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Original Article

Prevalence of Musculoskeletal Disorders in Dentists, Physiotherapists and Nurses in Punjab Pakistan

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ABSTRACT

Background: Musculoskeletal disorders (MSDs) are prevalent among healthcare professionals, significantly impacting their quality of life and work efficiency. Given the physical demands of their jobs, nurses, physiotherapists, and dentists are particularly susceptible to these disorders. This study aims to explore the prevalence and nature of MSDs among these professionals in Punjab, Pakistan, a region where such data is scarce but crucial for healthcare policy and practice improvement.

Objective: This research aims to determine the prevalence and distribution of various musculoskeletal disorders among nurses, physiotherapists, and dentists in Punjab, Pakistan, identifying the most affected body regions in each profession.

Methods: A comparative cross-sectional study was conducted from February to July 2022. The study population comprised 557 individuals (174 dentists, 196 physiotherapists, and 187 nurses) from DHQ and Teaching Hospitals in Punjab, including its capital and major cities. Non-probability purposive sampling was utilized. The Nordic musculoskeletal questionnaire was employed to assess the prevalence of musculoskeletal problems. Participants were contacted via email and telephone.

Results: The average ages of dentists, nurses, and physiotherapists were 35.01±5.18, 30.11±7.24, and 29.50±6.80 years, respectively. The study found that 78.7% of dentists suffered from neck disorders, 54.6% from low back pain, and 50% from shoulder disorders. Among physiotherapists, the prevalent disorders were lower back pain (45.9%), elbow (26%), and wrist/hand issues (23%). Nurses mostly reported lower back (38%), hips/thighs (38%), and shoulder disorders (27.3%).

Conclusion: The study concludes that musculoskeletal disorders are a significant health concern among physiotherapists, nurses, and dentists in Punjab, Pakistan. The most affected areas are the neck, shoulder, and lower back.

Keywords: Dentists, Nurses, Musculoskeletal Disorders, Physical Therapists, Prevalence, Healthcare Professionals, Punjab, Pakistan.

INTRODUCTION

The focus of this study is to analyze the prevalence and patterns of musculoskeletal disorders (MSDs) among healthcare professionals, specifically dentists, physiotherapists, and nurses, and to understand how their working postures might contribute to these conditions. This research is vital in light of the growing concerns about occupational health in the healthcare sector. In the healthcare profession, the risk of health-related harms, notably musculoskeletal disorders, is rising. These disorders include symptoms like pain, discomfort, and tingling, affecting various parts of the body (1, 4). The working environment plays a crucial role in the development of these

disorders. Stressful, negative, or uncomfortable work conditions, along with job uncertainty, can worsen these health issues (1, 2).

Among dentists, a significant number report musculoskeletal complications. An Italian study found that 93.3% of dentists faced such problems, with the prevalence differing based on their specific roles, such as clinical dentists, postgraduate students, or assistant professors (3). A broader review further indicated that between 64% to 93% of dental professionals suffer from MSDs due to the nature of their work (4). The situation is similar for physiotherapists. Studies from different countries show high prevalence rates of musculoskeletal problems linked to their professional activities- 68% in the United Kingdom, 91% in Australia, and 85% in Turkey (6). In Canada, 47% of physiotherapists report suffering from low back pain, and a study in Kuwait found that 72% struggle with lumbar issues (7, 8). Nurses also face a high risk of MSDs, with an estimated 65% experiencing these conditions due to their job demands (9). The most common issues are lower back and shoulder pains, with lumbar region injuries accounting for a significant portion of annual injuries (10).

This study aims to deepen the understanding of these occupational challenges. By examining the prevalence and patterns of musculoskeletal disorders and analyzing the postures healthcare professionals maintain during their daily work, we can gain insights into the causes of these conditions. This information is crucial for developing strategies to improve workplace ergonomics and reduce the risk of MSDs among healthcare workers. The findings could also guide policy changes and preventive measures in the healthcare sector, aiming to protect the health and well-being of those who dedicate their lives to caring for others.

