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"Evaluate The Effectiveness Of Self-Instructional Module On Knowledge Regarding Computer Vision Syndrome And Its Prevention Among It Workers In Selected It Centers At Udaipur City, Rajasthan."

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Abstract: *A quasi experimental study to evaluate the effectiveness of self-instructional module on knowledge regarding computer vision syndrome and its prevention among IT workers in selected IT centers at Udaipur city, Rajasthan. The sample consisting of 140 IT workers was selected by using Simple Random sampling technique (Lottery Method). The tool comprised of structured self-administered questionnaire. The pre-test was conducted and the self-instructional module was administered. The post-test was conducted after one week. The data obtained were analyzed by using descriptive and inferential statistics. The mean score of post-test knowledge 28.98 (80.50.%) was apparently higher than the mean score of pre-test knowledge 14.96 (41.57%), suggesting that the self-instructional module was effective in increasing the knowledge of the IT workers regarding computer vision syndrome and its prevention. The mean difference 14.02 between pre-test and post-test knowledge score of the IT workers was found to be significant.*

Key words: *effectiveness, self-instructional module, IT workers, computer vision syndrome, one group pre – test post – test, quasi experimental study.*

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I. Introduction

Computers have now become basic and essential desktop equipment in every organization. Just because of its smaller size and affordable prices, the computer is widely using in office, college, universities and home. With online training, trading and office work, the use of personal computers (PCs) are growing exponentially.[1] Computer-related job opportunities are offering colourful salary and the wide nature of scope for this profession attracts many people into this field.[2]

Before the dawn of the computer era, injuries and problems related to computer usage and Ergonomics were not that rampant, since early and mid-1980 centuries the use of computer has increased dramatically. Nowadays, people rely so heavily on computers at home or office, because of those several health problems significant rises such as Carpal Tunnel Syndrome, back pains and eye discomforts.[3]

Various research studies have found an association between computer use and illness, injury, and discomfort. It is also observed that heavy uses of computers may lead to symptoms of general fatigue, eyestrain or irritation, and physical discomfort. Computer ergonomic hazards are generally related to workstation setup, job design, and work practices. It is known that personal computers usage, even for three hours per day, leads to a chance of injury or health risk including Occupational Overuse Syndrome (OOS), Computer Vision Syndrome (CVS), low back pain, tension headache and psychosocial stress. Repetitive motion such as keyboarding, poor posture, and long job task duration may increase the risk of pain and discomfort. Continue exposure to these hazards leads to Cumulative Trauma Disorders (CTD) of the musculoskeletal system, which is also known as termed Repetitive Strain Injuries (RSIs).[4]

The computer technology has its own pros and cons, the majority of these issues are related to health. The increased use of computers in the workplace has brought about the development of a number of health concerns. Many individuals who work at a computer video display terminal reports a high level of job related complaints and symptoms including ocular discomfort, muscular strain and stress. The level of discomfort appears to increase with the amount of video display terminal uses. Visual discomfort and related symptoms occur in video display terminal workers must be recognized as a growing health problem. The complex of eye

and vision problems related to near work experienced during computer use has been termed as computer vision syndrome (CVS).[5]

Computer Vision Syndrome, also referred to as Digital Eye Strain, is a condition resulting from focusing the eyes on a computer or other display device for protracted, uninterrupted periods of time.[6] Some symptoms of computer vision syndrome include headaches, blurred vision, neck pain, fatigue, eye strain, dry eyes, irritated eyes, double vision, vertigo/dizziness, and difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions i.e. glare or bright overhead lighting or air moving past the eyes.[7]

An individual works at a computer, eyes have to focus and refocus all the time. They move back and forth as a read. Person may have to look down at papers and then back up to type. Person's eyes react to changing images on the screen to create so his/her brain can process what they are seeing. All these jobs require a lot of effort from eyes muscles to make things worse, unlike a book or piece of paper, the screen adds contrast, flicker, and glare. Computer works gets harder as age and the lenses of eyes become less flexible. Generally in the age of 40 years it is difficult to focus near or far objects the condition is known as presbyopia.[8]

