

Assessment of Computer-Related Health Problems Among Post-Graduate Nursing Students

Shaheen Akhtar Khan¹, Veena Sharma²

Abstract

The study was conducted to assess computer-related health problems among post-graduate nursing students and to develop a Self Instructional Module for prevention of computer-related health problems in a selected university situated in Delhi. A descriptive survey with co-relational design was adopted. A total of 97 samples were selected from different faculties of Jamia Hamdard by multi stage sampling with systematic random sampling technique. Among post-graduate students, majority of sample subjects had average compliance with computer-related ergonomics principles. As regards computer related health problems, majority of post graduate students had moderate computer-related health problems, Self Instructional Module developed for prevention of computer-related health problems was found to be acceptable by the post-graduate students.

Computer has become a familiar and much talked about technology these days. Today, no aspect like business, leisure, health education etc. has been left untouched by the computer revolution. People have been using computers for several decades. Computers are man-made machines but today men are slaves of it. There can be no work without computers these days. If we spend 4-5 hours on computer we start feeling tired, sleepy, neck aches, back aches, eye problems and what not. Apart from knowledge and entertainment excessive use on computer adversely affects health. Sitting for long hours and working in computer gives problems like spondylitis, which can be serious enough. Continuously sitting in one position may result in back aches and neck aches. Obesity is another rapidly increasing problem among adults. Computer screens contain ultraviolet (UV) rays and not all monitors are protected enough, which may damage the eyes.

Objectives

The objectives of the study were:

1. To assess the principles of computer-related ergonomics being practiced by post-graduate students of nursing;
2. To assess computer-related health problems in post-graduate students in a selected university situated in Delhi;

3. To develop a Self Instructional Module for prevention of computer-related health problems;
4. To establish the relationship between computer ergonomics related to posture and musculoskeletal problems, vision and eye problems, computer-related health problems and total years of computer exposure and average work hours per day on computer; and
5. To determine the acceptability and utility of Self Instructional Module for prevention of computer-related health problems.

Review of Literature

Rajeev et al (2006) observed the relationship between visual fatigue and computer use among college students (MSc and MA). The total subjects studied were 229. There were 39 myopes, 51 severe asthenopes, 61 mild asthenopes and 78 controls. Compared to the myopes, the severe asthenopic subjects who visited the ophthalmologists had more headaches in addition to rubbing of eyes, blurred vision and less of watering of eyes. Bhandari et al (2007) identified the influence of psychosocial workplace factors on occurrence of musculoskeletal discomfort in computer operators. The prevalence of self-reported symptoms related to musculoskeletal discomfort (MSD) like tiredness, neck and shoulder stiffness, neck and shoulder pain, tingling/numbness in hands or fingers during or after work or at night perhaps interrupting sleep, hand or wrist pain, backache, headache, leg cramps, leg stiffness, numbness in ankles and feet, reduction in strength

The authors are : 1. Lecturer, Rama Nursing College, Ghaziabad (UP) and 2. Associate Professor, Rufaida College of Nursing, Faculty of Nursing, Jamia Hamdard, Hamdard Nagar, New Delhi.

of hand and difficulty in grasping objects was high. Talwar et al (2009) conducted a study of visual and musculoskeletal health disorders among computer professionals in NCR Delhi, in order to study the prevalence of health disorders among computer professionals, and its association with working environment conditions. The prevalence of visual problems in the study group was 76 percent, and musculoskeletal problems were reported by 76.5 percent.

Methodology

Research approach and design: descriptive survey approach with correlational survey design was used in this study. The study was conducted in Hamdard University. It is located in Hamdard Nagar, New Delhi. Post-graduate students enrolled on regular basis in Jamia Hamdard, New Delhi constituted the study population. Sample had 97 post graduate students.

Multi stage sampling with systematic random sampling technique was used for the study so that the sample is a true representative of the population.

Dependent Variables: Various computer related health problems like eye problems, musculoskeletal problems, GI problems, neurological problems and sleep problems

Independent Variable: Total years of computer exposure and computer ergonomics pertaining to: work-related factors, seating, keyboard, typing technique, mouse and monitor.

Description of tool

1. *Structured Questionnaire* was used to assess computer ergonomics and computer-related health problems among students. It had three sections A, B and C.

Section A had demographic variables.

Section B was further divided into two parts: Part I, to assess ergonomics related to posture, and Part II to assess ergonomics related to vision.

Section C sought to assess computer related health problems

2. *Structured Opinionnaire* aimed to determine the acceptability and utility of the Self Instructional Module developed for prevention of computer-related health problems.

