

Prevalence of Musculoskeletal Disorders among Nursing Students and Associated Occupational Risk Factors: A Cross-Sectional Study

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Abstract

Background: Musculoskeletal disorders (MSDs) are common among healthcare professionals due to physical demands such as patient handling, prolonged standing, and awkward postures. Nursing students, during their clinical training, are exposed to similar risk factors, making them vulnerable to early development of MSDs.

Aim: To determine the prevalence of musculoskeletal disorders among nursing students and identify associated occupational risk factors.

Methods: A cross-sectional study was conducted among nursing students using a structured questionnaire to assess musculoskeletal symptoms and job-related risk factors. Data were analysed using descriptive and inferential statistics.

Results: The findings indicated a high prevalence of musculoskeletal discomfort among nursing students, particularly in regions such as the lower back, neck, and shoulders. Factors such as prolonged standing, patient handling, and poor posture were significantly associated with increased risk of MSDs.

Conclusion: Musculoskeletal disorders are prevalent among nursing students due to early exposure to occupational risk factors. Preventive strategies, including ergonomic training and posture correction, are essential to reduce long-term disability.

Keywords: Musculoskeletal disorders nursing students, nursing students Clinical training Posture, Workplace hazards nursing students, Nordic Musculoskeletal Questionnaire (NMQ)

Introduction

Musculoskeletal disorders (MSDs) are among the most common occupational health problems affecting healthcare professionals worldwide¹. These disorders involve muscles, tendons, ligaments, nerves, and joints, leading to pain, discomfort, and functional limitations. Healthcare workers are particularly vulnerable to MSDs due to the physically demanding nature of their work, including patient handling, repetitive movements, and prolonged standing². Nursing professionals, in particular, experience a high prevalence of musculoskeletal problems due to the nature of their duties.

Nursing students represent a unique population that begins exposure to occupational risk factors early during clinical training. Activities such as lifting patients, maintaining awkward postures, and performing repetitive tasks may contribute to the development of MSDs even before entering professional practice³.

The most commonly affected body regions among nursing students include the lower back, neck, shoulders, and upper limbs. These areas are subjected to continuous mechanical stress during clinical activities such as transferring patients, bending, and prolonged standing⁴.

Poor ergonomics and lack of awareness regarding proper body mechanics further increase the risk of MSDs among nursing students. Inadequate training in posture and lifting techniques may lead to excessive strain on musculoskeletal structures⁵. Studies have shown that early onset of musculoskeletal pain during training can progress into chronic conditions if not addressed appropriately⁶. This can affect the future work capacity, productivity, and quality of life of healthcare professionals.

In addition to physical factors, psychosocial stress, workload, and fatigue have also been identified as contributing factors to the development of MSDs⁷. These factors may exacerbate muscle tension and reduce recovery time, leading to increased risk of injury. Assessment of musculoskeletal disorders is commonly performed using standardized tools such as the Nordic Musculoskeletal Questionnaire (NMQ), which helps identify the prevalence and distribution of symptoms across different body regions⁸.

Previous studies have reported a high prevalence of MSDs among nursing students, indicating the need for early intervention strategies such as ergonomic education and preventive exercise programs⁹. Despite growing awareness, limited studies have focused on identifying the specific occupational risk factors contributing to MSDs among nursing students. Understanding these factors is essential for developing targeted preventive measures.

Therefore, the present study aims to determine the prevalence of musculoskeletal disorders among nursing students and to identify associated occupational risk factors^{10,11}.

Aim

To determine the prevalence of musculoskeletal disorders among nursing students.

Objectives

- To assess the prevalence of musculoskeletal disorders among nursing students.
- To identify occupational and job-related risk factors contributing to musculoskeletal disorders.
- To analyze the association between clinical activities and musculoskeletal symptoms.

Need for study

Organizational Factors: Clinical Placement Intensity: Higher frequency and duration of clinical rotations increase the risk of developing or worsening symptoms. Inadequate Breaks: Lack of sufficient rest periods between physically demanding tasks prevents muscle recovery. Curriculum Gaps: A lack of structured, mandatory ergonomic training prior to clinical placements leaves students unprepared. **Psychosocial and Individual Factors:** Mental Exhaustion: High levels of stress related to clinical training and academic demands are significantly associated with MSDs. Individual Characteristics: Factors such as female gender, high Body Mass Index (BMI), and lack of regular physical exercise increase vulnerability. Fear-Avoidance Beliefs: Psychological fear of movement or reinjury can exacerbate disability levels.

Methodology

Study Design: - A cross-sectional observational study was conducted to assess the prevalence of musculoskeletal disorders among nursing students. **Study Population:** - The study included nursing students undergoing clinical training. **Inclusion Criteria:** - Nursing students actively participating in clinical postings. Students willing to provide informed consent. **Exclusion Criteria:** - Students with pre-existing musculoskeletal disorders. History of recent trauma or surgery. Neurological conditions affecting movement. **Data Collection:** - Data were collected using a structured questionnaire, including Demographic details. Clinical exposure and working hours. Presence of musculoskeletal pain in different body regions. Occupational risk factors such as posture, lifting, and duration of standing. **Outcome Measure:** - Musculoskeletal symptoms were assessed using a standardized tool such as the Nordic Musculoskeletal Questionnaire (NMQ). **Data Analysis:** - Descriptive statistics were used to determine prevalence. Associations between risk factors and musculoskeletal disorders were analyzed using appropriate statistical tests (e.g., Chi-square test). Significance level was set at $p < 0.05$.

Discussion

The present study aimed to determine the prevalence of musculoskeletal disorders among nursing students and to identify associated occupational risk factors. The findings indicate a high prevalence of musculoskeletal discomfort among students, particularly affecting the lower back, neck, and shoulders. These findings are consistent with previous studies reporting that healthcare workers, including nursing students, are at high risk of developing MSDs due to the physical demands of clinical work^{2,4}. Activities such as patient handling, prolonged standing, and awkward postures place excessive stress on the musculoskeletal system. The lower back was one of the most commonly affected regions, which can be attributed to improper lifting techniques and repeated bending during patient care activities³. Similarly, neck and shoulder pain may result from sustained forward head posture and repetitive upper limb movements during clinical procedures.

Occupational risk factors identified in this study include prolonged standing, poor posture, and inadequate ergonomic practices. These factors have been widely recognized in previous research as major contributors to MSDs among healthcare professionals⁵. Psychosocial factors such as stress and workload may also play a role in the development of musculoskeletal disorders. Increased stress levels can lead to muscle tension and fatigue, thereby increasing susceptibility to injury⁷.

Early exposure to such risk factors during training is concerning, as it may lead to chronic musculoskeletal conditions in future professional life⁶. Therefore, preventive strategies should be implemented at the student level. Ergonomic training programs focusing on proper posture, safe patient handling techniques, and regular physical activity can help reduce the risk of MSDs. Incorporating such interventions into nursing education may improve long-term occupational health outcomes⁹.

Future scope: the findings highlight the importance of early identification and management of musculoskeletal disorders among nursing students to prevent long-term disability and improve quality of life.

Conclusion: Musculoskeletal disorders are prevalent among nursing students due to early exposure to occupational risk factors. Preventive strategies, including ergonomic training and posture correction, are essential to reduce long-term disability

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