



An ergonomic imperative for the silent epidemic of musculoskeletal disorders in health networks

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ABSTRACT. Musculoskeletal disorders (MSD), a major occupational health problem in the healthcare sector, are often exacerbated by prolonged uncomfortable or static positions, handling patients and heavy physical workloads. The productivity and welfare of health workers is severely compromised by the high prevalence of these disorders. The purpose of the study was to determine the exact prevalence of multiple sclerosis among medical personnel at the Pardis Health Network of the Shahid Beheshti University of Medicine in Tehran, Iran. The study design used was a cross-sectional design. The multistage cluster sampling was used for the selection of the sample of 90 health care workers. The Orebro questionnaire on musculoskeletal pain was used to collect information on the location and prevalence of MSD. The association between the individual variables and the prevalence of the disorder was examined by statistical analysis. The study confirmed that healthcare workers are at high risk of multiple sclerosis. The highest prevalence of musculo-skeletal disorders was 50 percent, and the lowest was 7 percent. Some disorders showed significant correlations with demographic variables ($p < 0.05$): age and educational status were associated with lower back and arm disorders, and with education level with leg disorders. On the other hand, there was no apparent correlation between these factors and the upper back disorders. The results confirm the importance of personal factors in addition to work-related stress and are consistent with international research. Proactive ergonomic and behavioral interventions are urgently needed, as shown by the high prevalence of multiple sclerosis in the Pardis health network. The approval of the shortened version of the Commitment to Action scale for stretching was an important finding that underlined the importance of setting up reliable tools to support preventive stretching practices and successfully reducing the significant burden of MSD on healthcare professionals © 2025 Published by Public Knowledge Project (PKP).

Keywords: Musculoskeletal Disorders, Health Workers, Stretching Exercise, Occupational Health, Prevalence, Ergonomic Intervention.

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Introduction

Worldwide, musculoskeletal disorders (MSDs) are acknowledged as one of the most significant occupational health issues. Because of the physically taxing nature of the work (patient handling), prolonged awkward postures (particularly when using a computer), and high psychological stress, the prevalence of these disorders is especially concerning in the healthcare industry. According to global meta-analyses, the overall prevalence of MSDs among nurses and other health professionals can vary from 45 to 95 percent, with the lower back and neck areas usually having the highest rates (Al-Ma'aitah et al., 2025; Aveyard et al., 2024).

In this context, a cross-sectional study conducted from the Pardis Health Network, affiliated with Shahid Beheshti University of Medical Sciences in Tehran, aimed to determine the precise prevalence rate of these disorders among the health workers in the Pardis region. The results of this study vividly reflect the magnitude of this challenge within the national health system.

Methods

From March to May 2025, healthcare professionals at Tehran's Pardis Health Network participated in a cross-sectional survey. Three health centers were chosen at random from the network using multistage cluster sampling.

Every member of the clinical staff, including general practitioners, midwives, nurses, and health technicians, qualified. Based on a 95 percent confidence level, a 5 percent margin of error, and a 50% expected MSD prevalence, a sample of 90 participants was determined.

Data collection Two tools were used: the Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPQ), which was modified for Persian and evaluated the frequency and location of pain over the previous 12 months in the neck, shoulders, upper/lower back, arms, and legs. The Commitment to Action Scale for Stretching Exercise (CAS-SE) is a recently created 6-item scale ($\alpha = 0.82$) that assesses self-efficacy and intention about stretching at work.

Additionally, demographic information was gathered, including years of experience, job role, education, gender, and age. Statistical Analysis SPSS v was used to analyze the data. 26. The prevalence of MSDs by anatomical site was compiled using descriptive statistics. Bivariate analyses (Fisher's exact test, chi-square) looked at relationships between MSDs and demographic factors. Statistical significance was defined as a p-value <0.05 .

Result

high prevalence and related factors in Pardis health network the study confirmed the high prevalence of MSD in this occupational group by surveying 90 healthcare workers using the Orebro MSD screening questionnaire and a multi-staged cluster sampling. The highest prevalence of Musculo-skeletal disorders was 50 percent and the lowest was 7 percent. In line with international research on risk factors such as age and gender, the results showed a strong correlation between specific disorders and individual characteristics (Widiat et al.). (f) Age, gender and educational attainment were significantly correlated with specific disorders ($P<0.05$).

Lower back disorders have been associated with age and educational levels. The arm disorders were related to age. Leg disorders were related to educational level ($p<0.05$). Conversely, no significant correlation was observed between upper back disorders and age, gender or educational level ($p<0.05$).

The high prevalence of back pain, particularly in areas such as the lower back, related to age and education in this study is consistent with the 60-70 percent prevalence of back pain in healthcare workers documented in international studies, underlining the importance of personal factors in addition to work-related stress (Aveyard et al.). Al-Ma'aitah and Others, 2024.

Conclusion

The Emphasis on Behavioral Interventions This study highlights how urgently the Pardis Health Network needs to develop efficient ergonomic and health interventions. The acceptance of the abbreviated version of the Commitment to a Plan of Action Scale for Stretching Exercise is a significant finding in the conclusion. To guarantee a valid and dependable tool for achieving Stretching Exercise behaviors, the researchers emphasize that "more advice is provided" (Pourhaji and Delshad, n. d.).

This "commitment to stretching exercises" emphasis is very important. Evidence indicates that integrating ergonomic modifications with stretching and exercise regimens has a greater long-term impact on reducing MSD-related discomfort, especially in the neck and back, even though environmental ergonomic interventions are crucial (El-Gohary & Ibrahim, 2017).

Occupational health managers and health network representatives need to employ a multifaceted approach to effectively combat this epidemic: Specialized programs for ergonomic intervention that focus on high-risk regions, such as the lower back, which are identified in this study and worldwide data (Al-Ma'aitah et al. 2025). Programs for awareness and training that are specifically designed to address risk factors like age, gender, and educational attainment enable more targeted interventions for every demographic and occupational group (Widiyanto et al. 2022).

Utilizing validated tools (like the scale covered in this article), stretching exercises are promoted and monitored during working hours to foster commitment and establish this behavior as a routine. The foundation of the community's health system is the well-being of healthcare professionals. The Pardis Health Network's findings confirm a global issue that necessitates prompt and methodical action, not merely a local warning.

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