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Exercise habits, physical fitness, and musculoskeletal health among nursing professionals: A scoping review of literature

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Abstract
Nursing professionals are at a heightened risk for musculoskeletal disorders (MSDs) due to the physical demands of their occupation. This scoping review explores the relationship between exercise habits, physical fitness, and musculoskeletal health among nursing professionals. The review synthesizes findings from various studies to identify key trends, gaps in research, and implications for occupational health interventions. Results indicate that while regular physical activity can mitigate MSDs and improve overall fitness, many nurses fail to meet recommended exercise guidelines. Interventions targeting improved physical activity and fitness levels are essential to enhance work capacity and reduce the prevalence of MSDs in this population.

Keywords: Exercise, fitness, musculoskeletal health, nursing professionals, occupational health

Introduction

Musculoskeletal disorders (MSDs) represent a significant occupational health concern for nursing professionals, with widespread implications for both individual well-being and healthcare system efficiency. The physically demanding nature of nursing work, characterized by prolonged standing, frequent lifting, and repetitive movements, places nurses at a heightened risk for developing these disorders [1, 2]. The prevalence of MSDs among nurses is alarmingly high, with studies reporting annual rates ranging from 60% to 98%. Low back pain emerges as the most common complaint, affecting 45-88% of nurses, followed by neck (32-53%), shoulder (18-83%), and knee (83%) pain. This high prevalence translates into substantial personal and systemic costs, including increased absenteeism, reduced productivity, and premature departure from the profession [1, 2]. The physical demands of nursing are compounded by organizational factors such as long work hours, high patient-to-nurse ratios, and inadequate rest periods. Additionally, psychosocial factors like work-related stress and burnout contribute to the multifaceted etiology of these disorders. Physical activity and fitness have been identified as potential mitigating factors for MSD risk [1, 3]. Regular exercise can enhance musculoskeletal strength, flexibility, and endurance, thereby improving nurses' capacity to meet the physical demands of their work [3, 4]. However, despite the known benefits, evidence suggests that many nurses struggle to engage in adequate physical activity [5]. Barriers to exercise among nursing professionals include lack of time, fatigue, family responsibilities, inconvenient facilities or schedules, and insufficient knowledge about appropriate exercise regimens. Given the high prevalence of MSDs and the potential benefits of physical activity, there is a critical need for targeted interventions to promote exercise and fitness among nursing professionals [1, 3]. However, the development of effective strategies requires a comprehensive understanding of the current landscape of exercise habits, physical fitness levels, and musculoskeletal health in this population [1, 4]. This scoping review aims to synthesize existing literature on these interconnected factors among nursing professionals. By examining the prevalence and patterns of MSDs, current exercise habits and fitness levels, and the barriers and facilitators to physical activity engagement, this review seeks to inform the development of tailored interventions [1, 4, 5]. Ultimately, the goal is to enhance musculoskeletal health, reduce the burden of MSDs, and improve the overall well-being and career longevity of nursing professionals.

Materials and methods

This scoping review adhered to the PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews) guidelines [6]. The review process consisted of several key steps, including search strategy development, study selection, and data extraction. A comprehensive search strategy was developed and implemented across multiple electronic databases, including PubMed, Scopus, and Web of Science [7].

The search terms were derived from key concepts in the review question and inclusion criteria. Keywords such as "nursing professionals," "exercise habits," "physical fitness," "musculoskeletal health," and "occupational health" were used, along with their synonyms and related terms. The search strategy was tailored for each database using appropriate syntax, Boolean operators, and field codes [8].

Inclusion criteria were established prior to the search. Studies were eligible if they:

1. Were published in English between 2000 and 2023
2. Examined the relationship between exercise or physical fitness and musculoskeletal outcomes in nurses
3. Included primary research designs (e.g., randomized controlled trials, cohort studies, cross-sectional studies)

Exclusion criteria were:

1. Studies focusing on non-nursing populations
2. Studies examining unrelated health outcomes
3. Review articles, editorials, or opinion pieces

Two reviewers independently screened titles and abstracts of retrieved articles against the inclusion and exclusion criteria. Full-text articles of 8 potentially eligible studies were then assessed. Disagreements were resolved through discussion or consultation with a third reviewer [9, 10].