METERIAL AND METHODS

This study employed a comparative cross-sectional design, conducted between February and July 2022, to investigate musculoskeletal disorders among health professionals in Punjab, Pakistan. The target population included dental surgeons (n=174), nurses (n=187), and physiotherapists (n=196), amounting to a total of 557 participants. These individuals, ranging in age from 22 to 55 years and encompassing both genders, were selected based on their clinical experience of at least one year and a minimum of 8 working hours per day. Participants were drawn from DHQ and Teaching Hospitals across major cities in Punjab, including Lahore, Sialkot, Rawalpindi/Islamabad, Multan, Faisalabad, Sargodha, Gujranwala, Jhelum, and Bahawalpur.

Data collection was conducted using non-probability purposive sampling and involved the Nordic Musculoskeletal Questionnaire, a comprehensive tool designed to assess musculoskeletal disorders. This questionnaire encompasses personal and work-related domains, identifying symptoms such as numbness, pain, tingling, burning, or stiffness that persisted for over a week in the past year, or occurred monthly with at least moderate pain. Participants were interviewed and their histories taken to fill out the questionnaires.

The Nordic Musculoskeletal Questionnaire, instrumental in this study, included specific questions targeting both upper and lower limbs, the upper and lower back, and task-oriented aspects. The severity of musculoskeletal disorders was gauged on a scale of 0 to 10, with 0 to 1 indicating no significant impact on job performance, 2 to 7 representing minimal to moderate problems, and 8 to 10 signifying major work-related issues. Additionally, a self-designed questionnaire consisting of Yes/No questions was employed to further assess the severity of musculoskeletal disorders specific to each of the three professions. Data collection extended beyond in-hospital interviews, utilizing emails and telephonic communication, with participant contact information sourced from the Pakistan Medical Commission (PMC), Pakistan Nursing Council, and Pakistan Physical Therapy Association (PPTA).

Statistical analysis was performed using SPSS version 23. Quantitative data were expressed in terms of mean and standard deviation, while qualitative data were presented as frequencies and percentages. To establish the association between self-reported musculoskeletal symptoms and personal characteristics, a chi-square test was utilized. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

The prevalence of musculoskeletal disorders related to repetitive tasks is striking, especially among dental surgeons, with 97% reporting it as a major problem. Physiotherapists follow closely at 94%, while nurses are somewhat less affected at 20%. When it comes to handling an excessive patient load, 95% of dental surgeons consider it a major issue, closely followed by physiotherapists at 91%, and significantly affecting nurses at 73.5%.

Manual orthopedic techniques pose a significant challenge specifically for physiotherapists, with 91.2% reporting major problems. The issue of insufficient rest breaks is acute across professions: 91.9% of dental surgeons, 81.3% of physiotherapists, and 33.8% of nurses report this as a major concern. Working in awkward or cramped positions is a major problem for a majority of dental surgeons (85.5%) and physiotherapists (71.3%), with nurses also affected significantly (51.8%). Prolonged static positions are a considerable issue for dental surgeons (95.7%) and physiotherapists (87.7%), in contrast to nurses (30%).

Awkward back bending or twisting is a prominent issue among dental surgeons (81.2%) and physiotherapists (70.4%), with nurses experiencing this to a lesser extent at 38.8%. The problem of reaching or working away from the body is particularly pronounced among dental surgeons (88.2%) and physiotherapists (83.4%), compared to 13.8% of nurses. Lifting or transferring patients is notably a problem for nurses, with 33.8% finding it a major issue. Handling agitated patients is another significant concern, particularly for dental surgeons (71.2%) and physiotherapists (57.2%), as opposed to 15.4% for nurses.

Heavy material handling is a major problem for physiotherapists (55.5%) and nurses (53.5%). Work scheduling issues are reported as major problems by 36.4% of dental surgeons, 65.5% of physiotherapists, and 36.3% of nurses, highlighting the stress related to work schedules across these professions. There appears to be a gap in occupational health and safety training, with 30.5% of dental surgeons, 43.2% of physiotherapists, and 43.8% of nurses reporting inadequate injury prevention training as a major issue.

