are frequently exposed to prolonged static and dynamic loads, awkward working postures, and repetitive physical effort, which are recognized risk factors for musculoskeletal disorders.^{6–8} Previous studies conducted among practicing physiotherapists in Poland have indicated a very high prevalence of spinal pain, reported by up to 91.7% of professionals.⁹ Moreover, repetitive manual tasks and forceful movements are associated with a significant risk of upper limb disorders in this occupational group.¹⁰ Importantly, many of these problems may begin to develop already during the educational period, highlighting the need to assess physical health at the student level.^{11,12}

In addition to physical strain, physiotherapy students face substantial academic and psychological challenges. The curriculum requires assimilation of extensive theoretical knowledge within limited timeframes, continuous assessment, and the development of practical competencies under evaluative conditions.¹³ Academic stress is common among students of medical and health-related programs and has been shown to negatively affect both mental and physical health, contributing to emotional distress, anxiety, sleep disturbances, and reduced academic performance.¹⁴ The most frequently reported stressors include excessive workload, long study hours, examination pressure, high performance expectations, and fear of failure.^{13–16}

Clinical placements represent a particularly demanding period of education. During this stage, students often experience uncertainty regarding their professional competence, fear of making mistakes, and perceived gaps in practical skills, which may further compromise mental well-being.^{17,18} Additionally, the intensive workload associated with physiotherapy education may disrupt the balance between academic responsibilities and personal life, limiting opportunities for rest, social interaction, and recovery.¹⁹ Prolonged exposure to stress, time pressure, and high expectations can increase the risk of burnout and other mental health problems; potentially affecting both future professional functioning and

overall quality of life.²⁰ This issue is especially relevant in light of reports indicating a general decline in mental health among younger populations.²¹

International literature consistently demonstrates that students of physiotherapy and other healthcare professions are exposed to elevated levels of psychological distress, including stress, anxiety, and depressive symptoms.^{6,13,14} At the same time, musculoskeletal complaints, particularly spinal pain, are frequently reported even before entering professional practice, reflecting both lifestyle-related factors and early occupational strain.^{7–9} Despite the growing body of international evidence, data concerning the psychophysical health of physiotherapy students in Poland remain limited. In particular, the relationship between mental health, physical health, selected anthropometric factors such as body mass index (BMI), and the duration of studies has not been sufficiently explored in this population.

Therefore, the present study aims to address this gap by assessing selected indicators of mental and physical health among physiotherapy students in Poland. The specific objectives were to evaluate the intensity of symptoms indicating reduced psychophysical well-being, to analyze associations between mental and physical health outcomes and selected health-related factors, and to examine whether the duration of studies is associated with the severity of symptoms related to decreased mental and physical health.

2. AIM

The aim of the study is to assess the impact of the duration of studies on the intensity of symptoms of reduced mental and physical health and selected correlates related to this impact.

3. MATERIAL AND METHODS

3.1. Study design and population

The study was conducted between October 2024 and January 2025. Inclusion criteria required an active student status in the field of physiotherapy and voluntary informed consent to participate. A total of 204 physiotherapy students were enrolled in the study. Exclusion criteria included studying a field other than physiotherapy, simultaneous enrollment in another study program, and failure to provide informed consent. The study was conducted across multiple academic centres and included physiotherapy students from several universities in Poland.

Data were collected using an online questionnaire consisting of demographic questions and two standardized instruments: the General Health Questionnaire – 28 (GHQ-28) for assessing general mental health, and the Oswestry Disability Index (ODI) for evaluating the degree of disability related to low back pain. The GHQ-28 is comprised of 28 questions divided into four subscales, each containing seven items. These subscales assess different dimensions of mental

health: somatic symptoms, anxiety and insomnia, social dysfunction, and depression. Responses were rated on a four-point Likert scale (0–3), corresponding to the following categories: “not at all,” “no more than usual,” “rather more than usual,” and “much more than usual.” The total score ranges from 0 to 84 points, with higher scores indicating greater severity of psychological distress.^{22,23} The ODI consists of 10 items addressing various aspects of daily functioning, including pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social activity, and traveling. Each item is rated on a six-point scale (0–5), where 0 represents no limitation and 5 indicates maximum disability. The total score is the sum of all item scores, with a maximum possible score of 50 points. Higher scores reflect a greater degree of disability; scores above 35 indicate severe distress and significant disability.²⁴