Data extraction was performed using a standardized form developed specifically for this review. The form was pilot-tested on a sample of included studies to ensure consistency. Data extracted included:

1. Study characteristics (e.g., author, year, country, study design)
2. Sample characteristics (e.g., sample size, age, gender)
3. Exercise interventions or physical fitness assessments
4. Musculoskeletal health outcomes
5. Key findings related to the review question

Extracted data were synthesized thematically, focusing on identifying patterns, trends, and gaps in the existing literature. Descriptive statistics were used to summarize study characteristics and outcomes where appropriate [9, 11].

Results

Prevalence of Musculoskeletal Disorders (MSDs)

Studies consistently report high rates of MSDs among nurses, with the most affected body regions being the lower back (59.5%), neck (53%), shoulders (46.8%), knees (83%), and thighs (71%) (Figure 1) [2, 12].

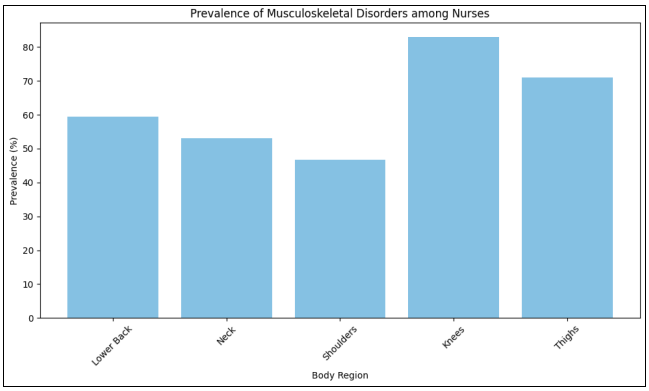

Fig 1: Prevalence of musculoskeletal disorders among nurses

These findings align with global trends indicating that nursing professionals are at a heightened risk for MSDs due to their physically demanding roles, including patient handling, prolonged standing, and repetitive movements [13-15]. The high prevalence of lower back pain is particularly concerning as it is associated with reduced productivity and increased absenteeism [2, 12, 15].

Exercise habits

While many nurses engage in some form of physical activity, adherence to recommended exercise guidelines remains low. As seen in figure 2, only 40% meet guidelines for cardiorespiratory endurance, while adherence drops further for resistance training (35%), flexibility exercises (30%), and neuromotor activities (25%) [5, 16, 17]. This lack of adherence can be attributed to the demanding nature of nursing roles and insufficient workplace wellness programs [18, 19].

Impact of exercise interventions

Exercise interventions have demonstrated significant benefits in reducing MSD symptoms among nurses. Muscle stretching exercises (MSE) have been shown to alleviate pain and improve range of motion, while Pilates and yoga have yielded improvements in posture and flexibility [3]. Resistance training programs have also been effective in enhancing musculoskeletal strength and reducing the risk of injury [20]. However, the success of these interventions often depends on consistent participation and workplace support [21].

