

Prevalence of Musculoskeletal Disorders among Physiotherapists Working in Tertiary Care Hospitals in Lahore: A Cross-Sectional Study

Aqsa Tahir¹

Ripha International University Islamabad Pakistan

* Correspondence: Aqsatahir96.at@gmail.com

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ABSTRACT

Background: Musculoskeletal disorders (MSDs) are a major occupational health concern among healthcare professionals, particularly physiotherapists, due to the physically demanding nature of their work, which includes manual therapy, patient handling, repetitive movements, and prolonged static postures. These occupational exposures place physiotherapists at increased risk of work-related musculoskeletal disorders, potentially affecting their health, productivity, and quality of care.

Objective: To determine the prevalence and distribution of musculoskeletal disorders among physiotherapists working in tertiary care hospitals in Lahore. **Methods:** A cross-sectional observational study was conducted among 200 physiotherapists employed in tertiary care hospitals in Lahore. Data were collected using a self-administered structured questionnaire incorporating the Standardized Nordic Musculoskeletal Questionnaire to assess 12-month musculoskeletal symptoms across different body regions. Demographic and occupational characteristics were recorded. Data were analyzed using descriptive statistics and inferential analyses, including chi-square tests and logistic regression. **Results:** The overall prevalence of musculoskeletal disorders was 76.5% (95% CI: 70.6–82.4). The most commonly affected body regions were the lower back (52.0%), neck (45.5%), shoulders (41.0%), and wrists/hands (33.5%). Female physiotherapists demonstrated significantly higher odds of musculoskeletal disorders compared with males (OR = 2.03, $p = 0.034$). Working more than 8 hours per day (OR = 2.75, $p = 0.002$) and frequent manual patient handling (OR = 2.96, $p = 0.001$) were significantly associated with musculoskeletal disorders. **Conclusion:** Musculoskeletal disorders are highly prevalent among physiotherapists in tertiary care hospitals in Lahore, highlighting the need for ergonomic interventions, workload management, and preventive occupational health strategies.

Keywords: Musculoskeletal Disorders; Physiotherapists; Occupational Health; Prevalence; Cross-Sectional Study

INTRODUCTION

Musculoskeletal disorders (MSDs) are among the most common occupational health problems worldwide and represent a leading cause of work-related disability, reduced productivity, and absenteeism among healthcare professionals (1). MSDs encompass a broad range of inflammatory and degenerative conditions affecting muscles, joints, tendons, ligaments, and peripheral nerves, often resulting in chronic pain and functional impairment (2). Healthcare workers involved in physically demanding tasks are particularly vulnerable due to repetitive movements, sustained awkward postures, manual handling of patients, and prolonged static loading of the musculoskeletal system (3).

Physiotherapists constitute a high-risk occupational group for work-related musculoskeletal disorders because their clinical practice routinely involves manual therapy techniques, patient transfers, mobilization activities, repetitive upper limb movements, and prolonged standing or bending postures (4). Previous studies conducted in different healthcare settings have reported a high prevalence of MSDs among physiotherapists, with estimates ranging from 60% to over 90%, indicating a substantial occupational burden (5). The lower back, neck, shoulders, and wrists are consistently identified as the most frequently affected anatomical regions, reflecting the biomechanical demands placed on these body areas during routine physiotherapy interventions (6).

Despite the growing body of international evidence, MSDs among physiotherapists remain under-recognized in many low- and middle-income countries, where occupational health surveillance systems are limited and preventive ergonomics are often neglected (7). In Pakistan, physiotherapists working in tertiary care hospitals frequently face high patient volumes, staff shortages, and extended working hours, which may further exacerbate physical strain and increase susceptibility to musculoskeletal injuries (8). However, empirical data describing the magnitude and distribution of MSDs among physiotherapists in this context are scarce, particularly in major urban healthcare centres.

