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Effectiveness of self-instructional module on knowledge regarding ergonomics and occupational health hazards among computer users working in IT Company in selected area of the city

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Abstract
Objectives

1. To assess the knowledge of the computer users regarding ergonomics and occupational health hazards among computer users working in IT Company in selected area of the city.
2. To assess the effectiveness of a self-instructional module on knowledge regarding ergonomics and occupational health hazards among computer users working in IT Company in selected area of the city.
3. To find the association between pre-test knowledge score with selected demographic variables.

Materials and Methods: The research approach adopted in this study is Quantitative Evaluative approach. Pre experimental one group pre-test post-test design was used. The sample was selected by Simple random sampling technique. Sample size was 60 computer workers working in IT Company.

Result

Knowledge	Pre-test		Post-test	
	Freq	%	Freq	%
Poor (Score 0-10)	2	3.3%	0	0.0%
Average (Score 11-20)	49	81.7%	0	0.0%
Good (Score 21-30)	9	15.0%	60	100.0%

Result shows that in pre-test, 3.3% of the computer users had poor knowledge (score 0-10), 81.7% of the computer users had average knowledge (score 11-20) and 15% of them had good knowledge (score 21-30) regarding ergonomics and occupational health hazards. In post-test, all of them had good knowledge (score 21-30) regarding ergonomics and occupational health hazards. This indicates that the knowledge of the computer users regarding ergonomics and occupational health hazards improved remarkably after self-instructional l module. Corresponding p value was small (less than 0.05), the null hypothesis is rejected.

Conclusion: The knowledge of the samples regarding ergonomic improved remarkably after the self-instructional module.

Keywords: Polythene utilization, adults, corresponding

Introduction

Background: It is obvious that in today's competitive world every individual has to work hard to survive and to develop. The nature of the today's work world is a very large portion of the work that is done on computers. The presence of computer in the workplace leads to set of peculiar characteristics of the workstation which require the workers to stay in a static posture for long periods. This has led to an increase in computer related injuries like back pain, neck pain, repeated strain injuries and vision problems Tharu R (2008) [4].

Ten years ago back injuries were associated with heavy lifting. Today they are caused by people sitting in front computers. Employers and workers need to be informed of the health hazards of constant computer use, successful prevention techniques and useful remedies if injuries do occur.

Review of literature

Review of literature is done under following points 1. Studies related to Ergonomics and occupational health hazard among computer users. 2. Studies related to the ergonomics and occupational health hazard and its management. 3. Studies related to the effectiveness of a self-instructional module on ergonomics and occupational health hazard and its management.

Studies related to ergonomics and occupational health hazard among computer users

Gerr F, Marcus M, Ensor C, Kleinbaum D, Cohen S. (2002) Conducted a prospective study of computer users that was performed to determine the occurrence of and evaluate risk factors for neck or shoulder and hand or arm musculoskeletal symptoms and disorders. This study concluded that Hand/Arm and Neck/Shoulder musculoskeletal symptoms were common among computer users. More than 50% of computer users reported musculoskeletal health problems during the first year after starting a new job.

Studies related to the ergonomics and occupational health hazard and its management

Xue L, Kee H. Study was conducted on "Ergonomic Assessment of Computer Workstations. The sample of the study was 90 student employees and faculty. The data was collected through survey approach. Office workers endured significantly more chronic discomfort/pain (p=0.018) and also suffered twice as much neck pain as the cubicle workers (p=0.034), Furthermore there is a significant difference between actual working postures in comparison to the neutral/ideal postures (p<0.05). And there is no significant difference existed between groups regarding their mastery of ergonomic knowledge. The study finding reveals that, more than 80% of all the participants agreed they learned more about ergonomics and felt confident to recognize and fix their ergonomic problems in the future. The study concluded that targeting people's knowledge has proven to be effective. In the long-term, it will be helpful to reduce the risk of ergonomic hazards at computer workstations. Rhoda K. Had conducted a study to ascertain the prevalence of occupational diseases in the information technology industries. The results of this study indicated that visual fatigue is the predominant compliant and working with computer for long hours (6 hours as critical in this study) causes headaches, Itching of eyes, tearing of eyes, blurred vision, redness in eyes, and pain in neck & shoulder as it requires shifting and focusing of the eyes between screen documents and keyboards. This study also demonstrated that lower back pain, neck pain, leg cramps and wrist pains are the common findings.

