



# Study Protocol on Musculoskeletal Disorders Situation in a Sample of Iranian Office Workers at Health Centers in Khoi, Iran

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## ABSTRACT

**Aims:** Work-related Musculoskeletal Disorders (WMSDs), particularly Chronic Low Back Pain (CLBP), are a growing public health concern among office workers due to sedentary work styles. This study will aim to investigate the prevalence and risk factors of WMSDs among office workers in Khoi, Iran.

**Method and Materials:** A descriptive study will be conducted with a convenience sample of 100 office workers at Health Centers in Khoi, Iran. Data will be collected through a self-administered questionnaire on demographics characteristics, work-related factors of musculoskeletal disorders and musculoskeletal symptoms and finally will be analyzed through SPSS.

**Conclusion:** This study will provide a positional approach in order to be able to determine the situation of WMSDs and related factors among office workers in Khoi, Iran. Additionally, based of these data, the researchers could design proper interventional preventive program to improving their WMSDs and reducing related among office workers.

**Keywords:** Work-related Musculoskeletal Disorders, Office Workers, Prevalence, Risk Factors, Iran

## Introduction

Work-related Musculoskeletal Disorders (WMSDs), particularly Chronic Low Back Pain (CLBP), have become a growing public health concern globally which effecting on millions of office workers who spend long hours on performing their tasks in their work office. In Iran like many other developing countries, the prevalence of WMSDs among office workers is rising due to factors such as prolonged sitting, improper posture, and repetitive keyboard use. These musculoskeletal issues can significantly impact workers' productivity, leading to increased healthcare costs, and decrease their overall Quality of Life (QoL)<sup>(1-2)</sup>.

Musculoskeletal disorders (MSDs) among office workers are often attributed to factors such as improper postures, static positions, repetitive movements, and inadequate equipment placement<sup>(2)</sup>. Previous studies also identified neck and lower back pain as the most prevalent

areas affected by musculoskeletal disorders in office workers. These findings provide valuable insights into the specific risk factors and affected areas among this population<sup>(2-4)</sup>. Musculoskeletal disorders are prevalent issues among office workers in Iran. Studies have shown that the neck, shoulders, back, and lower extremities are the most commonly affected areas. Factors such as age, gender, body mass index, and job-related demands have been associated with MSD symptoms in different body regions. Improving workplace conditions, both physically and mentally, is recommended to reduce and eliminate musculoskeletal pain and problems among office workers<sup>(5-9)</sup>.

Work-related musculoskeletal disorders are a common health problem among Iranian office workers. The prevalence of WMSDs in this population ranges from 61-70%<sup>(9)</sup>. The most commonly affected body regions are the lower back and neck

(5, 10-11). Risk factors for WMSDs include adverse postures, repetitive movements, prolonged sitting, work stress, and high workloads. Ergonomic assessments using tools such as the Rapid Office Strain Assessment (ROSA) have shown that a significant proportion of office workers are at a medium to high risk level for MSDs. Improving workplace conditions, both physically and mentally, is recommended to reduce the prevalence of WMSDs among office workers. Corrective measures should be implemented to improve working conditions in both office and operational units (5, 12-13). Other factors that contribute to musculoskeletal disorders include improper work posture, sustained body position, workplace stress, inadequate rest breaks, and non-ergonomic support facilities (13-14).

It is important to improve workplace conditions, both physically and mentally, in order to reduce and eliminate musculoskeletal problems among office workers. Additionally, awareness of the dangers of environmental and psychosocial factors in the workplace, as well as the implementation of ergonomic measures, can help prevent and manage these issues. Factors associated with a reduced risk of MSDs among office workers include taking breaks from sitting, engaging in Moderate-to-Vigorous Intensity Physical Activity (MVPA) for at least 150 minutes per week, changing positions from sitting to standing or walking every hour, and getting sufficient sleep at least 6 hours per day (5, 7, 15). These factors have been found to be effective in reducing the prevalence of MSDs, particularly in the neck, shoulders, and back (16).

Additionally, ergonomic improvements and adjustments of workstations can help identify and eliminate ergonomic risk factors associated with MSDs (17). Other factors such as age, gender, body mass index, and years of experience may also contribute to the development of MSDs among office workers. Implementing interventions to improve workplace conditions, both physically and mentally, is recommended to reduce and eliminate musculoskeletal problems among office workers.

A previous study determined the prevalence of musculoskeletal symptoms in a sample of

Iranian office workers, to investigate the association between pain severity, MSDs and job satisfaction (18). This study provided that musculoskeletal symptoms were common in Iranian office workers and it was associated with low job satisfaction. Non-ergonomic worksites has emerged as a significant cause of MSDs among employees of health care organizations. The postural states of the participants were assessed using Novel Ergonomic Postural Assessment Method (NERPA) and ROSA (19). Despite the significant impact of MSDs on office workers' health and well-being, relatively little research has been conducted in this area in Iran. This study aims to address this gap by investigating the prevalence and characteristics of WMSDs among office workers in the Khoi Health Center, Iran.

