# Knowledge Regarding Computer Ergonomics and Incidence of Musculoskeletal Disorders among Desktop Users

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## Abstract

The use of computers has become universal. Computer technology plays an integral role in our personal, professional and educational lives and neglecting the principles of ergonomics during computer utility raises the risk of health problems. Musculoskeletal disorders (MSDs), Visual symptoms and Insomnia are the common health problems among desktop users. Aims and Objectives: To assess the knowledge regarding computer ergonomics and incidence of musculoskeletal disorders Methodology: In this cross-sectional research study 130 desktop users were recruited as study participants. The tool used i.e. selected variables regarding study participants characteristics and Structured Knowledge questionnaire (35 items) Results: More than 2/3rd of study participants (90%) were reported about discomfort related to eye strain, head and neck, wrist and hand, elbow, upper back, lower back, hips and thighs and knees. Less than half of the study participants were at average level of knowledge related to computer ergonomics and There was significant association of selected variables (discomfort and severity of hand and wrist discomfort) was found with the Knowledge of computer ergonomics. Conclusions: Findings of this study concluded that there was majority of study participants reported discomfort related to the eye strain, head and neck, wrist and hand, elbow, upper back, lower back, hips and thighs and knees and severity of hand and wrist discomfort which showed that these organs get influence more by desktop based on body configuration.

***Keywords:*** *Knowledge, Computer ergonomics, Musculoskeletal Disorders, Desktop users*

## Introduction

Ergonomics (human factors) is the study of humans in relation to their work environment and work in surroundings. It is a broad science involving application of psychological as well as physiological principles.[1] The use of computers has become universal. Computer technology plays an integral role in our personal, professional and educational lives[2]. Neglecting the principles of ergonomics during computer utility raises the risk of health problems. Musculoskeletal disorders (MSDs), Visual symptoms and Insomnia are the common health problems amongst computer users[3]. Extended period of static sitting postures causes decreased circulation, stiffness and pain in the joints. Prolonged duration of continuous work increases the risk of cumulative trauma disorders, which may result in long-term disability[4]. A little knowledge of the principles of ergonomics of work station setup and exercises can prevent a lot of discomfort and maximize productivity[5]. (Knowledge of Computer Ergonomics among Computer Science Engineering and Information Technology Students in Karnataka, India. There is a need for more awareness regarding musculoskeletal disorders and why it's happening. Nowadays people have obesity, eye problem which has made them to uses spectacles at early age, disfigured body, some patches in wrist because not using mouse pad and swelling in legs due to prolonged sitting. These problems mainly arise when one doesn't

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sit regularly for work but when they sit they won't left it incomplete, finishing the work without considering their health and body aches, which makes have poor health[6]. discomfort arises from lack of knowledge about ergonomics get influence more by desktop based on body configuration[7]. Awareness among this generation need to be given with the cause of poor ergonomic postures This research was undertaken to assess the knowledge of computer ergonomics and incidence of musculoskeletal disorders among desktop users.

## Materials and Methods

Assessment of Knowledge regarding computer ergonomics was done through questionnaire survey method from 130 desktop users. Questionnaire was prepared and circulated among computer users through google form. The data collected was handled confidentially. Research tool consists of two sections i.e. Section A related to Demographic profile consists of age, gender, qualification, discomfort related to eye strain, head and neck, shoulders, elbow, wrist, upper back, lower back, hips and thighs and knees, Dominant Hand, Frequency of Wrist and hand discomfort, severity of wrist and hand discomfort, previous knowledge, Hours of working on computer and years of working on computer and Section B related to Structured Knowledge questionnaire consists, was used to assess the knowledge regarding computer ergonomics among desktop users. The tool was developed on the basis of previous research evidences, based on extensive review of literature and opinion of experts and guides. It consists of 35 items and scoring was done as very good (28-35), good (23-27), average (18-22) and below average (0-17). The tool is valid and reliable to assess the knowledge regarding computer ergonomics.

## Data Analysis

**Descriptive statistics:** Frequency, percentage distribution was used to describe selected variables

**Inferential statistics:** Independent 't' test and ANOVA test was used to find out the association of knowledge regarding computer ergonomics with selected variables

## Results

Most of the study participants were female (76.2%) and most of the study participants in age group less than 30 years of age (75.4%) and more than half of the study participants were post graduated (55.4%). More than 2/3$^{rd}$ of study participants (90%) were reported about discomfort related to eye strain, head and neck, wrist and hand, elbow, upper back, lower back, hips and thighs and knees. Majority of the study participants (99.2%) dominant hand was right. Less than half of the study participants were neither having hand and wrist discomfort nor severity of hand and wrist discomfort. Less than half of study participants were at average level of knowledge regarding computer ergonomics. ANOVA and 't' test value for association of Knowledge score regarding computer ergonomics among desktop users with selected variables. The findings revealed that computed 'F/t' value between knowledge and age (F= 0.34, p=0.79), gender (t= 1.51, p= 0.13), qualification (F= 1.33, p=0.26), dominant hand (F= 0.69, p=0.48), Frequency of wrist and hand discomfort (F= 1.31, p=0.26), previous knowledge (t= 0.21, p= 0.83), hours of working on computer (t= 1.01, p= 0.31) and years of using computer (F= 0.45, p=0.67were found to be statistically non-significant except discomfort (t= 2.04, p= 0.04) and severity of wrist and hand discomfort (F= 2.167, p=0.03).

**Table 1: Level of Knowledge regarding computer ergonomics among desktop users**

**N=130**

| Level of Knowledge | Actual Range of Score | f (%) |
|---|---|---|
| Very Good | 28-35 | 4(3.1) |
| Good | 23-27 | 35 (26.9) |
| Average | 18-22 | 50 (38.5) |
| Below Average | 0-17 | 41(31.5) |

## Discussion

In this study most of the study participants were female and most of the study participants belongs to age group of less than 30 years. These findings were supported by a cross sectional study conducted by Mohamed Sherif Sirajudeen et al (2018) where they found more than half of the participants (54.8%) were in 22-24 years of age group and more than half of the participants (57.5%) were females. In present study majority of study participants (90%) were reported about discomfort related to eye strain, head and neck, wrist and hand, elbow, upper back, lower back, hips and thighs and knees. These research findings were similar to previous research findings, conducted by A.K. Sharma et al (2006)[8] where majority of subjects (93%) had one or more than one computer related health problem

## Conclusion

Based on our research findings, discomfort related to the eye strain, head and neck, wrist and hand, elbow, upper back, lower back, hips and thighs and knees and severity of hand and wrist discomfort are associated with the knowledge regarding computer ergonomics which emphasize the importance of computer ergonomics to decrease the related musculoskeletal disorders. There is a need to plan an appropriate learning programme to make the computer users more aware and make them understand about the computer ergonomics

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