3.2. Statistical analysis

Collected data were compiled using Microsoft Excel, and statistical analyses were performed with STATISTICA 13.3 (StatSoft Polska). The level of statistical significance was set at $\alpha = 0.05$. The Spearman’s rank correlation coefficient was used to examine relationships between quantitative variables (e.g., Body Mass Index [BMI] and GHQ-28 scores), while the Mann-Whitney U test was applied to assess associations between quantitative and qualitative variables (e.g., sex and ODI scores).

3.3. Ethical standards

In accordance with the principles of the Declaration of Helsinki, the study was conducted with full respect for ethical standards to ensure participant safety and rights. All respondents were informed about the voluntary nature of participation and their right to withdraw at any stage of the research.

According to the opinion of the Bioethics Committee of the Medical University of Silesia in Katowice (Poland), this study did not constitute a medical experiment and therefore did not require ethical approval (BNW/NWN/0052/KB/197/24, issued on September 16, 2024).

4. RESULTS

A total of 204 physiotherapy students participated in the study. The group consisted of 77% women ($n = 157$) and 23% men ($n = 47$). The mean age was 21.7 ± 2.7 years, with a median of 22 years (IQR: 20–23). The majority of respondents were in a relationship (55.9%, $n = 114$), and 22.1% ($n = 45$) lived in rural areas. Almost half of the participants (49.5%, $n = 101$) lived with their families. The largest subgroup comprised fifth-year students (27.9%, $n = 57$), and most attended full-time studies (90.7%, $n = 185$). Based on self-reported anthropometric data, the Body Mass Index was calculated, showing that 6.4% ($n = 13$) of students were underweight. The majority (70.1%, $n = 143$) reported not smoking tobacco, while 24% ($n = 49$) declared abstaining from alcohol. Chronic diseases were reported by 26.5% ($n = 54$) of respondents. The most commonly declared conditions were hypothyroidism (15.3%, $n = 11$) and Hashimoto’s disease (8.3%, $n = 6$). Detailed sociodemographic data are presented in Table 1.

Spearman’s rank correlation coefficient was used to determine associations between BMI and the results of the GHQ-28 and ODI questionnaires, as well as between study duration and questionnaire scores. A statistically significant correlation was found between BMI and ODI scores ($p < 0.05$). The negative correlation coefficient ($r = -0.144$) suggests that the intensity of back pain decreased slightly with increasing BMI. However, the correlation coefficient

Table 1. Patients’ characteristics.

Variable		N	%
Gender	Female	157	76.96%
	Male	47	23.04%
Marital status	Single	82	40.20%
	Partnership	114	55.88%
	Married	6	2.94%
	Others	2	0.98%
Living area	Village	45	22.06%
	City with less than 50,000 inhabitants	33	16.18%
	City with 50,000 to 100,000 inhabitants	43	21.08%
Form of residence	City with over 100,000 inhabitants	83	40.69%
	In the family home	101	49.51%
	In a rented apartment	74	36.27%
	In the dorm	12	5.88%
	Others	17	8.33%

Table 1. Patients' characteristics (cont.).

