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Self-reported practice of ergonomics and musculoskeletal problems among computer users of selected offices at Mangaluru

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Abstract

Introduction: The extent of computer use in the offices has greatly increased over the recent decades, resulting in the risk of several health problems among computer users. Symptoms like pain, numbness, tingling, etc. occur in various body parts due to the improper practice of computer ergonomics. **Methodology:** The descriptive survey approach had been used in view of accomplishing the main objective of the study. The tool consists of baseline pro forma along with rating scale to assess the self-reported practice of ergonomics and rating scale to assess musculoskeletal problems. The subjects consisted of 100 office workers who used the computer for their work and were selected by a purposive sampling technique. Descriptive and inferential statistics were used for analysis. **Results:** In this study, 57% of the subjects reported mostly safe practice, 23% reported partially safe practice, 18% reported totally safe practice and 2% reported totally unsafe practice on self-reported practice of ergonomics. It was studied that 64% had moderate musculoskeletal problems, 25% had mild and 11% had severe musculoskeletal problems. The findings of the study indicated that there was a negative correlation between self-reported practice of ergonomics and musculoskeletal problems. **Conclusion:** The safe practice of ergonomics can lead to better occupational health.

Key words: Computer ergonomics, computer users, self-reported practice

Introduction

In the current world, use of computers is pervasive like a pen and paper in day-to-day activities. There are approximately six computers per thousand populations with an installation of 18 million personal computers and this count is rising day-by-day. The computer has become very important and one can neither replace nor imagine a life without a computer (Blehm, 2005).

Computer, an attribute of advancement in technology has run in a class of the occupational health problems. Currently, use of computers is mandatory for majority

of the people. Only few people actually scrutinize the adverse health effects of it. Using computers for an extended period of time can cause damage to the eyesight, defective posture, arthritis and computer related stress. The afore said problems are related to several factors such as lack of component design, the nearness of the users to the screen and an excess and continuous computer usage (Suparna, 2005).

Major medical problem associated with computer-related work is numerous musculoskeletal disorders which may be due to poorly set computer components and boundless typing for a long period of time. Bending forward of the user not only causes postural defects, but can also cause chronic pain in the upper back, neck and shoulders. A study conducted in Denmark among 2,146 technical assistants to assess the musculoskeletal pain showed that in a majority of subjects, the pain aggravated by the use of computer peripherals like the mouse and keyboard (Andersen, 2003).

Objectives: The objectives of the study are to assess the self-reported practice of ergonomics; to assess

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musculoskeletal problems among computer users; and to assess the correlation between the self-reported practice of ergonomics and musculoskeletal problems among computer users.

Materials and methods

A descriptive survey was carried out in the year 2016 among 100 office workers using the computer for at least four hours a day for their work. The setting selected for the study was different offices of the Father Muller Medical College Hospital, Mangaluru. Purposive sampling was used to select the subjects for the study. The purpose of the study, method of data collection, and the duration were explained to the subjects in the language they understood. A written consent was obtained and the confidentiality was assured. The instruments such as rating scale to assess practice of ergonomics and the musculoskeletal problems were administered to the subjects. The data was collected from 1 to 25 June 2016. The data obtained were entered into a master sheet and analyzed based on the objectives and hypothesis of the study under various sections.

Results

Characteristics of the subjects

Majority of the subjects were in the age group of 21-30 years. Majority (79%) of the subjects were females, who were graduates (76%). More than half of the subjects were using the computer for 1-5 years (53%) and most of the subjects belonged to Christian religion. Majority of subjects (62%) had prior information on computer related injuries and source of information through television and internet. Around 35% of the subjects work with the computer for 2-4 hours without taking a break. Around 47% of the subjects were having the height of 150-159 cm. A majority (68%) had no foot rest in their office chair. About 61% were comfortable with sitting arrangement in the office.

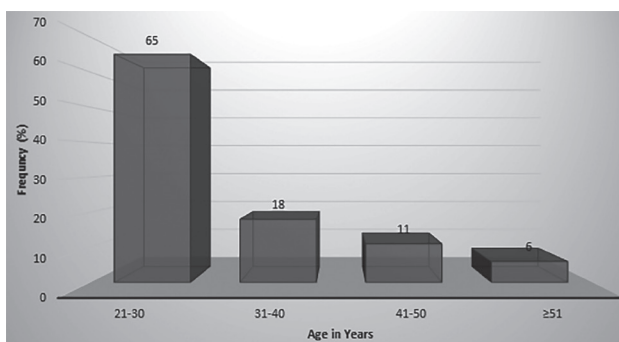


Figure 1: Bar diagram showing the distribution of subjects according to their age

Data presented in Figure 1 shows that 65% of the sample were in the age group of 21 – 30.

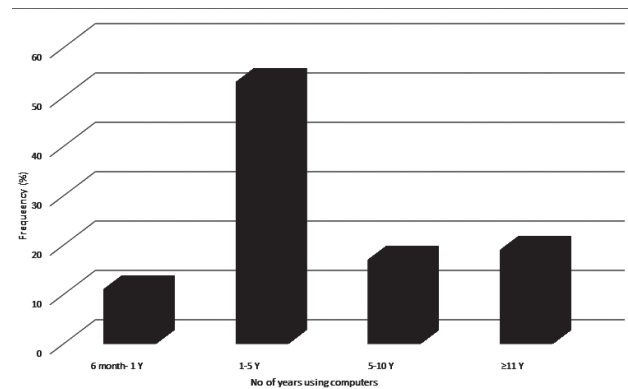


Figure 2: Bar diagram showing the distribution of subjects according to the number of years using the computer

Self-reported practice of ergonomics

Table 1:

Range, Mean, Mean Percentage and Standard Deviation of the Self-Reported Practice of Ergonomics

N= 100

Content	Maximum Score	Mean \pm SD	Mean Percentage
Self- reported Ergonomics	60	44.01 \pm 6.36	73.35

Table 1 reveals that the mean percentage of self-reported ergonomics is 73.35%.