A report by Lurton states that, the majority of visual display terminal workers experience some eye or vision symptoms. The main categories of people at risk of developing computer vision syndrome are computer-aided designers (CAD), software professionals, graphic designers, customer service representatives, management information system professionals. Telemarketers, researchers and design engineers. The amount of risk associated with these professionals is due to the type of job they do, in which they have to screw their eyes for a long time on the computer monitor without taking adequate rest.[5]

A national survey of doctors of optometry found that more than 14% of the patients present with eye or vision-related symptoms resulting from visual display terminal work. The most common symptoms are eyestrain, headache, blurred vision, and light sensitivity, double vision, and colour distortion. High visual demands of visual display terminal work make many individual susceptible to the development of eye and vision-related symptoms. Uncontrolled vision condition, poor visual display terminal design and work plan ergonomics and a highly demanding visual task can all contribute to the development of visual symptoms and complaints.[9]

American optometric association (AOA) has reported a substantial increase in employee complaints about computer vision syndrome. The report also states that this trend is very much alarming. Despite the fact that 99.99% of the risk factors are 100% preventable, no concrete efforts are taken to ensure computer workers health. Shady stated that up to 90.00% of computer users reported visual problems and 22.00 % reported musculoskeletal fatigue and 10 million cases of computer vision syndrome need medical help annually.[10]

II. Research Elaborations

Statement of problem-

"Evaluate the effectiveness of self-instructional module on knowledge regarding computer vision syndrome and its prevention among IT workers in selected IT centers at Udaipur city, Rajasthan."

III. Objectives

1. To assess the knowledge of IT workers regarding computer vision syndrome and its prevention.
2. To evaluate the effectiveness of self-instructional module on knowledge of IT workers regarding computer vision syndrome and its prevention.
3. To find out the association between pre-test knowledge score of IT workers with their selected demographic variables.

IV. Hypothesis

H_1: There is a significant difference between the pre-test and post-test knowledge score of IT workers.
H_2: There is a significant association between pre-test level of knowledge score and selected socio-demographic variables.

V. Material and method

Population- IT workers
Sample- the IT worker working in selected IT centers in Udaipur city, Rajasthan
Sample size-140 IT workers
Settings- The study was conducted in following selected IT centers at Udaipur; e-connect private limited, IT Park, Oron IT & Nexus IT solution, Udaipur city.
Sampling technique- Simple random sampling technique (Lottery Method)
The conceptual framework for the study was developed on the based on Imogene modified king's goal attainment theory (1957)

VI. Research design

The research design selected for the present study was a one group per-test post-test research design.

	Pre-test (Dependent variable)	Intervention (Independent variable)	Post-test (Dependent variable)
R	**O1** Knowledge of IT workers	**X** self-instructional module	**O2** Knowledge of IT workers

Table 1: Quasi experimental one group pre-test and post-test research design

The interpretations of the symbol are as below

O1 - Administration of pre-test knowledge Questionnaire
O2 - Administration of post-test knowledge Questionnaire
X - Intervention (self-instructional module)

ETHICAL CONSIDERATION

After obtaining permission from research committee of Geetanjali College of nursing, prior permission was obtained from centers Head from selected IT centers at Udaipur. Consent was taken from each participant who had participated in the study.

DESCRITION OF THE TOOL

Section A- Demographic Data: consisted of selected socio-demographic variables such as age, gender, habitat, dietary pattern, educational qualification, monthly income, years of work experience, hours of daily exposure to the computer, nature of work, using of power spectacle and sources of information regarding computer vision syndrome and its prevention.

Section B- Tools and scoring technique: A structured self-administered questionnaires was selected based on the objective of the study as it was considered the based and appropriate instrument to elicit the response from the literate subject.

SCORING

The knowledge of IT workers regarding the outcomes of computer vision syndrome and its prevention was scored as follows, one mark for each correct answer and zero marks for incorrect answer. The maximum score was 36, to interpret level of knowledge the score was distributed as follows; Interpretation of knowledge:

Level	Range
Inadequate knowledge	<50 %
Moderate knowledge	51-75 %
Adequate knowledge	>76 %

An answer key was prepared for scoring answer to the structured knowledge questionnaire.