Variable		N	%
Year of study	First year	46	22.55%
	Second year	29	14.22%
	Third year	31	15.20%
	Fourth year	41	20.10%
	Fifth year	57	27.94%
Form of studies	Full-time studies	185	90.69%
	Part-time studies	19	9.31%
BMI	Thinness	13	6.37%
	Normal	145	71.08%
	Overweight	37	18.14%
	Obese	9	4.41%
Smoking	Yes	61	29.90%
	No	143	70.10%
Alcohol drinking	No drinking	49	24.02%
	Less than once a week	130	63.73%
	1–2 times a week	24	11.76%
	Every day	1	0.49%
Chronic disease	Yes	54	26.47%
	No	150	73.53%

N – number of participants.

was low ($r = -0.144$), indicating a weak association. This suggests that the observed relationship is of limited clinical relevance, despite statistical significance. The distribution

of values is presented in [Figure 1](#). No other significant correlations were identified and are therefore not discussed further in this section.

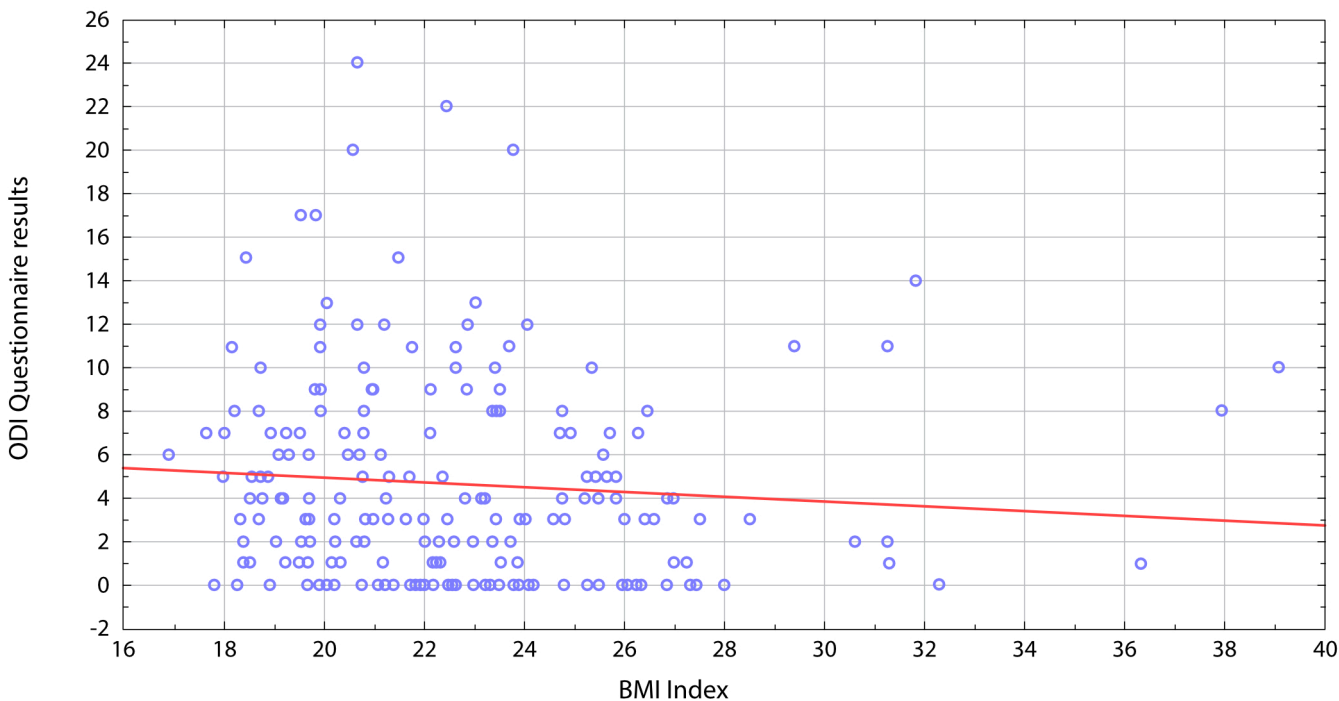


Figure 1. Scatter plot showing the relationship between BMI and ODI scores.