Grading of self- reported practice of ergonomics

Table 2:

Description of Subjects According to The Grading of Self-Reported Practice of Ergonomics

N= 100

Self-reported Practice Score	Grading	Frequency	Percentage
20-30	Totally unsafe practice	2	2
31-40	Partially safe practice	23	23
41-50	Mostly safe practice	57	57
51-60	Totally safe practice	18	18

Table 2 shows that majority of the subjects followed mostly safe practice (57%)

Table 3:
Area Wise Mean, Mean Percentage and Standard Deviation of
Self-Reported Practice of Ergonomics

N= 100

Area	Maximum score	Mean± SD	Mean %
Ergonomics on keyboard, mouse and monitor	24	18.05±3.13	75.20%
Ergonomics on seating and lighting	18	13.51±2.15	75.05%
Health aspects and environment	18	12.45±2.72	69.16%

Table 3 reveals that self- reported practice of ergonomics in the area of keyboard, mouse and monitor was 75.2% and health aspects and environment was 69.16%.

Musculoskeletal problem among computer users

Musculoskeletal problems: The mean score of musculoskeletal problems was 23.42 ± 4.5 .

Table 4:
Description of Subjects According to Musculoskeletal Problem Assessment

N = 100

Problem assessment	Grading	Frequency	Percentage
12-20	Mild	25	25
21-28	Moderate	64	64
29-36	Severe	11	11

Table 4 depicts that majority of the subjects reported moderate musculoskeletal problems (64%).

Correlation between self-reported practice of ergonomics and musculoskeletal problems among computer users

The Karl Pearson correlation between self-reported practice of ergonomics and musculoskeletal problems is $r = -.457$ and it is inferred that the safe practice of ergonomics has led to a decrease in musculoskeletal problems.

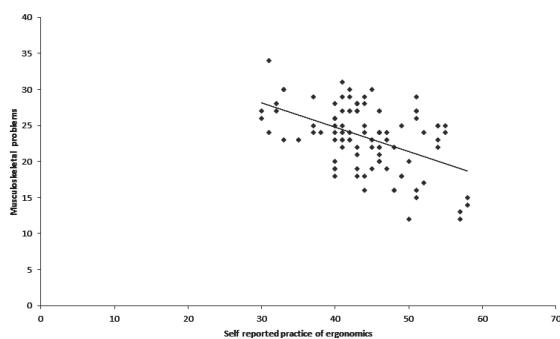


Figure 3: Scatter diagram showing the correlation between self-reported practice of ergonomics and musculoskeletal problems

Discussion

The result of the present study was consistent with similar study conducted in Karachi that assessed the knowledge and practice of ergonomics among desktop users of various professions found that more than half of the subjects (54%) used computer for over 10 years and majority (52.33%) had heard about ergonomics (Khan, 2012). A study conducted in Canada among female officers showed that majority (34.95%) spent an average of 20.35 hours per week in front of the computer, which is approximately half compared to the present study findings (Nieuwenhuijsen, 2004). A cross-sectional study was conducted among bank employees in Enugu metropolis to investigate the ergonomic compliance of office furniture used. The result showed that 50% were uncomfortable with sitting arrangement. The study concluded that ergonomic compliance of the office furniture was not optimal. This finding was not congruent with the present study findings (Ezema, 2011). Majority of the subjects (68%) reported back pain, followed by headache (65%), neck pain (52%), shoulder pain (50%), finger stiffness (38%), wrist pain (32%) and shoulder stiffness (26%). This finding was congruent with the study conducted in 465 video displayed work stations in a Government office building in the US found that 35% experienced pain during their work hours and 21% claimed discomfort at their work stations. Few of the subjects 13% have been diagnosed with injuries (Pentikis, 2002).

A similar study was conducted among 52 students to assess computing related ergonomic risks using a questionnaire and observation method. The study depicted that majority of the students using computers had the mouse at the incorrect level and had no support. Only a few students had supports thereby preventing the hand, wrist or forearm from resting on the desk's edge (Tullar, 2007). Present study highlighted that 64% had moderate musculoskeletal problems, 25% had mild and 11% had severe musculoskeletal problems.

In a cross-sectional study on ergonomics and musculoskeletal disorders conducted among 182 call center operators at a large healthcare company, 63 participants were diagnosed with one or more incident of musculoskeletal disorders, which supported the present study findings (Robertson, 2009).

Conclusion

Work related health issues should be considered as an integral part of comprehensive primary care. Primary and specialized occupational health services should be strengthened with more focus on primary prevention of occupational hazards. The present study revealed that majority of the subjects reported back pain, followed by headache, neck pain and shoulder pain. More than half of the subjects reported mostly safe practices and the majority of them suffered musculoskeletal problems. The safe practice of ergonomics can lead to better occupational health.

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