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Computer Vision Syndrome and Its Risk Factors Among Professional College Students of Agartala: A Cross Sectional Study

Medical Science

KEYWORDS : Computer vision syndrome, Professional college, Agartala

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ABSTRACT

Objectives: To estimate the prevalence of computer vision syndrome among the professional college students and to determine the factors associated with CVS. Methods: A Cross sectional study was conducted among 330 students of professional colleges of Agartala. Results: Majority of the students belonged to 20-23 years (74.5%) and were male (57.3%). Use rate of laptop (63.6%) was higher and majority (55.8%) of them were using computer for less than 3 years and also using for < 3 hours in a day (74.2%). Prevalence of CVS was found 55.5% among college students. Regarding the types of problem, headache (44.8%), and blurred vision (18.5 %) were commonly seen. The presence of CVS was significantly associated with sex, duration of use and time spent in a day on computer. Conclusion: So education about ergonomics, postural health and eye exercises are needed in new computer users.

Introduction: American Optometric Association defines computer vision syndrome as "the complex of eye and vision problems experienced during or related to computer use."[1] Common symptom of CVS include eye strain, headache, blurred vision and neck or shoulder pain that generally increase in severity with the amount of video display terminal use. [2] Globally, personal computers were one of the commonest office tools. Almost all institutions, colleges, universities and homes today were using computer regularly. Using computers had become a 21st century necessity. Prevalence of CVS ranges from 64% to 90% among computer users.[3] Nearly 60 million people suffer from CVS globally: A million new cases of CVS occur each year.[4] Millions of people including children, college students are using computers for prolonged hours. Therefore, it is important to examine potential effect on health after exposure. Although many studies have reported the association between prolonged computer use, poor postures at workstations and various musculoskeletal discomforts, most of them were focused on western adult subjects. Very little research has been performed to document the effects of computer use on the physical health of Indian users especially among professional college students. Hence, this study was designed to estimate the prevalence of CVS among professional college students and to determine the factors associated with the same.

Methodology: A cross sectional study was conducted among the students of professional colleges of Agartala from 1st September to 30th November 2015. Considering prevalence of CVS 69.3% [5], at 5% significance level and with absolute error of 5%, total 330 students were selected for the study. Students who were not willing to participate, not using computer, were absent at the day of data collection, were suffering from previous eye problems even before starting use of computer were excluded from the study. Multistage sampling method was followed for selecting the study participants. In first stage, out of 12 professional colleges 5 colleges (AGMC, RIPSAT, TECHNO INDIA, and VABANS College) were selected by simple random sampling. In second stage, from each college 66 students were selected by stratified random sampling. Computer Vision Syndrome – reported by his/r own one of the eye problems listed below. Eyestrain, blurred vision, headache, dry eye, watery eye, blurred vision, double vision and irritation of the eyes that occur as a result of computer use (Chiemeke, SC, 2007). [6] Ethical clearances were obtained from Institutional Ethics Committee, AGMC and written permission was taken from the principals of all the selected colleges. Informed consent was sought from study participants and data were collected on a pretested predesigned semi structured interview schedule. Data analysis was done by Epi Info. Version 6. Descriptive statistics were expressed as frequencies and percentages. Chi square statistics and Fishers exact test were applied to determine the association of different variables. P value < 0.05 was deemed as significant.

Results:

A total of 330 professional college students were included in the study with an overall response rate of 100%. Majority of the students were male (57.3%) and belonged to the age group of 20 to 23 yrs (74.5%). Mean age of respondent 20.69 + 2.12 yrs. Majority of students were Hindu (90.3%), General category (40.9%) and belonged to family with per capita monthly income of up to Rs 5000 (42.1%). Mostly they were using computer for browsing internet (45.2%), educational purposes (21.8%) and for social networking (18.5%). Majority of them were using computer for less than 3 years (55.8%) and also using for < 3 hours in a day (74.2%) [Table no. 1].

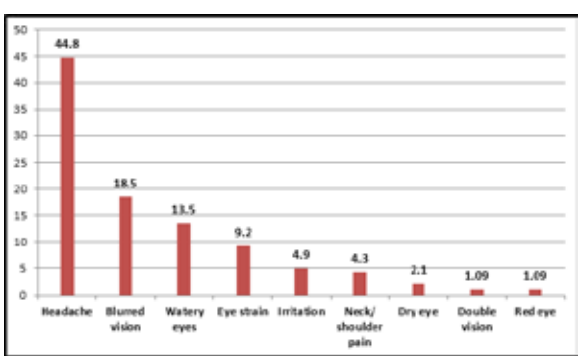
Table No 1. Base line characteristics of study participants

Characteristics	Frequency (Percentage) N (%)
a) Sex	
Male	189 (57.3)
Female	141 (42.7)
b) Age group	
17- 19 Yrs	74 (22.4)
20- 23 Yrs	246 (74.5)
24 – 26 Yrs	10 (3)
c) Religion	
Hindu	298 (90.3)
Muslim	10 (3)
Christian	16 (4.8)
Others	6 (1.8)
d) Community	
ST	66 (20)
SC	53 (16.1)
OBC	76 (23.0)
General	135 (40.9)
e) Monthly per capita income	
< Rs 5000	139 (42.1)