4.1. Group comparisons

The Mann-Whitney U test was applied to analyze the influence of selected categorical variables such as sex, smoking, alcohol consumption, and chronic disease on GHQ-28 and ODI results. A significant relationship was found between sex and GHQ-28 scores ($p < 0.05$; $Z = 3.31$). Women achieved higher GHQ-28 scores (Me = 32, IQR: 22–42) compared with men (Me = 23, IQR: 17–30), indicating poorer mental health among female students.

A statistically significant difference was also observed between chronic disease status and ODI scores ($p < 0.05$; $Z = -2.35$). Students with chronic illnesses reported more

severe back pain (Me = 5, IQR: 1–10) than those without chronic conditions (Me = 3, IQR: 0–6).

Furthermore, a significant relationship was identified between chronic disease status and GHQ-28 scores ($p < 0.05$; $Z = -2.91$). Students with chronic diseases demonstrated higher GHQ-28 scores (Me = 33, IQR: 26–43) than healthy students (Me = 26, IQR: 18–39), indicating poorer mental health in the former group.

A summary of the statistically significant findings is provided in Table 2. Other comparisons did not show statistically significant relationships between the analyzed variables.

Table 2. Comparison of GHQ-28 and ODI scores according to sex and chronic disease status among physiotherapy students.

Groups	ODI				GHQ-28			
	$\bar{x} \pm SD$	Me ($Q_{0,25}$ – $Q_{0,75}$)	Min	Max	$\bar{x} \pm SD$	Me ($Q_{0,25}$ – $Q_{0,75}$)	Min	Max
Female	5.13 ± 4.73	4 (1–8)	0	24	32.26 ± 14.0	32 (22–42)	3	73
Male	2.57 ± 4.06	1 (0–20)	0	20	24.47 ± 11.15	23 (17–30)	1	53
Participants with chronic disease	6.09 ± 5.55	5 (0–22)	0	22	34.61 ± 11.88	33.5 (26–43)	11	63
Participants with no chronic disease	3.99 ± 4.23	3 (0–6)	0	24	28.97 ± 14.13	26.5 (18–39)	1	73

GHQ-28 – General Health Questionnaire-28; ODI – Oswestry Disability Index; $\bar{x} \pm SD$ – mean and standard deviation; Me ($Q_{0,25}$ – $Q_{0,75}$) – median and interquartile range; Min – minimum value; Max – maximum value.

5. DISCUSSION

The aim of this study was to assess selected aspects of physical and mental health among physiotherapy students. For this purpose, specific characteristics of the study group were analyzed, taking into account the results of standardized questionnaires evaluating psychophysical health status.

Starting with the analysis of the relationship between BMI values and the intensity of low back pain, it was observed that the present findings differ from those previously reported in the literature, showing an inverse correlation between these two variables. In the examined group, a higher BMI value was associated with a lower intensity of low back pain, which contradicts previous studies indicating an increased risk of back pain with higher BMI levels.²⁵ This discrepancy may result from various factors. Possible explanations include specific characteristics of the study population, differences in pain assessment methods, or other variables that require deeper analysis and consideration in future research design. Importantly, physiotherapy students, as individuals engaged in the medical field, may have higher health awareness, maintain a more active lifestyle, and possess knowledge of basic back pain prevention techniques, which could contribute to lower pain intensity despite higher BMI values. Although the correlation between BMI and low back pain reached statistical significance, its weak strength suggests that this relationship is likely of limited clinical importance and should be interpreted with caution.

In this study, pain assessment was based on the Oswestry Disability Index (ODI), which evaluates the degree of disability resulting from back pain, focusing on the impact of pain on daily functioning.²⁴ Unlike other tools that rely on direct assessment of pain intensity, such as the Visual Analogue Scale (VAS),²⁶ often used in studies on cervical spine dysfunction, the ODI measures a more complex relationship between pain and its functional consequences in everyday life. Such methodological differences in pain assessment could have influenced the type, magnitude, and interpretation of the results, thereby contributing to the observed discrepancies compared to studies employing different tools.

