A Study to Determine the Prevalence of Computer Vision Syndrome among Computer Engineering Students of Selected Colleges at Rohtak with a view to Provide an Informational Booklet

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Abstract: _Background of study_: _Computer vision syndrome is also known as Digital eye strain which refers to the complex of eye and vision problem which include headache, blurred vision, neck pain, backache, fatigue, eye-strain, dry eye, irritated eye and difficulty in focusing the eyes during computer use experienced by people._ _Objectives_: _To determine the prevalence of computer vision syndrome among computer engineering students and to find the association between symptoms with selected demographic variables. To develop an informational booklet._ _Material and Methods_: _The study was conducted among 150 computer engineering students in selected colleges at Rohtak. The subjects were selected by non-probability convenient sampling method. All the students were willing to participate in the study. Structured questionnaire and rating scale was developed and administered. The collected data was analyzed statistically using SPSS version 20. Informational booklets were distributed._ _Results_: _The present study showed that there is mild CVS (58%), moderate CVS (39.3%) & severe CVS (2.6%) among computer engineering students of selected colleges at Rohtak. This study revealed a positive association between systemic disorder like musculoskeletal problems and ocular problems with symptoms of CVS._ _Conclusion_: _It is concluded that, there is mild CVS among computer engineering students of selected computer engineering colleges at Rohtak. Majority of the subjects having problems of dry and heavy eyes, headache and back-pain. It is prime responsibility to create awareness among people who are at risk for developing Computer vision syndrome._

Keywords: Computer vision syndrome, prevalence, symptoms

1. Introduction

Computers are now an integral part of our day. This advancement of science has brought about a vast change in our lives and has become backbone of today's occupational setting. These are the heartbeats of modern world. Computer vision syndrome refers to the complex of eye and vision problem which include headache, blurred vision, neck pain, backache, fatigue, eye-strain, dry eye, irritated eye and difficulty in focusing the eyes during computer use experienced by people. It holds the distinction of being called the number one occupational hazard of the 21st century. According to National Association of Software Companies reported that number of workers is rapidly growing in information technology sector. Around one million computer professionals are graduating from various courses every year. CVS affects 75% of the people who works on computers, most markedly those who work more than 3 to 4 hours a day.

There is limited empirical-based evidence on the computer vision syndrome among computer engineering students from Haryana. The researcher attempted to explore the prevalence of computer vision syndrome and want to create awareness among people who are at risk for developing this syndrome with the help of an informational booklet.

2. Materials and Methods

The present study was conducted among 150 computer engineering students in selected Computer engineering colleges at Rohtak, Haryana. The participants were included as per the predetermined criteria using a non-probability convenient sampling method. The study participants were initially interviewed using a structured questionnaire and collected information regarding socio-demographic profile such as age, gender, educational status, experience, working hours per day, type of appliances used, spectacles use, contact lens use, sources of lighting condition and any systemic disorders. Rating scale was used for assessment for symptoms of computer vision syndrome. The collected data was analyzed statistically using SPSS version 20. Informational booklets were distributed. Researcher compared the characteristics of various categorical data using Pearson's Chi-square test. Variables that showed statistical significance ($P<0.05$) in the univariate analysis were considered.

3. Results

The study involved 150 computer engineering students from selected engineering colleges at Rohtak. The present study showed that there is mild CVS (58%), moderate CVS (39.3%) & severe CVS (2.6%) among computer engineering students of selected colleges at Rohtak.

Table 1: Prevalence of CVS

CVS Symptoms	Frequency	Percentage (%)
Mild CVS	87	58
Moderate CVS	59	39.3
Severe CVS	4	2.6
Total	150	100

Table 2: Association of CVS Symptoms with socio-demographic variables

Sr. No.	Demographic variables	Frequency	Percentage (%)	χ^2	P
1	**Age**				
	<19 years	9	6	7.569	0.271
	20-22 years	80	53.3		
	23-25 years	44	29.3		
	>25 years	17	11.3		
2	**Gender**				
	Male	80	53.3	0.283	0.868
	Female	70	46.7		
3	**Educational status**				
	B. Tech 3rd year	49	32.7	1.53	0.957
	B. Tech 4th year	52	34.7		
	M. Tech 1st year	34	22.7		
	M. Tech 2nd year	15	10		
4	**Duration of use**				
	<1 year	18	12	4.029	0.673
	1-2 years	38	25.3		
	2-3 years	31	20.7		
	>3 years	63	42		
5	**Working hours per day**				
	<1 hour	19	12.7	8.886	0.18
	1-2 hours	65	43.3		
	2-3 hours	32	21.3		
	>3 hours	34	22.7		
6	**Types of appliances used**				
	Ordinary computer	26	17.3	2.087	0.912
	Laptop	61	40.7		
	Tablet	13	8.7		
	Android Mobile	50	33.3		
7	**Use of Spectacles**				
	Yes	36	24	0.54	0.764
	No	114	76		
8	**Use of contact lens**				
	Yes	3	2	0.149	0.928
	No	147	98		
9	**Any systemic disorders**				
	Musculoskeletal problems	7	4.7	20.823	0
	Ocular problems	10	6.7		
	None	133	88.7		
10	**Source of lightning**				
	Overhead	29	19.3	5.776	0.449
	Fluorescent	81	54		
	Window light	30	20		
	None	10	6.7		

This study revealed a positive association between systemic disorder like musculoskeletal problems and ocular problems with symptoms of CVS by using Pearson's Chi-square test. The chi-square test of association between systemic disorders and CVS symptoms (χ^2=20.823, P-value 0.000), were significant at 0.05 level of significance.

4. Discussion

The present study signifies that there is mild CVS 87(58%), moderate CVS 59(39.3%) & severe CVS 4(2.6%) among computer engineering students of selected colleges at Rohtak. The findings of the study implies that majority of the participants were having the problems of tired and heavy eyes, headache and back-pain.The Pearson's Chi-square test was applied to check the association between socio-demographic data and CVS symptoms. The chi-square test of association between systemic disorders and CVS symptoms (χ^2=20.823, P-value 0.000), were significant at 0.05 level of significance.

Acc. To Soman Mani, et al., (2016) a study was conducted on prevalence of computer vision syndrome among Information technology students in a rural engineering college. The prevalence of CVS was found to be 55.46%.

Acc. To Rosenfield Mark, et al., (2012) conducted a study on the prevalence of computer vision syndrome and dry eye in office workers. The most prevalent symptoms associated with CVS were tired eye, which was reported by 40% of subjects. 32% and 31% of subjects reported symptoms of dry eye and eye discomfort.

5. Conclusion

It is concluded that there is mild CVS among computer engineering students of selected computer engineering colleges at Rohtak. Majority of the subjects were having problems of dry and heavy eyes, headache and back-pain. It is prime responsibility to create awareness among people who are at risk for developing Computer vision syndrome.

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