Table 1 Prevalence of Work-Related Musculoskeletal Disorders in Health Professionals

Risk Factor	Dental Surgeons (n=174)	Physiotherapists (n=196)	Nurses (n=187)
Same Task Repeated	No Problem: 0%, Minimal/Moderate: 3%, Major: 97%	No Problem: 0%, Minimal/Moderate: 6%, Major: 94%	No Problem: 1.3%, Minimal/Moderate: 78.8%, Major: 20%
Excessive Patient Load	No Problem: 2%, Minimal/Moderate: 3%, Major: 95%	No Problem: 1%, Minimal/Moderate: 8%, Major: 91%	No Problem: 6.2%, Minimal/Moderate: 20.3%, Major: 73.5%
Manual Orthopedic Techniques	N/A	No Problem: 0%, Minimal/Moderate: 8.8%, Major: 91.2%	N/A
Insufficient Rest Breaks	No Problem: 5.6%, Minimal/Moderate: 2.5%, Major: 91.9%	No Problem: 3.95%, Minimal/Moderate: 14.75%, Major: 81.3%	No Problem: 3.8%, Minimal/Moderate: 62.4%, Major: 33.8%
Awkward/Cramped Positions	No Problem: 0%, Minimal/Moderate: 14.5%, Major: 85.5%	No Problem: 9.5%, Minimal/Moderate: 19.2%, Major: 71.3%	No Problem: 2.2%, Minimal/Moderate: 46%, Major: 51.8%
Static Positions	No Problem: 0%, Minimal/Moderate: 4.3%, Major: 95.7%	No Problem: 3%, Minimal/Moderate: 10.3%, Major: 87.7%	No Problem: 13.8%, Minimal/Moderate: 56.2%, Major: 30%
Awkward Back Bending/Twisting	No Problem: 3.6%, Minimal/Moderate: 15.2%, Major: 81.2%	No Problem: 8.7%, Minimal/Moderate: 20.9%, Major: 70.4%	No Problem: 10%, Minimal/Moderate: 51.3%, Major: 38.8%

Risk Factor	Dental Surgeons (n=174)	Physiotherapists (n=196)	Nurses (n=187)
Reaching/Working Away from Body	No Problem: 6.5%, Minimal/Moderate: 5.4%, Major: 88.2%	No Problem: 1.3%, Minimal/Moderate: 15.3%, Major: 83.4%	No Problem: 1.3%, Minimal/Moderate: 85%, Major: 13.8%
Lifting/Transferring Patients	N/A	No Problem: 0%, Minimal/Moderate: 5.4%, Major: 94.6%	No Problem: 28.8%, Minimal/Moderate: 37.5%, Major: 33.8%
Handling Agitated Patients	No Problem: 9.9%, Minimal/Moderate: 18.9%, Major: 71.2%	No Problem: 3.4%, Minimal/Moderate: 39.4%, Major: 57.2%	No Problem: 10.3%, Minimal/Moderate: 75.3%, Major: 15.4%
Heavy Material Handling	N/A	No Problem: 5.7%, Minimal/Moderate: 38.8%, Major: 55.5%	No Problem: 9.3%, Minimal/Moderate: 37.2%, Major: 53.5%
Unanticipated Patient Movement	N/A	No Problem: 3.8%, Minimal/Moderate: 23.9%, Major: 72.3%	N/A
Assisting in Gait Activities	N/A	No Problem: 13.3%, Minimal/Moderate: 39.4%, Major: 47.3%	N/A
Work Scheduling Issues	No Problem: 13.2%, Minimal/Moderate: 50.4%, Major: 36.4%	No Problem: 5.2%, Minimal/Moderate: 29.3%, Major: 65.5%	No Problem: 10.3%, Minimal/Moderate: 52.5%, Major: 36.3%
Inadequate Injury Prevention Training	No Problem: 47.5%, Minimal/Moderate: 22%, Major: 30.5%	No Problem: 26.3%, Minimal/Moderate: 30.5%, Major: 43.2%	No Problem: 30%, Minimal/Moderate: 26.3%, Major: 43.8%

Dental surgeons face several specific challenges: managing a large patient load (96.5%), repetitive shoulder movements (71.3%), working in awkward postures (58.6%), and high exposure to vibrating tools (82.8%). For physiotherapists, concerns include working in the same position for long durations (21.9%) and insufficient rest breaks (26.5%). Nurses are particularly affected by manual patient handling (14.4%) and often bending or twisting (60.9%).