Continuing the analysis of BMI in relation to mental health assessed with the General Health Questionnaire – 28 (GHQ-28), no significant correlation was found. This suggests that body mass in the studied group is not a direct determinant of mental health status among physiotherapy students. The psychological well-being of respondents may be influenced by a number of other factors outside the scope of this study but potentially more relevant to their overall mental health and well-being.

Further analysis confirmed that the presence of chronic diseases has a significant impact on the psychophysical condition of physiotherapy students. A comparison of results obtained from participants with and without chronic diseases revealed clear differences in both pain perception and mental health status. The present study demonstrated that students with chronic diseases experienced higher levels of

back pain and lower levels of psychological well-being. It can therefore be assumed that chronic diseases negatively affect daily functioning, as confirmed by findings from other researchers.²⁷ Moreover, individuals struggling with long-term illnesses are particularly vulnerable to developing mental disorders such as anxiety or depression, which consequently reduce work capacity and affect emotional and social functioning.²⁸ This underscores the necessity of providing adequate support not only for practicing physiotherapists but also for physiotherapy students.²⁹ Considering these results, it is essential to emphasize that access to psychological support within academic training can offer students practical assistance in coping with academic demands and maintaining psychophysical well-being.

The findings of this study offer valuable insights for both physiotherapy practice and the education of future physiotherapists. Identifying relationships between students' psychophysical health and factors such as BMI, presence of chronic disease, and gender highlights the need for a comprehensive approach to health already at the academic level. Introducing components of psychological prevention, stress management education, and promoting a balanced lifestyle (including physical health maintenance) may substantially support future professionals in preserving their health and occupational efficiency. Early recognition of symptoms of diminished psychophysical well-being, as well as ergonomic training addressing proper posture and equipment adjustment, may prove effective in reducing musculoskeletal discomfort.^{7,10,28} Furthermore, the inclusion of relaxation techniques within the physiotherapy curricula could help shape health awareness and mental resilience among future professionals, becoming an integral element of their educational process.²⁸

5.1. Limitations

This study provides valuable insight into the psychophysical health of future physiotherapy professionals. However, certain limitations should be acknowledged. The use of validated instruments, such as the GHQ-28 and the ODI, ensured the reliability of the obtained data, yet the online survey format introduced potential bias. The questionnaire was distributed via social media, which allowed for broad participation but also carried the risk of responses from individuals not strictly representing the target group. Moreover, the self-reported nature of the data may have led to subjective interpretations, particularly regarding mental health indicators. Despite these limitations, the findings offer meaningful implications for health education and underline the importance of preventive measures and ergonomic awareness among physiotherapy students.

6. CONCLUSION

Based on the analysis of the results of the study conducted among physiotherapy students and the interpretation of the obtained results, several key conclusions can be drawn

regarding their physical and mental well-being. Female students demonstrated a higher level of psychological distress compared to their male counterparts, suggesting that gender may play a role in shaping mental health within this population. The duration of study did not appear to significantly influence the psychophysical health status of respondents, which may indicate that academic workload or exposure to professional training does not necessarily translate into measurable changes in mental or physical condition. Interestingly, a slightly higher Body Mass Index (BMI) among the surveyed students was associated with a somewhat lower intensity of back pain; however, this relationship was weak and contrasts with findings from most previous studies. Finally, the presence of chronic diseases was found to negatively affect the overall psychophysical condition of students, leading to more frequent pain complaints and reduced psychological well-being. The findings highlight the importance of early mental health support and preventive strategies aimed at improving both physical and psychological resilience among future physiotherapists.

Ethics approval

None declared.

Conflict of interest

None declared.

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Author contributions

Study design: NW, MG, BN, MP, TJ
 Data collection: NW, MG, BN, MP, TJ
 Statistical analysis: NW, MG, BN, MP, TJ
 Data interpretation: NW, MG, BN, MP, TJ
 Manuscript preparation: NW, MG, BN, MP, TJ
 Literature search: NW, MG, BN, MP, TJ
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