Lahore, one of the largest metropolitan cities in Pakistan, hosts multiple tertiary care hospitals that provide specialized rehabilitation services to a large and diverse patient population. Physiotherapists working in these institutions are exposed to substantial physical workloads across inpatient and outpatient settings, yet limited local evidence exists to quantify the prevalence of MSDs or to identify the most commonly affected body regions within this professional group (9). The absence of such data hampers the development of targeted ergonomic interventions, occupational health policies, and preventive strategies tailored to the local healthcare environment.

Addressing this knowledge gap is essential to inform evidence-based workplace modifications and to promote the long-term health and sustainability of the physiotherapy workforce. Therefore, the present study aimed to determine the prevalence of musculoskeletal disorders among physiotherapists working in tertiary care hospitals in Lahore and to describe the distribution of musculoskeletal symptoms across different body regions over the preceding 12 months.

MATERIAL AND METHODS

This cross-sectional observational study was conducted to estimate the prevalence of musculoskeletal disorders among physiotherapists working in tertiary care hospitals in Lahore. The study was carried out over a six-month period in multiple public and private tertiary care hospitals providing inpatient and outpatient physiotherapy services. A cross-sectional design was selected as it is appropriate for determining the prevalence and distribution of health-related outcomes within a defined population at a specific point in time (10).

The study population comprised licensed physiotherapists actively involved in clinical practice. Physiotherapists aged 22 to 55 years with a minimum of one year of professional clinical experience were eligible for inclusion. Individuals with a prior history of traumatic musculoskeletal injury unrelated to work, congenital musculoskeletal abnormalities, systemic inflammatory or neurological disorders, or current pregnancy were excluded to reduce confounding related to non-occupational causes of musculoskeletal symptoms. Participants were recruited using a convenience sampling strategy from eligible physiotherapists present during the data collection period. All participants were provided with detailed information regarding the study objectives and procedures, and written informed consent was obtained prior to participation in accordance with ethical research principles (11).

Data were collected using a self-administered structured questionnaire consisting of two components. The first component captured demographic and occupational characteristics, including age, gender, years of professional experience, average daily working hours, clinical work setting, and frequency of manual patient handling. The second component utilized the Standardized Nordic Musculoskeletal Questionnaire, a validated instrument widely used to assess the presence of musculoskeletal symptoms in specific body regions over a defined recall period (12). For the purpose of this study, musculoskeletal disorder was operationally defined as self-reported pain, discomfort, or functional limitation in any specified body region experienced at any time during the preceding 12 months.

To minimize information bias, participants completed the questionnaire independently in a quiet clinical setting, and clarifications regarding questionnaire items were provided when required without influencing responses. Questionnaires were reviewed at the time of submission to ensure completeness. Potential sources of bias, including selection bias inherent to convenience sampling and recall bias related to self-reported symptoms, were acknowledged and addressed through standardized data collection procedures and clear operational definitions (13).

The sample size of 200 participants was determined based on feasibility and the expected high prevalence of musculoskeletal disorders reported in previous studies among physiotherapists, which allows for reasonably precise prevalence estimates in descriptive research (14). Data were coded and entered into a secured database and analysed using the Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics were used to summarize the data, with categorical variables presented as frequencies and percentages and continuous variables summarized using means and standard deviations. Subgroup analyses were performed to describe musculoskeletal disorder prevalence across gender and occupational characteristics. Missing data were minimal and handled using complete-case analysis to maintain data integrity (15).

Ethical approval for the study was obtained from the institutional ethics review committees of the participating hospitals prior to data collection. All procedures were conducted in accordance with the Declaration of Helsinki and national ethical guidelines for research involving human participants. Participant confidentiality and anonymity were ensured through the use of coded identifiers and restricted access to study data. Standardized protocols for questionnaire administration, data entry, and statistical analysis were followed to ensure reproducibility and reliability of the findings (16).

