

A study to assess the computer related ergonomic practices and computer related health problems among the final year postgraduate nursing students in selected Colleges Of Nursing, Kolkata, West Bengal.

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Abstract- A non experimental, survey research design study was undertaken to assess the computer related ergonomic practices and computer related health problems, among the final year postgraduate nursing students in selected colleges of nursing. The main objective is to find out the computer related health problem and to find out the association between computer related ergonomic practices and computer related health problems. The theoretical framework of the study is based on health belief model. Total 60 final year post graduate nursing student was selected by convenient sampling technique.

The finding of the study revealed that 31.67% of the student had good computer related ergonomic practice and 65% of the student had moderate musculoskeletal problem 61.6% had eye problem and 96.67% had mild skin problem. Statistically significant associations were found between computer related health problem and type of computer device at 0.05 level of significance.

Index Terms- computer, ergonomics, health problems, students.

I. INTRODUCTION

The word ergonomics is derived from greek words, ergo and nomos meaning work and law. International association describes it as the engineering science dealing with various anatomical, physiological, psychological and engineering philosophies and their interaction with people.⁽¹⁾

Computers are an integral part of life and no longer need specialized training for use. dependence of computers is increasing and has led to health concern. In the absence of a good ergonomic design, extended work for prolonged periods and adversely affect not only vision, but also the muscles of neck, back, shoulders and arms, leading to visual and muscular fatigue and discomfort musculoskeletal condition.

Cartre et al. has reported the association between prolonged computer uses, poor postures at workstations is the main cause of musculoskeletal disorder.⁽²⁾ Globally the number of people suffering from musculoskeletal conditions has increased by 25% percent over the past decade and these conditions make 2% of the global disease burden.

Computers are man- made machine but today men are slaves of it. If we send 4-5 hours on computer we start fleeing tired, sleepy, neck aches, back aches, eye problems and what not.

India , the incidence rate shows that the computer related morbidity was resented in 93% of the study subjects. The visual problem were seen in 76% and musculoskeletal in 77.5% while 35% felt stressful symptoms.⁽³⁾ the post graduate nursing students are supposed to spend a considerable amount of time before computer such like preparing assignments, class presentations and the submission of research project which demand the use of computer a lot.

Objectives of the study

1. To identify the computer related ergonomics being practiced by the final year post graduate nursing student.
2. To find out the computer related health problems among the final year post graduate nursing students.
3. To examine the co-relation between computer related ergonomics practices and computer related health problems.
4. To find out the associations between the computer related ergonomics practices and the selected demographic variables
5. To find out association between computer related health problems and the selected demographic variables.

II. METHODOLOGY

A non-experimental, descriptive survey design . The study was conducted in CON, medical college and hospital; CON Nrs medical college and hospital and BM Birla college of nursing. the sample size is 60 and the sampling technique was adopted was non-**probability** convenience sampling.

Description of the tool

Three tools were used for data collection

1. Tool I a semi structured questionnaire schedule (Demographic data), it was collected by interviewing the samples and it consists of age, any computer course undertaken, duration of working days on computer per week, duration of working hours on computer per day,

whether heard about computer related physical health hazards, type of computer device used, placement of the computer, whether help from other personnel is sought for submitting the computerized assignment in time.

2. Tool II A semi structured questionnaire of 22 items to assess the computer related ergonomic practices, the minimum score is 0 and maximum is 22 was collected by questioning. An arbiter categorization was made for excellent practice with a score of more than 80% i.e. >18,

Good practice with score 71-80% i.e. 16-18, fair practice with score 61-71% i.e. 14-15, average practice with score 51-60% i.e. 11-13 and poor practice with score less than 50% i.e. <11.

3. Tool III A semi structured interview schedule of 22 items to assess the computer related health problems among the students, minimum score is 22 and maximum is 66 by interviewing. An arbiter categorization was made for mild i.e. 22-36, moderate i.e. 37-51, severe i.e. 57-66

III. RESULTS

Section I: Findings related to demographic variables

Table 1: Frequency and percentage distribution of demographic variables
 n=60

Demographic variables	Frequency	Percentage
Age in years		
24-34	44	73.33
35-45	12	20
46-56	4	6.67
Computer course undertaken		
Yes	10	16.67
No	50	83.33
Whether heard about computer related physical health hazards		
Yes	53	88.33
No	7	11.67
Average days per week spent in computer		
<5 days per week	21	35%
≥5 days per week	39	65%

Average hours per day spent in computer		
2-4 hrs		
5-7 hrs	32	53.33%
8-10 hrs	21	35%
	7	11.67%

Type of computer used		
Laptop		
Desktop	47	78.33%
Both (laptop and desktop)	8	13.33%
	5	8.33%