Studies related to the effectiveness of a self-instructional module on ergonomics and occupational health hazard and its management: Westgaard R, Winkel J. (1997). This literature review of ergonomic intervention studies aims to identify effective ergonomic interventions for improved musculoskeletal health in the workplace and to make recommendations for quality criteria in ergonomic intervention research. To avoid ambiguity in terminology a list of definitions of the ergonomic terms used in this paper is provided in an appendix.

Models were developed for use in the classification of ergonomic intervention research and to illustrate the problems in interpreting ergonomic intervention data. The relevant literature was identified by a two-step process. First the relevant literature was identified by inclusion criteria, then, quality criteria were applied to identify studies of good quality for effective intervention. These appear to be firstly "organizational culture" and secondly modifier interventions, the former using multiple interventions with high stakeholder commitment to reduce identified risk factors, and the latter especially focusing workers at risk and using measures which actively involve the individual. A list of recommendations is provided.

Odabasi H, Suzan D (2007) [7] Study was conducted on "Awareness of Healthy Computer use and Computer Ergonomics among Pre-Service Teachers". A total of 526 preservice teachers participated in the current study. The data were collected in the spring semester of 2007. Computer Use and Ergonomics Evaluation Survey" was developed by the authors of the current study to analyse the data. Findings revealed the awareness of the majority of pre-service teachers surveyed in the current study is quite insufficient. Male participants reported to have higher awareness than females. Participants enrolled in the Computer Education Department had higher level of awareness in comparison to other departments. Those who start to use computer at an earlier age are found to be more aware of computer related health issues. Finally, the more they use computer the more they are aware of computer related health issues.

Materials and Methods

The research approach adopted in this study is Quantitative Evaluative approach. Pre experimental one group pre-test post-test design was used. The sample was selected by Simple random sampling technique. Sample size was 60 computer workers in IT Company in selected company of the city. A tool structured questionnaire was prepared to assess the knowledge of nursing students regarding ergonomics. The study was conducted in selected colleges of the city. The raw data was collected and entered in a master sheet for the statistical analysis. It was interpreted using descriptive and inferential statistics.

Results

Section I: Description of samples (computer users) based on their personal characteristics Description of samples (computer users) based on their personal characteristics in terms of frequency and percentage n=60

Section II: Table 2: Description of samples based on their age in terms of frequency and percentages n=60

Table 1: The table summarizes demographic variables, showing the highest proportions in the age group 36-45 years (45.0%), females (55.0%), graduates and postgraduates (43.3% each), with 11-15 years of experience (46.7%), income of Rs.25,000-30,000 (40.0%), 6-8 hours of daily computer exposure (65.0%), and 100% have not undergone any occupational hazard prevention training

Demographic variable	Freq	%
Age		
<25 years	7	11.7%
26-35 years	22	36.7%
36-45 years	27	45.0%
>46 years	4	6.7%
Gender		
Male	27	45.0%
Female	33	55.0%
Education		
Diploma	4	6.7%
Graduate	26	43.3%
Post graduate& above	26	43.3%
Other	4	6.7%
Years of experience		
Less than 5 years	4	6.7%
6-10 years	25	41.7%
11-15 years	28	46.7%
> 15 years	3	5.0%
Income		
Rs.15,000-20,000	1	1.7%
Rs.20,000-25,000	12	20.0%
Rs.25,000-30,000	24	40.0%
>Rs.30, 0000	23	38.3%
Hours of daily exposure to computer		
6-8 hours	39	65.0%
More than 8 hours	21	35.0%
Are you undergone any training programmer related to prevention of occupational hazards		
No	60	100.0%