RESULTS

A total of 200 physiotherapists participated in the study. Females constituted the majority of the sample, accounting for 62.0% ($n = 124$), while males comprised 38.0% ($n = 76$), a distribution that differed significantly from equality ($p = 0.003$). Most participants had relatively early professional experience, with 59.0% ($n = 118$) reporting 1–5 years of work experience, followed by 31.0% ($n = 62$) with 6–10 years and 10.0% ($n = 20$) with more than 10 years of experience. A substantial proportion of physiotherapists reported working more than 8 hours per day (59.5%, $n = 119$), which was significantly more frequent than those working 8 hours or less ($p = 0.014$) (Table 1).

The overall 12-month prevalence of musculoskeletal disorders among physiotherapists was 76.5% ($n = 153$; 95% CI: 70.6–82.4), whereas 23.5% ($n = 47$; 95% CI: 17.6–29.4) reported no musculoskeletal complaints during the

same period. This distribution was statistically significant ($p < 0.001$), indicating that musculoskeletal symptoms were highly prevalent within the study population (Table 2).

Analysis by anatomical region demonstrated that the lower back was the most frequently affected site, with 52.0% of physiotherapists ($n = 104$; 95% CI: 45.1–58.9) reporting symptoms. Neck involvement was reported by 45.5% ($n = 91$; 95% CI: 38.6–52.4), followed by shoulder symptoms in 41.0% ($n = 82$; 95% CI: 34.2–47.8). Upper extremity involvement extended to the wrists and hands in 33.5% ($n = 67$; 95% CI: 27.0–40.0) of participants. Lower limb symptoms were less frequently reported, with knee complaints present in 23.0% ($n = 46$; 95% CI: 17.2–28.8) and ankle or foot symptoms in 16.0% ($n = 32$; 95% CI: 10.9–21.1) of physiotherapists (Table 3).

Gender-stratified analysis revealed a higher prevalence of musculoskeletal disorders among female physiotherapists, with 81.5% ($n = 101$) reporting MSDs compared with 68.4% ($n = 52$) of males. Female gender was associated with a significantly increased likelihood of musculoskeletal disorders, with an odds ratio of 2.03 (95% CI: 1.05–3.91; $p = 0.034$) relative to males (Table 4).

Occupational exposure analysis demonstrated significant associations between work-related factors and musculoskeletal disorders. Physiotherapists working more than 8 hours per day exhibited a markedly higher prevalence of MSDs at 84.0% ($n = 100$) compared with 65.4% ($n = 53$) among those working 8 hours or less. Extended working hours were associated with nearly threefold increased odds of MSDs (OR = 2.75; 95% CI: 1.46–5.19; $p = 0.002$). Similarly, frequent manual patient handling was reported by a majority of participants and was associated with an MSD prevalence of 82.4% ($n = 112$), compared with 61.2% ($n = 41$) among those reporting infrequent handling. Frequent manual handling was associated with significantly higher odds of musculoskeletal disorders (OR = 2.96; 95% CI: 1.54–5.67; $p = 0.001$) (Table 5).

Table 1. Demographic and Occupational Characteristics of Participants ($n = 200$)

Variable	Category	n (%)	p-value*
Gender	Male	76 (38.0)	0.003
	Female	124 (62.0)	
Work Experience	1–5 years	118 (59.0)	0.021
	6–10 years	62 (31.0)	
	>10 years	20 (10.0)	
Daily Working Hours	≤8 hours	81 (40.5)	0.014
	>8 hours	119 (59.5)	

Table 2. Overall Prevalence of Musculoskeletal Disorders among Physiotherapists ($n = 200$)

MSD Status	Frequency (n)	Percentage (%)	95% CI	p-value†
Present	153	76.5	70.6–82.4	<0.001
Absent	47	23.5	17.6–29.4	

Table 3. Prevalence of Musculoskeletal Disorders by Body Region (12-Month Recall)

Body Region	n (%)	95% CI
Lower Back	104 (52.0)	45.1–58.9
Neck	91 (45.5)	38.6–52.4
Shoulders	82 (41.0)	34.2–47.8
Wrists/Hands	67 (33.5)	27.0–40.0
Upper Back	58 (29.0)	22.7–35.3
Knees	46 (23.0)	17.2–28.8
Ankles/Feet	32 (16.0)	10.9–21.1