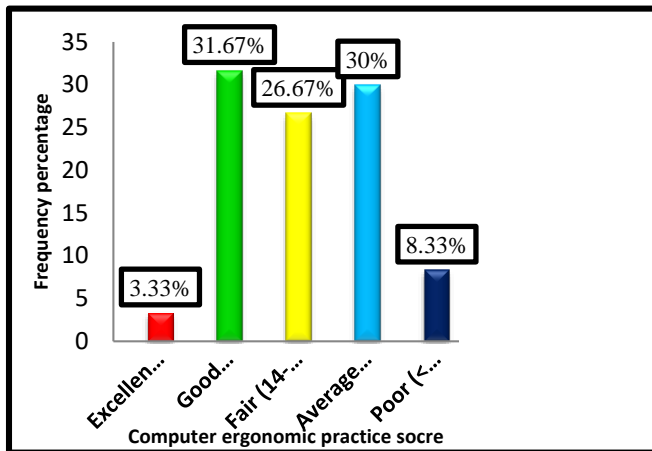
Placing of computer while working		
Table		
Bed	36	60%
	18	30%

Other place	6	10%
Whether help from others personnel is sought for submitting the computerized Assignment in time		
Yes		
No	15	25
	45	75

The data presented in table 1 showed that majority of the students (44; 73.33%) belonged to the age group of 24-34 years, 50(83.33%) had not undergone an computer courses, 39(65%) used computer for more than 5 days per week, 32(53.33%) used computer for 2-4 hrs per day, 53(88.33%) heard about computer related hazards from other sources, 47(78.33%) were using laptop, 36(60%) were lacing computer on the table while working, 45(75%) had not sought for help from others for submitting the computerized assignment in time.

section II: findings related to the assessment of computer related ergonomic practices

n=60



Maximum possible score = 22; Minimum possible score = 0
Figure 1: Bar diagram showing distribution of sample according to the computer related ergonomic practice score

The data presented in figure 1 showed that (19;31.67%) of the students had “good” practice, 18(30%) had “average”, 16(26.67%) had “fair”, 5(8.33%) had “poor” and 2(3.33%) had “excellent” practice score of computer related ergonomic practice.

Table 2 mean median and standard deviation of computer related ergonomic practices among final year postgraduate nursing students
n=60

	Mean	Median	Standard deviation
Computer related ergonomic practices	14.4	15	2.59

Maximum possible: 22 Minimum possible : 0

Data presented in table 2 showed that the mean of computer related ergonomic practice score was 14.4, median 15 and standard deviation 2.59.

Section III findings related to assessment of computer related health problems among the final year postgraduate nursing students

Table 3 frequency and percentage distribution of final year postgraduate nursing students according to domain wise (musculoskeletal, skin, eye) computer related health problems
n=60

Problem	Degree	Range	Maximum score: Minimum score:	Frequency	%

Musculoskeletal Q1 to 12	Mild Moderate Severe	12-20 21-28 29-36	36 12	19 39 2	31.67% 66.67% 3.33%
Skin Q13 to 14	Mild Moderate	2-4 5-6	6 2	58 2	96.67% 3.33%
Eye Q15 to 22	Mild Moderate Severe	8-13 14-19 20-25	24 12	19 37 4	31.67% 61.67% 6.67%

Data presented in table 3 showed that majority 39(65%) had moderate musculoskeletal problem, 58(96.67%) had been affected with mild skin problem, 39(61.6%) had developed moderate eye problem

Table 4 Mean, median and standard deviation of computer related health problems scores among final year postgraduate nursing students
n=60

Variable	Mean	Median	Standard deviation
Computer related health problems	39.3	39	5.47

Maximum possible 66 Minimum possible : 22

Data presented in table 4 showed that the mean of computer related health problem score among the students was 39.3 with a standard deviation of 5.47 and the median was 39.

Section IV: Correlation coefficients between computer related ergonomic practices and computer related health problem

Table 5 Correlation coefficient and its significance existing between computer related ergonomic practices and computer related health problem among the final year postgraduate nursing students
n=60

Variable	Correlation (r)	t-score	Significant
Computer related ergonomic practices	-0.14	1.11	Not significant
Computer related health problems			

Data presented in the table 5 could not explore statistically significant relationship between computer related ergonomic practices and computer related health problem among the students

at 0.05 level of significance as evident from the corresponding t-value.

It could be concluded from the above table that the health problems experienced by the students of the present study were not dependent upon the ergonomics practices.

Table 6 Correlation coefficient and its significance existing between computer related ergonomic practices and computer related health problem (domain wise) among the final year postgraduate nursing students n=60

Computer related ergonomic practices	Correlation (r)	t-score	Significant
Musculoskeletal	-0.098	0.75	NS
Skin	-0.14	1.16	NS
Eye	-0.09	0.76	NS

Data resented in the table 6 could not explore statistically significant relationship between computer related ergonomic practices and domain wise computer related health problems among the students at 0.05 level of significance as evident from the corresponding t-value.