Procedure for Data Collection

After taking formal permission to conduct the study,

sample subjects were contacted and verbal consent was taken. All the subjects were explained the purpose of the study and structured questionnaire for assessment of computer ergonomics and computer related health problems among post graduate students was administered. Necessary instructions for the completion of tool were provided to the subjects. Confidentiality of their responses was assured. After providing their responses, the subjects returned the structured questionnaire to the investigator and self-instructional module for prevention of computer-related health problems was administered. The subjects were once more contacted after seven days and the opinionnaire to determine the acceptability and utility of the Self Instructional Module (SIM) was administered by the investigator, sequentially to ascertain the acceptability and utility of SIM for prevention of computer related health problems.

Data Analysis

The data analysis (Table 1-5) was planned to include both inferential and descriptive statistics.

Fishers' exact test was used to determine the relationship between computer-related health problems and (i) total years of computer exposure; (ii) frequency and percentage distribution regarding acceptability and utility of SIM for prevention of com-

Table 1: Frequency and percentage distribution of sample subjects by their compliance with computer ergonomics (n=97)

Scores for compliance with computer ergonomics		Frequency	Percentage
Categories	Score		
Poor compliance	(0-21)	15	15.46
Average compliance	(22-31)	69	71.13
Good compliance	(32-42)	13	13.40

Maximum possible score: 42

Table 2: Area wise mean scores of occurrence of computer-related health problems among post graduate students (n=97)

Type of problem	Mean	Modified mean	Rank order
Musculoskeletal problem	1.87	0.31	1
Neurological problem	0.71	0.24	2
Eye problem	2.47	0.22	3
Sleep problem	0.56	0.14	4
Gastrointestinal problem	0.24	0.12	5

Maximum possible score: 26

Table 3: Frequency and percentage distribution of sample subjects by the extent of computer-related health problems among them (n=97)

Computer-related health problems among post-graduate students		Post-graduate students	
Categories	Score	Frequency	Percentage
No health problem	0	11	11
Mild health problem	1-8	64	66
Moderate health problem	9-18	20	21
Severe health problem	19-26	2	2

Maximum possible score: 26

Table 4: Coefficient of correlation between computer ergonomics related to posture with musculoskeletal problems (n=97)

Variables	Mean	Coefficient of Correlation
Computer ergonomics related to posture	19.71	-0.143
Musculo-skeletal problems	1.87	

*r (95) = 0.20 > 0.05 level, not significant at 0.05 level of significance
Musculoskeletal problems are independent of computer ergonomics.

Table 5: Coefficient of correlation between computer ergonomics related to vision with eye problems (n=97)

Variables	Mean	Coefficient of correlation
Computer ergonomics related to vision	6.6082	-0.258*
Eye problems	2.474	

*r (95) = 0.20 < 0.05 level, Significant at 0.05 level of significance

puter-related health problems was analysed.

Major Findings

Among post-graduate students, majority of sample subjects had average compliance with computer-related ergonomics principles.

There were total five areas in the questionnaire to assess the occurrences of computer-related health problem viz. eye problems, musculoskeletal problems, neurological problems, gastrointestinal problems and sleep problems. Out of these five areas, the problems related to musculoskeletal system were highest in post graduate students followed by neurological problems, eye problems and sleep problems. Health problems related to gastrointestinal system were the lowest among post-graduate students.

As regards computer related health problems,

majority of post graduate students had moderate computer-related health problems.

With regard to good compliance of computer ergonomics related to vision, there were fewer eye problems.

Computer-related health problems were independent of total years of computer exposure and average work hours per day on computer.

SIM on prevention of computer-related health problems was found to be acceptable and useful by the post graduate students. Around 87.73 percent of students agreed and strongly agreed on the statements related to the acceptability and utility of the SIM.

Discussion

In the present study, majority of the sample subjects had average compliance with computer-related ergonomics principles related to inappropriate work related factors, seating, use of key board; typing technique and mouse technique. The findings are confirmed with the findings of previous study done by Jenson et al (1999) who recorded the upper trapezius EMG activity pattern of mouse side and non-mouse side of computer operators to know the difference in muscular response potentially related to the risk of developing shoulder symptoms which were more prevalent in mouse side. It indicated more continuous activity on the mouse side.

In the present study, the major computer-related health problems identified were musculoskeletal problem, neurological problems, eye problems gastrointestinal problems and sleep problems. The findings are in conformity with those of previous study conducted by Sharma AK, et al (2006) that showed a high prevalence of computer related health problems among Information Technology professionals. The frequency of computer-related problems in the study group were visual problems in 76 percent, musculoskeletal problems in 77.5 percent and stress in 35 percent. The results of study quoted above are comparable with the result of the present study.