Table 4. Gender-Wise Prevalence of Musculoskeletal Disorders ($n = 200$)

Gender	MSD Present n (%)	MSD Absent n (%)	Odds Ratio (95% CI)	p-value
Male	52 (68.4)	24 (31.6)	Reference	0.034
Female	101 (81.5)	23 (18.5)	2.03 (1.05–3.91)	

Table 5. Association Between Occupational Factors and Musculoskeletal Disorders

Variable	Category	MSD Present n (%)	Odds Ratio (95% CI)	p-value
Daily Working Hours	≤8 hours	53 (65.4)	Reference	0.002
	>8 hours	100 (84.0)	2.75 (1.46–5.19)	
Manual Patient Handling	Infrequent	41 (61.2)	Reference	0.001
	Frequent	112 (82.4)	2.96 (1.54–5.67)	

These results demonstrate a high prevalence of musculoskeletal disorders among physiotherapists, with significant associations observed for gender, prolonged working hours, and frequent manual patient handling.

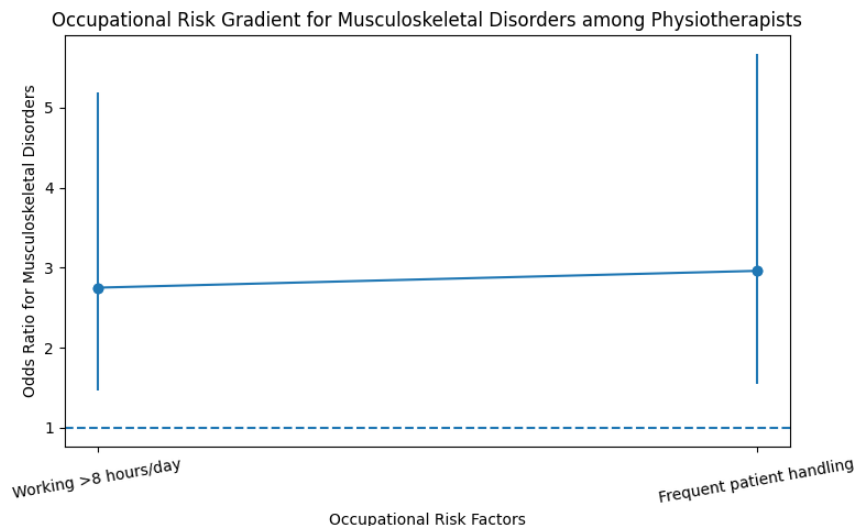


Figure 1 Occupational Risk Gradient for Musculoskeletal Disorders Among Physiotherapists

The figure illustrates the gradient of occupational risk for musculoskeletal disorders associated with key work-related exposures. Physiotherapists working more than 8 hours per day demonstrated an elevated likelihood of musculoskeletal disorders, with an odds ratio of 2.75 and a 95% confidence interval ranging from 1.46 to 5.19, indicating a statistically meaningful increase above the null threshold. Frequent manual patient handling showed a slightly higher magnitude of association, with an odds ratio of 2.96 and a 95% confidence interval of 1.54 to 5.67, reflecting the strongest occupational risk observed in the analysis. In both exposures, the confidence intervals remained entirely above unity, reinforcing the robustness of these associations. The closely aligned effect sizes highlight a cumulative occupational risk profile in which prolonged working hours and repetitive physical workload jointly contribute to a substantially increased burden of musculoskeletal disorders among physiotherapists in tertiary care settings.

DISCUSSION

The present cross-sectional study investigated the prevalence and distribution of musculoskeletal disorders among physiotherapists working in tertiary care hospitals in Lahore and identified occupational factors associated with these disorders. The findings indicate a high overall prevalence of musculoskeletal disorders, affecting more than three-quarters of the study population, underscoring the substantial occupational health burden faced by physiotherapists in high-demand clinical environments. This prevalence is comparable to estimates reported in international studies, where musculoskeletal disorder rates among physiotherapists have ranged from 60% to 90%, reflecting the physically intensive nature of the profession across diverse healthcare systems (17).