Table 2: The table shows that the majority of participants are aged 36-45 years (45.0%), followed by 26-35 years (36.7%), and less than 25 years (11.7%)

Demographic variable	Freq	%
Age		
<25 years	7	11.7%
26-35 years	22	36.7%
36-45years	27	45.0%

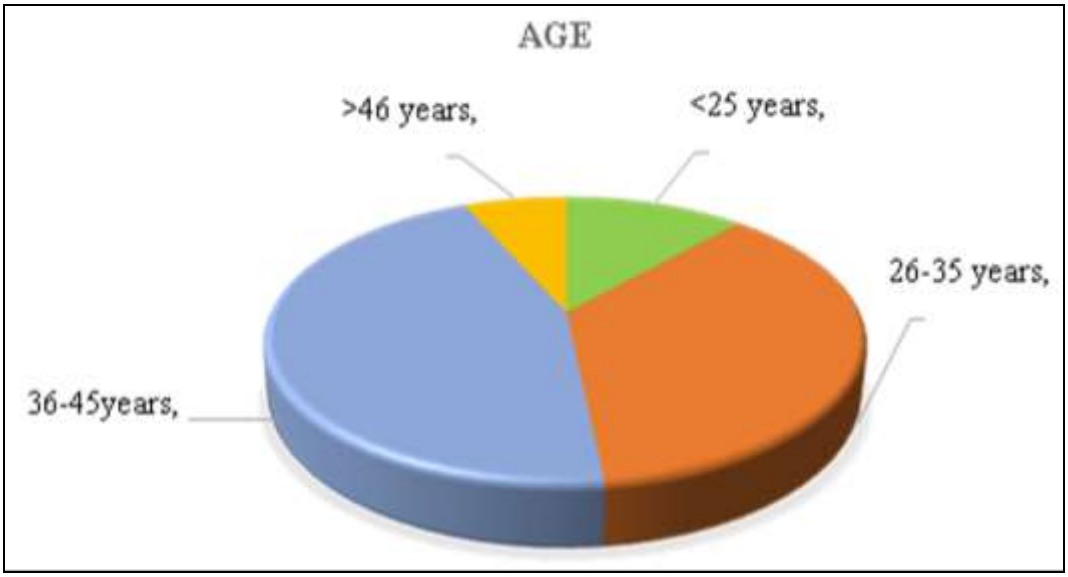

Fig 1: Distribution of samples based on their age

Table 2 and figure 1 shows that 11.7% of the computer users had age below 25 years, 36.7% of them had age 26-35 years, 45% of them had age 36-45 years and 6.7% of them had age above 46 years.

Table 3: Description of samples based on their gender in terms of frequency and percentages n=60

Demographic variable	Freq	%
Gender		
Male	27	45.0%
Female	33	55.0%

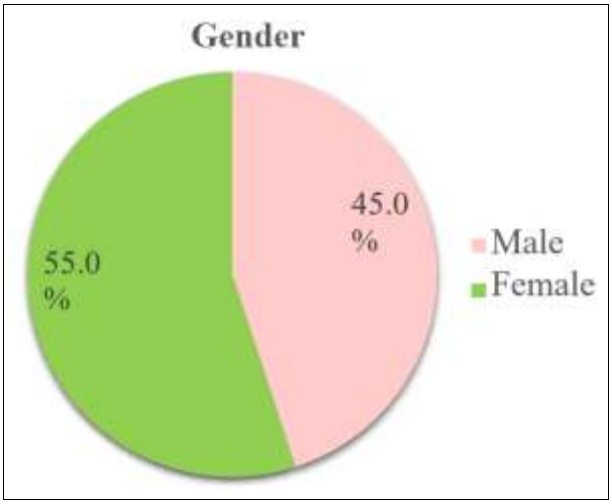

Fig 2: Distribution of samples based on their Gender

Table 4: Description of samples based on their Education in terms of frequency and percentages