Rs 5001 - 10000	117 (35.5)
Rs 10001- 15000	41 (12.4)
> Rs 15000	33 (10.0)
f) Duration of Computer use	
< 3yrs	184 (55.8)
3yrs – 6 yrs	112 (33.9)
7 yrs – 10 yrs	25 (7.6)
>10 yrs	9 (2.7)
g) Types of work on Computer	
Internet	149 (45.2)
Programming & word processing	12 (3.6)
Games	24 (7.3)
Educational purpose	72 (21.8)
Social networking	61 (18.5)
Others	12 (3.6)
h) Type of device use	
Desktop	55 (16.7)
Laptop	210 (63.6)
Both	65 (19.7)
i)Working hours in a day	
< 3 hours	245 (74.2)
3 – 6 hours	80 (24.2)
> 6 hours	5 (1.5)

A total of 183 students reported a history of one or more of the symptoms of Computer vision syndrome. Hence, the prevalence of CVS was found to be 55.5%. The symptoms most experienced by study participants were headache (44.8%) and blurred vision (18.5%). The rest symptoms were watering of eyes (13.5%), eye strain (9.2%), irritation of eyes (4.9%), neck or shoulder pain (4.3%), dry eye (2.1%) etc [Figure no 1].

Figure No 1. Symptoms of computer vision syndrome reported by study participants



Sex of the study participants (0.008), duration of work on computer (0.009) and working hours in a day on computer (0.000) were found significantly associated with computer vision syndrome [Table no 2].

Table No 2. Factors affecting Computer Vision Syndrome among Professional college students

	Variables	Computer Vision Syndrome		P value
		Yes (N)	No (N)	
a) Sex	Male	93	96	0.008
	Female	90	51	
b) Age group	17- 19 Yrs	41	33	0.939
	20- 23 Yrs	137	109	
	24 – 26 Yrs	5	5	
c) Religion	Hindu	166	132	0.487
	Muslim	6	4	
	Christian	7	9	
	Others	4	2	
d) Community	ST	36	30	0.962
	SC	31	22	
	OBC	41	35	
	General	75	60	
e) Monthly per capita income	≤ Rs 5000	71	68	0.061
	Rs 5001 - 10000	62	55	
	Rs 10001- 15000	25	16	
	> Rs 15000	25	8	
f) Duration of Computer use	< 3yrs	164	20	0.009
	3yrs – 6 yrs	83	29	
	7 yrs – 10 yrs	20	5	
	>10 yrs	7	2	
h) Type of device use	Desktop	29	26	0.289
	Laptop	115	95	
	Both	39	26	
i)Working hours in a day	< 3 hours	132	113	0.000
	3 – 6 hours	68	12	
	> 6 hours	3	2	

Discussion: The present study was conducted among 330 professional college students at Agartala and the prevalence of CVS in study population was found to be 55.5%. Subratty and Korumtolee, reported 59.5% prevalence of CVS among keyboard users.[7] In contrast Rahman and Sanip, reported 68.1% prevalence of CVS among university staff in Malaysia.[8] Iwakiri reported that 72.1%.[9] Logaraj, *et al*. reported prevalence of CVS among college students was 80.3%. The prevalence was almost similar between the medical 78.6% and engineering 81.9% students. [10] Present study showed factor like gender was statistically associated with computer vision syndrome. Shantakumari N et al reported that females had significantly higher incidence of headaches and blurred distant vision than males.[11] The present study found that an increase in the number of hours spent on computer increases the risk of CVS significantly. Respondents who spend less than 1 h on computer daily reported the lowest visual symptoms. [2] Shrivastava and Bobhate report found that visual symptoms increased with the increase in working hours on computer. [12] Rahman and Sanip, in their study reported that those respondents who used computer for more than 5 h/day were at higher risk of developing CVS. [8] Present study revealed that duration of use of computer in years was significantly associated with Computer Vision syndrome. Similar result was observed by Mahalingam, [13] Seshadhri et al. [5] The researcher found that the major cause of Computer Vision computer vision syndrome was due to prolonged use of computer without precaution. [14]

Conclusion:

The present study showed that prevalence of computer vision syndrome among professional college students is 55.5%. There was no significant association between the prevalence of CVS with age of the computer users, monthly per capita family income and type of device used. But there was a statistical significant observed between prevalence of CVS with sex of the students, time spent on computer per day, and duration of computer use in years.

Recommendation:

The current study highlighted the occurrence of vision related health problems among the professional college students who are using computer. These study findings confirmed that there is a need to educate new computer users about appropriate ergonomics, postural health and eye exercises. As the use of computer had become universal in higher education institutions, the subject of the prevention of CVS and associated discomfort should be made part of the curriculum in higher institutions.

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