The lower back emerged as the most frequently affected anatomical region, followed by the neck and shoulders. This pattern is consistent with previous research demonstrating that spinal and upper extremity regions are particularly vulnerable due to repetitive bending, manual lifting, sustained forward-flexed postures, and prolonged static loading during patient treatment sessions (18). The high prevalence of lower back symptoms observed in this study may be further explained by frequent patient transfers and mobilization activities common in tertiary care hospitals, where physiotherapists often manage patients with limited mobility and complex rehabilitation needs (19).

Gender-based analysis revealed a significantly higher prevalence of musculoskeletal disorders among female physiotherapists compared with their male counterparts. Similar gender disparities have been documented in earlier studies and may be attributable to a combination of biological, ergonomic, and psychosocial factors (20). Differences in muscle strength, anthropometric characteristics, task allocation, and exposure to repetitive tasks may increase susceptibility among female physiotherapists. Additionally, societal and occupational expectations may influence workload distribution and recovery time, further contributing to observed disparities (21).

Occupational factors played a critical role in the occurrence of musculoskeletal disorders. Physiotherapists working more than eight hours per day exhibited significantly higher odds of musculoskeletal disorders, highlighting the cumulative effect of prolonged physical exposure and insufficient recovery periods. Extended working hours have been consistently associated with increased musculoskeletal strain, fatigue, and injury risk in healthcare professionals, particularly in settings characterized by high patient volume and limited staffing (22). Similarly, frequent manual patient handling was strongly associated with musculoskeletal disorders, emphasizing the biomechanical demands imposed by repetitive lifting, transferring, and repositioning of patients (23).

The findings of this study have important implications for occupational health practice and policy within tertiary care hospitals. Implementation of ergonomic training programs, workload management strategies, use of assistive devices for patient handling, and institutional support for adequate staffing and rest periods may substantially reduce the burden of musculoskeletal disorders among physiotherapists (24). Early identification of high-risk individuals and promotion of preventive workplace interventions are essential to sustain workforce health and productivity.

Several limitations should be considered when interpreting these results. The cross-sectional design precludes causal inference and limits the ability to establish temporal relationships between occupational exposures and musculoskeletal symptoms. The use of convenience sampling may affect generalizability beyond the studied hospitals, and reliance on self-reported data introduces the potential for recall bias. Additionally, unmeasured confounding factors such as body mass index, physical fitness level, and psychosocial stressors were not assessed (25). Despite these limitations, the study's strengths include the use of a validated assessment tool, adequate sample size, and focus on an under-researched population within the local healthcare context.

Overall, this study contributes valuable local evidence regarding the high prevalence of musculoskeletal disorders among physiotherapists in tertiary care hospitals in Lahore and highlights key occupational risk factors that warrant targeted preventive action. Future research employing longitudinal designs and intervention-based approaches is recommended to further elucidate causal pathways and to evaluate the effectiveness of ergonomic and organizational interventions in reducing work-related musculoskeletal disorders among physiotherapists (26).

CONCLUSION

This cross-sectional study demonstrates a high prevalence of musculoskeletal disorders among physiotherapists working in tertiary care hospitals in Lahore, with more than three-quarters of participants reporting musculoskeletal symptoms within the preceding 12 months. The lower back, neck, and shoulders were the most commonly affected body regions, reflecting the physical demands inherent in physiotherapy practice. Female gender, prolonged working hours, and frequent manual patient handling were identified as significant occupational risk factors associated with increased musculoskeletal burden. These findings highlight the urgent need for institution-level ergonomic interventions, workload optimization, and preventive occupational health strategies to safeguard the well-being of physiotherapists. Incorporating ergonomic training, appropriate staffing, and assistive patient-handling measures may reduce the risk of work-related musculoskeletal disorders and promote sustainable clinical practice. Further longitudinal and interventional research is warranted to establish causal relationships and to evaluate the effectiveness of targeted preventive approaches in similar healthcare settings.

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