

The Prevalence of Musculoskeletal Pain in Computer Workers

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Abstract:

➤ Introduction

Minor physical limitations are a term used to describe musculoskeletal diseases (MSDs). The most common cause of back discomfort and muscle spasms is improper seating, which damages the cervical spine and the muscles in the neck.[1] It has been proven that there are a number of physical, psychological, and psychophysical occupational risk factors. High forces, high repetition, working with arms aloft, and prolonged static postures are examples of physical risk factors that are well recognized.[2] We hypothesize that work related musculoskeletal pain is prevalent in computer workers. The objective of this study is to evaluate the musculoskeletal pain in Computer Workers and aims to find its prevalence.

➤ Methodology

This observational cross-sectional study involved 100 Computer workers from 30-60 years. The participants who were willing to participate filled Google form consisting of questions related to painful joints and work profile. The response to questionnaire filled by respective participants, was statistically analysed.

➤ Results

In this study males and females with mean age of 36.85 \pm 6.21 were included. Total of 81% participants experienced pain while working on computer. Maximum pain was experienced in low back followed by neck. According to them attaining work postures for long duration was the pain aggravating factor.

➤ Conclusion

The study concluded that the job leads to neck and low back pain who are using computer. Non-adherence to prolonged sitting, the insufficient practice of physiotherapy, and undergoing work from home were associated with high low back and neck pain.

Keywords: Musculoskeletal Disorders, Computer Workers, Ergonomics.

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I. INTRODUCTION

Musculoskeletal disorders (MSDs), encompassing minor physical limitations, are significant causes of work-related disability, particularly among computer users. Improper seating and prolonged static postures are key contributors, damaging the cervical spine and neck muscles [1]. MSDs affect various body regions, including the neck, back, shoulders, and extremities, with symptoms ranging from pain and stiffness to tingling and swelling.

Rapid technological advancements and increased computer use have exacerbated these issues, introducing new occupational risks [1]. Studies reveal high MSD prevalence rates among computer workers, with neck pain reaching 55-69%, back pain 31-54%, and upper extremity

pain 15-52% [3]. Risk factors are multifaceted, including ergonomic factors like poor posture and repetitive motions, personal factors like age and BMI, and psychosocial factors such as work-related stress [4, 5, 6].

The Nordic Musculoskeletal Questionnaire (NMQ) is a valuable tool for assessing MSD prevalence, demonstrating good validity and reliability [9, 10]. This study aims to evaluate and determine the prevalence of work-related musculoskeletal pain in computer workers.

II. METHODS

It was an observational cross-sectional study. The survey was conducted on 100 computer workers who were randomly selected from Pravara Institute of Medical

Sciences. Both male and female from 30-60 years of age who were willing to participate in the study were included. Subjects with history of trauma or accident or recent fractures were excluded from the study. Pregnant women were also excluded.

III. PROCEDURE

Ethical clearance was obtained from ethical committee. The participants were selected according to inclusion and exclusion criteria. A consent form was distributed to the subject. Further the approved self- made questionnaire was forwarded to the subjects by the means of google form.