DATA COLLECTION AND DATA ANALYSIS

The data was presented under the following sections

Section-I: Description of socio-demographic variables of the respondents.

Section-II: Distribution of respondents according pre-test and post-test level of knowledge score.

Section-III: Effectiveness of self-instructional module on knowledge of IT workers regarding computer vision syndrome and its prevention.

VII. Result

Table 2: frequency and Percentage distribution of respondents to their level of knowledge score.

N=140

Level of knowledge	Score	Frequency		Percentage	
		Pre-test	Post-test	Pre-test	Post-test
Inadequate knowledge (0-50%)	0-18	108	00	77.14	00
Moderately knowledge (51-75%)	19-27	32	49	22.86	35.00
Adequate knowledge (76-100%)	28-36	00	91	00	65.00
Total	**36**	**140**	**140**	**100**	**100**

Table 2: The result showed that, in pre-test 77.14% of the respondents had inadequate knowledge, 22.86 % of the respondents had moderate knowledge and none of the respondents had adequate knowledge and

in post-test 65.00% of the respondents had adequate knowledge and 35.00% of the respondents had moderate adequate knowledge and none of the respondents had an inadequate knowledge regarding computer vision syndrome and its prevention.

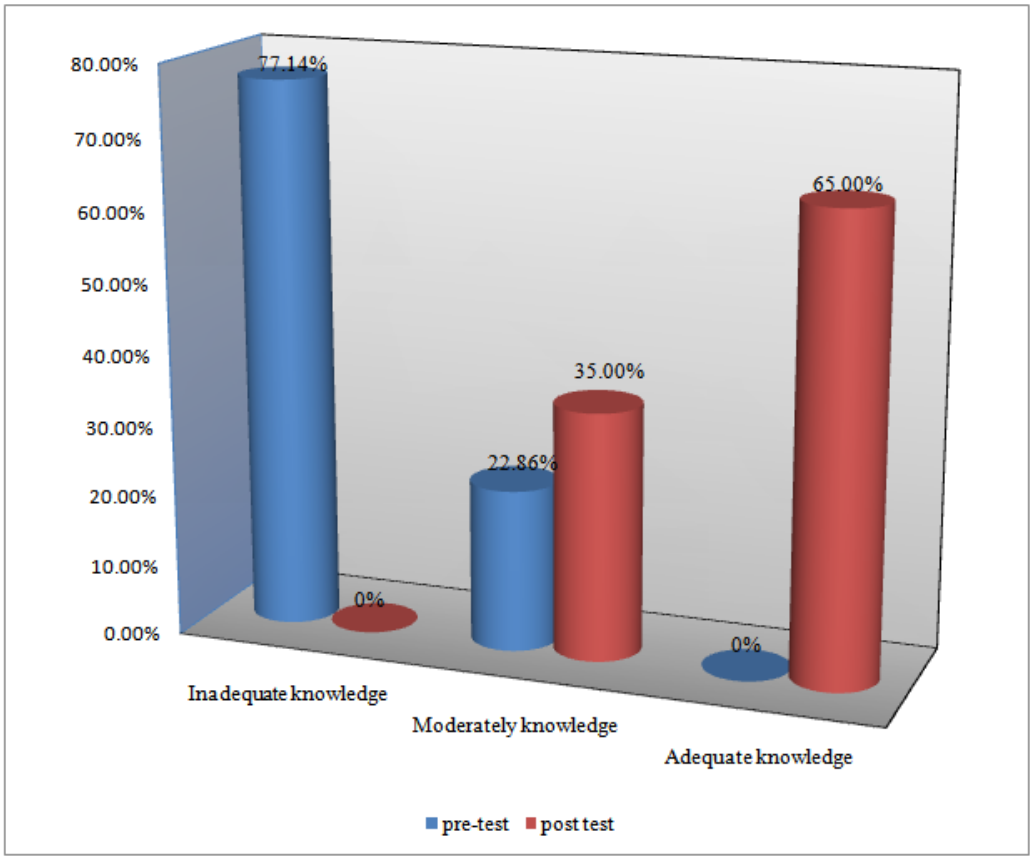

Figure 2: Percentage distribution of respondents to their level of knowledge score

SECTION: III
EFFECTIVENESS OF SELF-INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING COMPUTER VISION SYNDROME AND ITS PREVENTION

The paired "z" value was computed to determine the effectiveness of self-instructional module on knowledge of IT workers regarding computer vision syndrome and its prevention.