## Method and Materials

The study protocol has been approved by the Medical Ethics Research Center of Urmia University of Medical Sciences (Reference ID: IR.UMSU.REC.1402.298). All participants will be provided with full information of their part in the study and assured that their information will be kept strictly confidential. All participants will be asked to complete a written informed consent form. This will provide a clear understanding that their participation is entirely voluntary, and they have a right to withdraw at any time during the study.

The research population will comprise the full-time office workers who are working in health centers in Khoi city of Iran. To meet the inclusion criteria, recruitment will be from office workers who currently attending and working in the health centers and they have painful musculoskeletal complaint. Invitations for joining to the study will be through conveniently sampling method until the sample size be achieved to 100 office Workers. The target population consisted of office workers aged 18 years or older who are currently employed in various governmental and private sectors in Khoi, Iran. The eligible office workers who will be satisfied to participate in the study will be recruited in the study. However, the office workers who will

not complete the questionnaire completely will be excluded from the study. In this cross-sectional study the data will be conducted through a self-administered questionnaire which consisted 20 questions. This questionnaire has been developed based on previous research and validated for use in the Iranian context.

This questionnaire includes three sections 1- Demographic questions including 13 questions about age, sex, marital status, educational level, job title, and years of working experience. 2- 4 questions regarding musculoskeletal pain including location of pain, duration of pain, severity of pain (rated on Visual Analog Scale (VAS) scale of 1 to 10), and history of treatment, 1-3 questions about stress levels for which participants will rate their stress levels on Perceived Stress Scale (PSS). The 10-item Perceived Stress Scale (PSS-10) is a widely used measure of perceived stress that has been validated in various populations. Each item is scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). In the items of the PSS, participants are evaluated on their level of experience of stress symptoms over a specific period of time (usually the past month). The total score of the PSS ranges from 16 to 80. Higher scores indicate a higher level of stress (25). Visual Analog Scale is a standard scale by which the pain severity will be rated on a line that numbered from zero to ten. Zero means no pain and ten means very severe pain. The Persian version of VAS was validated in previous study (26).

To analyze data, descriptive statistics will be used. Frequencies and percentages will be applied for categorical variables, while means and standard deviations will be used for continuous variables. To ensure data accuracy and completeness, participants were provided with clear instructions on how to fill out the questionnaire.

## Discussion

Work-related musculoskeletal disorders is a significant occupational health problem that results in productivity loss, employee absenteeism, and high healthcare costs (20). Extrinsic feedback has been suggested as an

effective tool for the prevention and rehabilitation of WRMSDs (21). It has been shown that it is effective in controlling environment for short-term prevention of functional limitations and sensorimotor alterations, as well as for improving function, symptoms, and sensorimotor control in injured participants (22). However, more evidence is needed regarding its effectiveness in the workplace (23). Occupational rehabilitation programs play a crucial role in enhancing the return to work and improving the quality of life for workers with WRMSDs (24). Factors such as length of the sessions, number of therapy sessions, and occupation-based activities have been identified as predictors of success in rehabilitation. Additionally, the use of Artificial Intelligence (AI) shows potential in reducing the risk of developing WRMSDs through physical ergonomics (24). Existing literature recommending extrinsic feedback as a promising tool for the prevention and rehabilitation of WRMSD.

The present study can be strengthened in some cases, such as when addressing the need for research on long-term effectiveness and generalizability to the proper workplace intervention (23). The present study's recognition could predict the importance of probably programs in facilitating return to work and improving quality of life which is consistent with the existing literature (24). Another strength of the present study are that it points to important factors that influence success, such as reducing length of sessions number of sessions, and improving job-specific activities. Therefore, the present study could be in good agreement with existing research on the prevention and rehabilitation of WRMSD.

## Conclusions

The findings from this cross sectional study will provide valuable insights into the burden of WMSDs and help inform policymakers and healthcare professionals in designing targeted interventions to address the causal issues effectively. This study will provide a positional approach in order to be able to determine the situation of WMSDs and related factors among

office workers in Khoi, Iran. Additionally, based on these data, the researchers could design proper interventional preventive program to improving WMSDs, reducing related factors and improving work ability among office workers.

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### Authors' contribution

MHD and RN will perform all study stages and will have complete access to all data for analysis. MHD and BR supervise the whole study and approve the final version of the manuscript. MHD and FP will involve in drafting the manuscript. All authors will confirm the final manuscript.

### Conflict of Interests

There is no conflict of interests.

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