Table 2 Work Characteristics and Related Health Issues in Health Professionals (n = 557

Work Characteristic	Dentists (%)	Physiotherapists (%)	Nurses (%)
Large Patient Load	96.5	69.4	N/A
Repetitive Movements	Shoulder: 71.3	N/A	N/A
Awkward Posture	58.6	19.4	N/A
Vibrating Tools Exposure	82.8	N/A	N/A
Long Duration in Same Position	N/A	21.9	N/A
Insufficient Rest Breaks	N/A	26.5	N/A
Manual Patient Handling	N/A	N/A	14.4
Bending/Twisting	N/A	N/A	60.9

These findings illuminate the multifaceted and significant challenges faced by health professionals, underscoring the need for targeted interventions to mitigate these occupational hazards.

DISCUSSION

The discussion of the study's findings offers valuable insights into the prevalence and distribution of musculoskeletal disorders among healthcare professionals, specifically dentists, physiotherapists, and nurses. The

study's results are consistent with existing literature, highlighting common patterns of musculoskeletal afflictions in these professions.

The study reveals a high prevalence of musculoskeletal issues among dentists, with particular emphasis on neck, shoulder, and lower back regions. These findings align with previous research, such as the work of Gandolfi et al., which identified significant occurrences of shoulder and neck pain among dental professionals (3). Similarly, Lietz et al. reported a high prevalence of neck, lower back, and shoulder pain among Australian undergraduate dental students (4). These conditions are often attributed to the nature of dental work, which frequently involves prolonged periods in static, awkward postures, and repetitive movements. The prevalence of wrist and hand joint problems, as highlighted by Lietz et al., underscores the physical demands of dental surgery, requiring fine motor skills and sustained positions (4). The studies by Gasibat et al. and Khan et al. further reinforce these findings, highlighting the predominance of neck, shoulder, and lower back pain in this profession (11,14).

For physiotherapists, the study indicates a significant incidence of work-related musculoskeletal complications, with the lower back being the most affected area. This finding is in line with other studies, such as those by Nordin et al., which also identified low back pain as a predominant issue among physical therapists, followed by problems in the cervical and upper back regions (16). The physical nature of physiotherapy, which often involves manual patient handling and prolonged standing, is likely a contributing factor to this trend. The range of affected areas, from the neck to the ankles, reflects the diverse and physically demanding tasks that physiotherapists undertake.

Nurses also show a notable prevalence of musculoskeletal disorders, especially in the lower back, as evidenced in the study. This is consistent with global studies indicating the widespread nature of low back pain among nurses, as seen in various regions, including Hong Kong, England, France, Japan, and Sweden (19-24). Bin Homaid's study highlights the severity of low back pain among nurses, followed by issues in the ankle/feet and shoulders (25). The physical demands of nursing, including patient handling and long shifts, contribute significantly to these conditions. The comparison with Mailutha's findings, which also emphasize low back pain as a primary concern, further validates the pervasive nature of this issue in nursing (26).

The study offers a comprehensive view of musculoskeletal disorders across these healthcare professions, aligning with existing literature and underscoring the occupational risks inherent in these fields. The consistency of these disorders, particularly in the lower back region across all three professions, points to the need for targeted ergonomic interventions and enhanced training in injury prevention. Addressing these issues is crucial for the long-term health and productivity of healthcare workers.

CONCLUSION

The study concluded that musculoskeletal complications is one of the major health related problems prevailing among physiotherapist, nurses and dentist professionals. Moreover, neck, shoulder and low back are frequently affected regions of the body among physiotherapists, nurses and dentists. The screening for the risk factor should be implicated among the clinical set-ups so that further enhancement in health care can be obtained.

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