Education		
Diploma	4	6.7%
Graduate	26	43.3%
Post graduate& above	26	43.3%
Other	4	6.7%

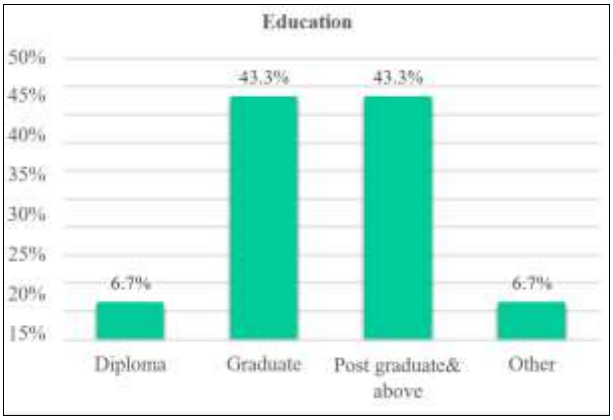

Fig 3: Distribution of samples based on their Education

Table 4 and figure 3 shows that 6.7% of them had diploma, 43.3% of them were graduates, 43.3% of them were postgraduates and above and 6.7% of them had some other education

Table 5: Description of samples based on their year of experience in terms of frequency and percentages

Years of experience		
Less than 5 years	4	6.7%
6-10 years	25	41.7%
11-15 years	28	46.7%
> 15 years	3	5.0%

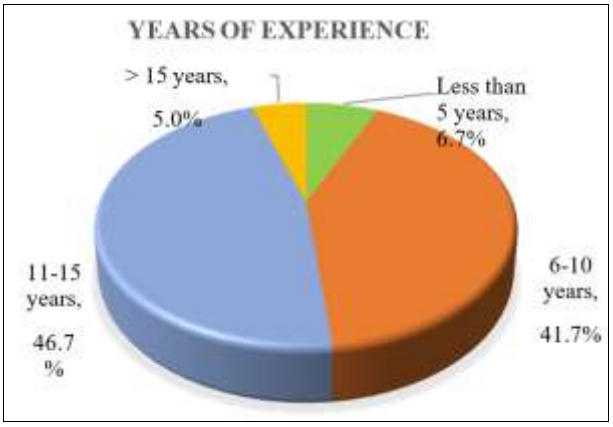

Fig 4: Distribution of samples based on their year of experience

Table 5 and figure 4 shows that 6.7% of them had less than 5 years of experience, 41.7% of them had 6-10 years of experience, 46.7% of them had 11-15 years of experience and 5% of them had more than 15 years of experience

Table 6: Description of samples based on their Income in terms of frequency and percentages

Income		
Rs.15,000-20,000	1	1.7%
Rs.20,000-25,000	12	20.0%
Rs.25,000-30,000	24	40.0%
>Rs.30, 0000	23	38.3%

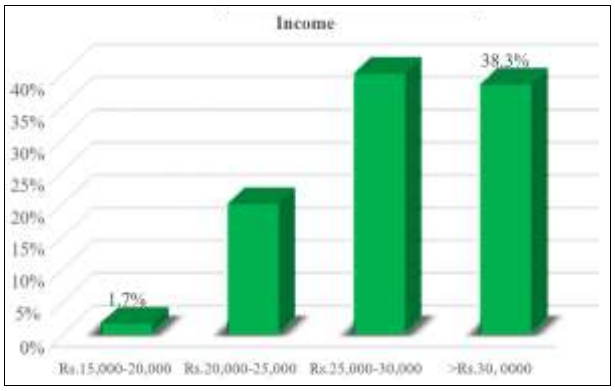

Fig 5: Distribution of samples based on their income

Table 6 and figure 5 shows that 1.7% of them had income Rs.15000-20000, 20% of them had income Rs. 20000-25000, 40% of them had income Rs. 25000-30000 and 38.3% of them had income more than Rs. 30000.