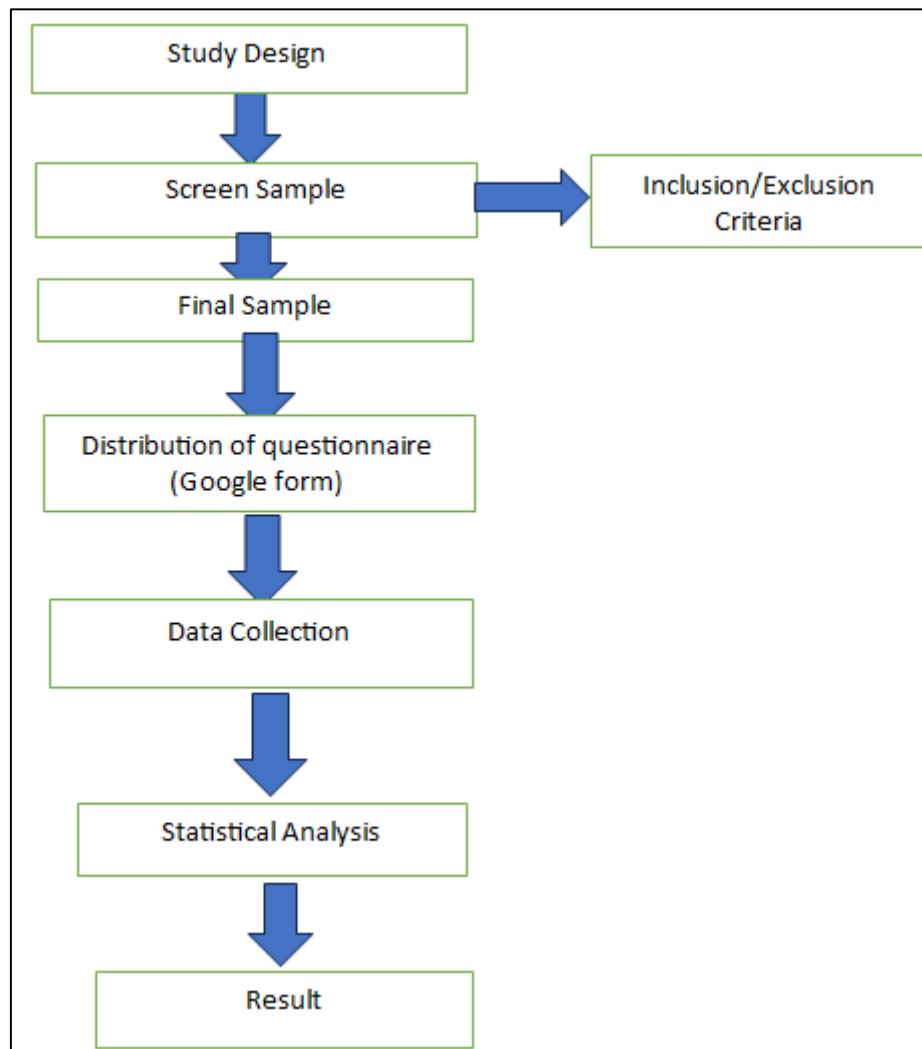


Fig 1 Flow Diagram

IV. STATISTICAL ANALYSIS

Data was descriptively analysed using MS Excel (version: Windows 11 Version 23H2).

V. RESULT

In this study 58% of males while 42% females with mean age of 36.85 ± 6.21 are included. Out of total 81% participants experienced pain in any of the joint during working on computer. Maximum pain was experienced in low back followed by neck pain. According to them attaining work postures for long duration was the pain aggravating factor. Maximum of 53% participants worked for 6 hours. Maximum of them were satisfied with their work environment.

Table 1: Demographic Details

Males	58%
Females	42%
Age	36.85 +/- 6.21

Table 2: Pain Assessment

No. of subjects experiencing pain		87%
Numerical Pain Rating Scale		
Site	Neck	45%
	Shoulder	23%
	Elbow	5%
	Wrist and hand	5%
	Upper back	31%
	Low back	46%
Aggravating factors	Attaining postures for long hours	68%
	Performing same task over and over	27%
	Repetitive bending	37%
	Repetitive movement of upper limb	16%

Table 3: Work Profile and Work Station Analysis.

No. of hours of working	1-2 hours	6%
	4 hours	12%
	6 hours	53%
	12 hours	32%
Is the height of the table up to the elbow	Yes	64%
	No	36%
Is the height and type of the chair comfortable	Yes	76%
	No	24%
Is the workplace well lit	Yes	90%
	No	10%
Is the workplace well ventilated	Yes	88%
	No	12%

VI. DISCUSSION

Computer workers who participated in this observational cross-sectional study had an average age of 36.85 +/- 6.21 (Table No. 1). Furthermore, WMSDs are more common in people between the ages of 30 and 39 than in younger age groups, according to study published in the *Frontiers in Public Health* journal. This implies that even for comparatively younger workers, the risk of WMSDs rises with age. musculoskeletal conditions.[11]

According to the results, 80% of respondents suffer MSDS as a result of repetitive motions at different joints, while a maximum of 68% of individuals experience it as a result of prolonged postures (Table no. 2). Repetitive activities raise the risk of WMSDs by causing muscle tension and exhaustion. Maintaining abnormal postures, including bending or twisting, can put excessive strain on joints and muscles, which can aggravate musculoskeletal pain. Low social support and high work expectations can exacerbate pain sensitivity and muscle strain, which can lead to WMSD.[12]

A maximum of 53% of the respondents worked for six hours straight (Table No. 3). Office workers' neck and low back pain is associated with prolonged sitting, particularly in non-ergonomic environments. According to research, office

workers who spend a lot of time in front of computers are more likely to develop musculoskeletal ailments. Musculoskeletal illnesses, which are now commonly recognized occupational ailments, are thought to be associated with prolonged computer use.[13]

The majority of respondents expressed satisfaction with their working environment, although some expressed discomfort because of the height of the table and chair they use, as well as the insufficient lighting and ventilation in the office (Table no. 3). The impact of vertical chair height adjustments and visual display units (VDUs) on office workers' sitting comfort and work-related upper quadrant musculoskeletal pain (WRUQMP) was evaluated in a study that was published in the *South African Journal of Physiotherapy*. According to the results, lowering the height of the chair and VDU may have reduced WRUQMP, highlighting the significance of a well-designed workstation. The effectiveness of a chair intervention in the workplace to lessen musculoskeletal symptoms was assessed in another study published in *BMC Musculoskeletal Disorders*. The importance of ergonomic seating solutions was highlighted by the research, which revealed that chairs made to avoid undue strain on the neuromuscular system may help reduce musculoskeletal pain and discomfort.

VII. CONCLUSION

The study concluded that low back pain, upper back pain and neck pain has increased in present scenario of computer workers' job. The sub items of questionnaire have increased values indicating towards risk factors of upper back pain and neck pain. The job leads to significant increase in neck pain among who are using computer. Non-adherence to prolonged sitting, the insufficient practice of physical activity, and undergoing work from home were associated with high low back pain and upper back pain intensity.

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