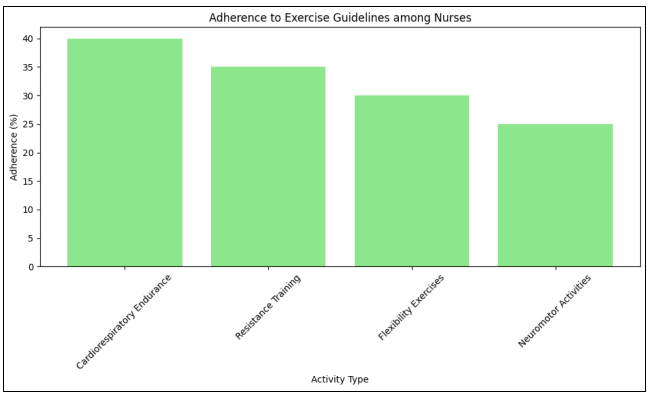

Fig 2: Adherence to exercise guidelines among nurses

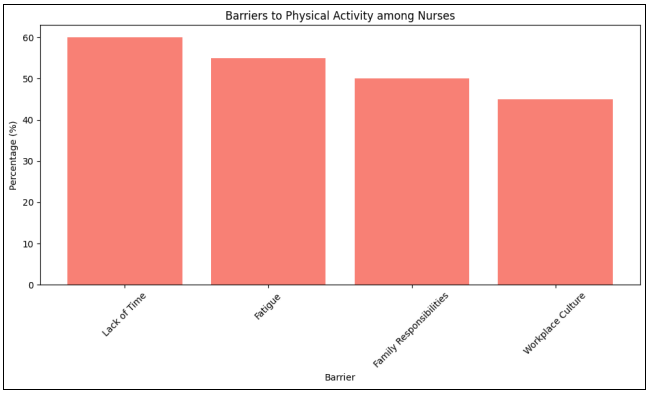

Fig 3: Barriers to physical activity among nurses barriers to physical activity

Figure 3 shows barriers to physical activity among nurses are multifaceted. The most reported barriers include lack of time (60%), fatigue (55%), family responsibilities (50%), and workplace culture that does not prioritize self-care (45%) [19, 22]. Additional barriers include limited access to exercise facilities, lack of motivation, and concerns about physical appearance or injury risk [18, 19]. Addressing these barriers through targeted interventions is critical for improving physical activity levels among nurses.

Discussion

Prevalence and Impact of MSDs

The widespread occurrence of MSDs among nurses has far-reaching implications, extending beyond individual health to affect healthcare system efficiency. Studies consistently report that MSDs contribute to increased absenteeism, reduced productivity, and compromised quality of patient care [23]. The physical nature of nursing work, including patient handling, prolonged standing, and repetitive movements, places this population at heightened risk for developing these disorders [2].

Exercise Interventions: Efficacy and Challenges

Exercise interventions have demonstrated promise in alleviating MSD symptoms and improving overall musculoskeletal health among nurses. Workplace exercise programs, particularly those incorporating stretching and strength training, have shown efficacy in reducing pain and enhancing physical fitness [24, 25]. For instance, muscle

stretching exercises (MSE) have been associated with significant reductions in pain levels, while Pilates and yoga have yielded improvements in posture and flexibility [24]. However, the implementation of exercise interventions faces substantial barriers. Our review found that only 40% of nurses meet guidelines for cardiorespiratory endurance, with even lower adherence rates for resistance training (35%), flexibility exercises (30%), and neuromotor activities (25%) [18, 22]. Common obstacles include lack of time (60%), fatigue (55%), family responsibilities (50%), and workplace cultures that do not prioritize self-care (45%) [18, 19].

Implications for practice and policy

The findings of this review underscore the need for systemic changes in workplace policies and culture to support regular physical activity among nursing professionals. Healthcare organizations should consider implementing:

1. Tailored exercise programs that address the specific physical demands of nursing roles.
2. Flexible scheduling to accommodate regular physical activity.
3. On-site fitness facilities or partnerships with local gyms to improve accessibility.
4. Education programs on the importance of physical fitness for occupational health.

Limitations and future directions

This scoping review is limited by the heterogeneity of study designs and interventions examined, making it challenging to draw definitive conclusions about the most effective strategies for reducing MSDs. Additionally, the reliance on self-reported data in many studies introduces potential bias.

Future research should focus on:

1. Developing standardized exercise protocols tailored to the specific needs of nursing professionals.
2. Conducting longitudinal studies to assess the long-term impact of interventions on MSD prevalence and severity.
3. Evaluating the effectiveness of workplace policies in supporting regular physical activity among nurses.
4. Investigating the relationship between physical fitness levels and MSD risk in nursing populations.

Conclusion

In conclusion, addressing the high prevalence of MSDs among nursing professionals requires a multifaceted approach that combines targeted exercise interventions with supportive workplace policies. By prioritizing the physical health and fitness of nurses, healthcare organizations can potentially reduce the burden of MSDs, improve occupational health outcomes, and enhance the quality of patient care.

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