Table 7: Description of samples based on their hours of daily exposure to computer in terms of frequency and percentages

Hours of daily exposure to computer		
6-8 hours	39	65.0%
More than 8 hours	21	35.0%

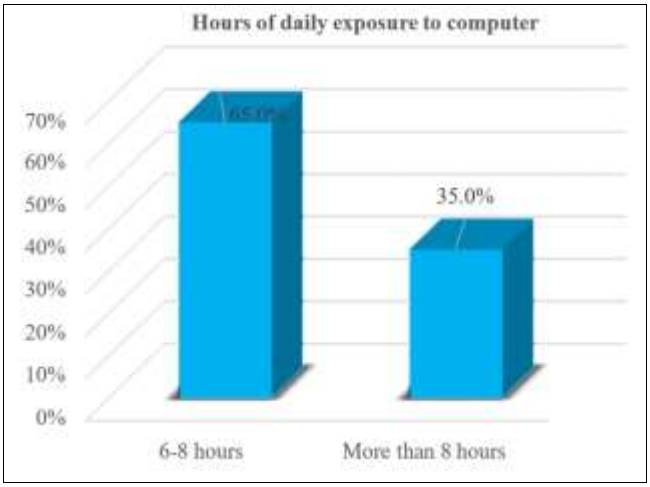

Fig 6: Distribution of samples based on their hours of daily exposure to computer

Table 7 and figure 6 shows that 65% of them were exposed to computer for 6 to 8 hours and 35% of them were exposed to computer for more than 8 hours daily.
None of them had undergone any training program related to prevention of occupational hazards.

Section II
Analysis of data related to the pre-test knowledge of the computer users regarding ergonomics and occupational health hazards.

Table 8: Pre-test knowledge of the computer users regarding ergonomics and occupational health hazards n=60

Knowledge	Pre-test	
	Freq	%
Poor (Score 0-10)	2	3.3%
Average (Score 11-20)	49	81.7%
Good (Score 21-30)	9	15.0%

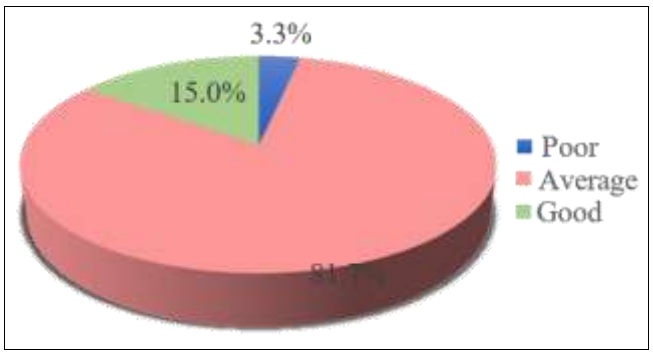

Fig 7: Pre-test knowledge score of the computer users regarding ergonomics and occupational health hazards

Table 8 and figure 7 shows that 3.3% of the computer users had poor knowledge (score 0-10), 81.7% of the computer users had average knowledge (score 11-20) and 15% of them had good knowledge (score 21-30) regarding ergonomics and occupational health hazards.

Section III
Analysis of data related to the effectiveness of a self-instructional module on ergonomics and occupational health hazards among computer users.