The following research hypothesis was stated

H_1: There is a significant difference between the pre-test and post-test knowledge score of IT workers.

H_2: There is a significant association between pre-test level of knowledge score and selected socio-demographic variables.

Table 3: Area wise pre-test and post-test knowledge score

Area	Maximum Score	PRE-TEST			POST-TSET		
		Mean	Mean Percentage	Standard deviation	Mean	Mean Percentage	Standard deviation
Introduction	05	02.19	43.71	01.03	04.04	88.00	0.71
Law of C.V.S	03	01.35	45.00	0.71	02.33	77.62	0.67
Sign & symptoms	05	02.24	44.71	01.56	04.05	81.00	0.83
Diagnosis	04	01.51	37.86	0.96	03.12	78.04	0.74

Prevention & management	19	07.68	40.41	02.76	15.08	79.36	1.96
Total	**36**	**14.96**	**41.58**	**04.46**	**28.98**	**80.50**	**02.80**

Table 3: The result showed that the mean, standard deviation and percentage of pre-test and post-test knowledge score on different areas of computer vision syndrome and its prevention.

In the area of Introduction of computer vision syndrome and its prevention, mean score 2.19 and SD 1.03 in pre-test of the respondents and mean score 4.04 and SD 0.71 in post-test of the respondents. In the area of law of CVS, the mean score 1.35 and SD 0.71 in pre-test of the respondents and mean score 2.33 and SD 0.67 in post-test of the respondents. In the area Sign & symptoms, mean score 2.24 and SD 1.56 in pre-test of the respondents and mean score 4.05 and SD 0.83 in post-test of the respondents. In the area of Diagnosis of CVS, mean score 1.51 and SD 0.96 in pre-test of the respondents and mean score 3.12 and SD 0.74 in post-test of the respondents. In the area of Prevention and management, mean score 7.68 and SD 2.76 in pre-test of the respondents and mean score 15.08 and SD 1.96 in post-test of the respondents. Therefore, the results confirmed that the self-instructional module was highly effective in improving the knowledge of IT workers regarding computer vision syndrome and its prevention

Table 4: Effectiveness of self-instructional module on knowledge regarding computer vision syndrome and its prevention among IT workers. N=140

Knowledge	Mean	Mean Percentage (%)	SD	Enhancement	Enhancement Percentage (%)	Df	Z Value	Inference
Pre-test	14.96	41.57	4.46					
Post-test	28.98	80.50	2.80	14.02	38.93	139	31.32	**S***

S*=Significant

Table 4: The result showed that the mean post-test knowledge score is 28.98 (80.50%) is greater than the mean pre-test knowledge score 14.96 (41.57%). The above table also depicts that the enhancement in the knowledge of respondents is 14.02 (38.93%) supporting the post-test knowledge score are higher than the pretest knowledge score. The data further represent that the 'z' value of 31.32 is significantly higher than the table value 1.96 at 0.05 level significance, hence the H_1 hypothesis was proved and accepted This indicates that there was a difference in the pre-test and post-test knowledge score of respondents and the self-instructional module is effective in improving the knowledge score of IT workers on computer vision syndrome and its prevention.

VIII. Conclusion

This study concluded that there is improvement in the level of knowledge of IT workers which indicates that the self-instructional module is effective. The demographic variables of IT workers significantly associated with the pre-test knowledge score. The development of self-instructional module will help the IT workers to enhance their knowledge regarding computer vision syndrome and its prevention.

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