It could be concluded from the above table that the musculoskeletal, skin and eye problems experienced by the students of the resent study were not dependent upon the computer related ergonomics practices

Section V: Association between the computer related ergonomic practices and selected demographic variable among final year post graduate nursing students

Table 7 Chi-square test of association between computer related ergonomic practices and their age. n=60

Age (in years)	Computer related ergonomic practice score			Chi-square value	Significance
	< Median	≥ Median	Total		
< 35	23	21	44	1.025	NS
≥ 35	6	10	16		
Total	29	31	60		

$\chi^2df(1) = 3.84; p < 0.05$

Data presented in table 7 showed that out of 44 students, with less than 35 years of age 23 scored below median and 21 scored at and above median of the total ergonomic practice score. Similarly, out of 16 students, with more than 35 years of age 6 scored below median and 10 scored at and above median of the total ergonomic practice score.

Chi square value was computed to see the association between the two variables which was found not to be statistically significant at 0.05 level of significance. So, it could be concluded that the computer related ergonomic practice among the students of the present study was independent of their age.

Table 8 Chi-square of association between computer related ergonomic practices and the type of computer device used by the final year postgraduate nursing students. n=60

Type of computer device used	Computer ergonomic practice score			Chi square value	Significance
	< Median	≥ Median	Total		
Laptop	22	25	45	2.74	NS
Desktop	3	5	8		
Both	4	1	5		
Total	29	31	60		

Yate's correction considered
 $\chi^2df(2) = 5.99; p < 0.05$

Data presented in table 8 showed that out of 45 students, who used laptop, 22 had scored below median and 25 had score at and above median of the total ergonomic practice score. Again among 8 students, who used desktop, 3 scored below median and 5 scored at and above median of the total ergonomic practice score. Similarly, among 5 students, who used both (laptop & desktop), 4 had scored below median and 1 had scored at and above median of total ergonomic practice score.

Chi square value was computed to see the association between two variables which was found not to be significant at 0.05 level of significance. So, it can be concluded that the computer related ergonomic practice score among the nursing student of the present study was independent with their type of computer device used.

Section VI: Association between the computer related health problem and selected demographic variable among final year post-graduate nursing students

Table 9 Chi-square of association between computer related health problems and their age n=60

Age (in years)	Computer related health problem score			Chi square value	Significance
	< Median	≥ Median	Total		
<35	19	25	44	0.805	Not significant
≥35	9	7	16		
Total	28	32	60		

$\chi^2df(1) = 3.84; p < 0.05$

Data presented in table 9 showed that out of 44 students, with less than 35 years of age 19 scored below median and 25 scored at and above median of the total computer related health problems score. Similarly, out of 16 students, at or above 35 years of age, 9 scored below median and 7 scored at and above median of the total computer related health problems score.

Chi square value was computed to see the association between two variables which was found not to be significant at 0.05 level of significance. So it could be concluded that the computer related

health problem among the nursing student of the present study was independent of their age.

Table 10 Chi-square of association between computer related health problem and number of days in a week.
n=60

Number of days per week	Computer related health problem score			Chi square value	Significance
	<Median	≥Median	Total		
< 5	12	9	21	1.42	Not significant
≥5	16	23	39		
Total	28	32	60		

$\chi^2_{df(1)} = 3.84; p < 0.05$

Data presented in table 10 showed that out of 21 students, who used computer on less than 5 days per week, 12 had scored below median and 9 had score at and above median of the total computer related health problems score. Similarly, among 39 students, who were used to use computer on 5 days or more in a week, 16 scored below median and 23 scored at and above median of the total computer related health problems score.

Chi square value was computed to see the association between two variables which was found not to be significant at 0.05 level of significance. So, it could be concluded that computer related health problem score among the students of the present study were independent of the days they were spending on computers per week.

Table 11 Chi-square of association between computer related health problems and type of computer device used among the final year postgraduate nursing student.
n=60

Type of computer device used	Computer related health problem score			Chi square value	Significance
	<median	≥median	total		
Laptop	18	29	47	6.333	S
Desktop	6	2	8		
Both	4	1	5		
Total	28	32	60		

Yate's correction considered
 $\chi^2_{df(2)} = 5.99; p < 0.05$

Data presented in table 11 showed that out of 47 students, who used laptop, 18 had scored below median and 29 had score at and

above median of the total computer related health problem score. Again among 8 students, who used desktop, 6 scored below median and 2 scored at and above median of the total computer related health problem score. Similarly, among 5 students, who used both (laptop & desktop), 4 had scored below median and 1 had scored at and above median of total computer related health problem score.

Chi square value was computed to see the association between two variables which was found to be significant at 0.05 level of significance. So, it could be concluded that computer related health problem among the nursing students of the present study was dependent with the type of the computer device used. It appears that relatively uses of laptop among the final year postgraduate nursing student is more than other computer device.

IV. CONCLUSION

1. From the study findings it can be concluded that majority of the students had good compliance with computer related ergonomic practices.
2. There were three main areas in the questionnaire to assess the occurrence of computer-related health problem viz. musculoskeletal, skin and eye problems. out of thee three areas, the problem related to musculoskeletal and eye was more than skin problems. The magnitude of the problems was moderate.
3. Computer related health problems were dependent on average total hours spent on computer per day and type of computer device used.

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