Table 9: Effectiveness of a self-instructional module on ergonomics and occupational health hazards among computer users n=60

Knowledge	Pre-test		Post-test	
	Freq	%	Freq	%
Poor (Score 0-10)	2	3.3%	0	0.0%
Average (Score 11-20)	49	81.7%	0	0.0%
Good (Score 21-30)	9	15.0%	60	100.0%

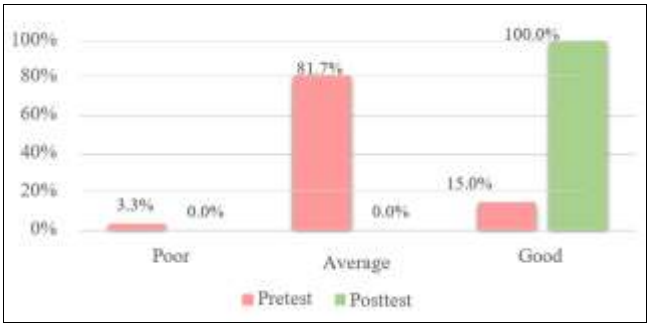

Fig 8: Pre-test and post-test knowledge of the computer users regarding ergonomics and occupational health hazards

Table 9 and figure 8 shows that in pre-test, 3.3% of the computer users had poor knowledge (score 0-10), 81.7% of the computer users had average knowledge (score 11-20) and 15% of them had good knowledge (score 21-30) regarding ergonomics and occupational health hazards. In post-test, all of them had good knowledge (score 21-30) regarding ergonomics and occupational health hazards. This indicates that the knowledge of the computer users regarding ergonomics and occupational health hazards improved remarkably after self-instructional l module.

Table 10: Paired t-test for the effectiveness of a self-instructional module on ergonomics and occupational health hazards among computer users n=60

	Mean	SD	t	df	p-value
Pre-test	16.7	3.4	24.1	59	0.000
Post-test	27.3	0.9			

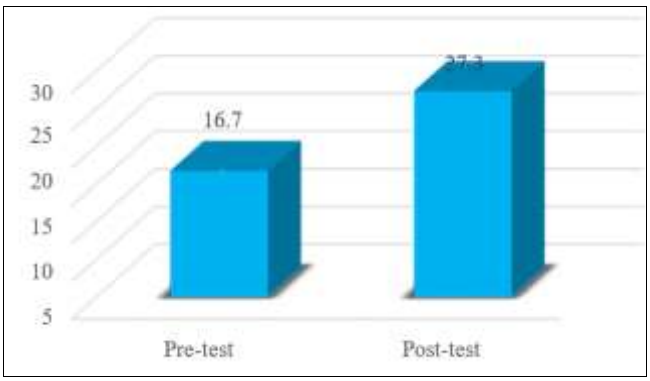

Fig 9: Average knowledge score of the computer users regarding ergonomics and occupational health hazards

Table 10 and figure 9 shows Researcher applied paired t-test for the effectiveness of a self-instructional module on ergonomics and occupational health hazards among computer users. Average knowledge score in pre-test was 16.7 which were 27.3 in post- test. T-value for this test was 24.1 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected.

This is evident that the self-instructional module on ergonomics and occupational health hazards was significantly effective in improving the knowledge of computer users.

Section IV

Analysis of data related to the association of knowledge of computer users with selected demographic variables

Table 11: Fisher's exact test for association of knowledge of computer users with selected demographic variables n=60

Demographic variable		Knowledge			p- value
		Average	Good	Poor	
Age	<25 years	7	0	0	0.665
	26-35 years	19	3	0	
	36-45years	20	5	2	
	>46 years	3	1	0	
Gender	Male	23	4	0	0.635
	Female	26	5	2	
Education	Diploma	4	0	0	0.683
	Graduate	21	5	0	
	Post-graduate& above	21	3	2	
	Other	3	1	0	
Years of experience	Less than 5 years	4	0	0	1.000
	6-10 years	20	4	1	
	11-15 years	22	5	1	
	> 15 years	3	0	0	
Income	Rs.15,000-20,000	1	0	0	0.673
	Rs.20,000-25,000	11	1	0	
	Rs.25,000-30,000	20	4	0	
	>Rs.30, 0000	17	4	2	
Hours of daily exposure to computer	6-8 hours	32	6	1	1.000
	More than 8 hours	17	3	1	

Since all the p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with the knowledge of computer users regarding ergonomics and occupational health hazards.

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