The present study showed that there was a significant relationship between computer ergonomics related to vision with eye problems. The findings are in line with those of Sobieszowska M, et al (1998) who evaluated the central nervous system problems and visual fatigue in computer terminal users. Most of the subjects suffered various complaints, not only visual problems but also central nervous system problems.

Our findings show that there was no relationship between computer-related health problems and total years of computer exposure and average work hours per day on computer which is in contrast with the study done by Mvungi VP, et al (2008) to assess the impact of computer usage on health. The interviewed subjects had been using computers for 1-8 hours a day and for a period ranging from 1 to 20 years. The study indicated ergonomic problems for a significant proportion of interviewees (63%) of various kinds ranging from backache to eyesight-related problems.

Conclusion

With the impact of 'computer revolution', people are faced with the need to educate themselves in the field of computers. Computer literacy is becoming germane. As a result there is an increased use of computers among students, especially among students pursuing higher education. Post graduate students use computers very frequently in their studies. However, there are chances that they are not following the computer ergonomics and therefore are likely to develop computer-related health problems. This study throws light on these issues and the Self Instructional Module developed

for prevention of computer-related health problems helps the students to improve upon their knowledge on computer related ergonomics. Equipped with this knowledge they may consciously try to follow the ergonomics principles while working on computers and thus prevent computer-related health problems.

References

1. Chowdhary SR, et al. Textbook of Nursing Research. 1st edn, 2010. New Delhi: Kumar Publishing House.
2. Polit DF, Beck CT. Essentials of Nursing Research: Appraising Evidence of Nursing Practice. 7th edn, 2009. Philadelphia: Wolters Kluwer Private Limited 315-20
3. Bhandari D, et al. A study of occurrence of musculoskeletal discomfort in computer operators. *Indian Journal of Community Medicine*, January 2008; 33(1)
4. Rajeev A, et al. Visual fatigue and computer use among college students. *Indian Journal of Community Medicine*, July - September, 2006; 31(3)
5. Talwar R, et al. Visual and Musculoskeletal Health Disorders among Computer Professionals. *Indian Journal of Community Medicine*, October 2009; 34(4)
6. <http://www.aoa.org/documents/EffectsComputerUse.pdf>
7. http://www.princeton.edu/uhs/ih_Q_A_ergonomics.html.



APOLLO COLLEGE OF NURSING - CHENNAI

(Approved by the Govt. of Tamil Nadu, Recognized by the Indian Nursing Council, The Tamil Nadu Nurses & Midwives Council, Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai & The Nurses League, Christian Medical Association of India (CMAI) New Delhi)

ADMISSION 2013 – 2014

MSc Nursing

- | | | |
|-----------------------------|------------------------|--|
| 1. Medical Surgical Nursing | 2. Paediatric Nursing | 3. Obstetrics & Gynaecological Nursing |
| 4. Community Health Nursing | 5. Psychiatric Nursing | |

Eligibility: (a) Female only (b) Pass in Basic BSc (N) with One Year Experience or Pass in PB BSc (N) with or without Experience after Nursing Council Registration as on 31.05.2013 (c) Physically fitness

PB BSc (Nursing)

(a) Female Only (b) Pass in Diploma in General Nursing & Midwifery with or without Experience after Nursing Council Registration as on 31.05.2013 (c) Physically fitness

BSc (Nursing)

(a) Only unmarried Female candidates will be admitted; (b) Pass in H. Sc. / P D C or Equivalent with Science Subjects; (c) Physically fitness

PB Diploma (Nursing)

- | | | | |
|---------------------------|---------------------------------|------------------------------|--------------------------|
| 1. Critical Care Nursing | 2. Emergency & Disaster Nursing | 3. Cardio - Thoracic Nursing | 4. Neonatal Nursing |
| 5. Operation Room Nursing | 6. Orthopedic Nursing | 7. Oncology Nursing | 8. Neuro Science Nursing |

Eligibility: (a) Female only (b) Pass in GNM / PB BSc (N) / BSc (N) (c) Registered with RN & RM (d) Physically fitness

Applications can be procured by sending a Demand Draft for Rs. 750/- UG & PG course and Rs. 500/- for Diploma course in favour of "Apollo College of Nursing" payable at Chennai. Also can be downloaded from the website <http://www.apollohospitalseducation.com>

For further details contact:

The Principal, Apollo College of Nursing, Vanagaram to Ambattur Main Road,
Ayanambakkam, Chennai - 600 095. Phone: 91-44-26 53 43 87, Tele Fax: 91-44-26 53 49 23