

Computer Vision Syndrome: A Rural College Based Pilot Survey

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ABSTRACT

The aim and purpose of this pilot survey was to determine the prevalence of computer vision syndrome (CVS) and to determine the most prominent symptom of CVS among the students. A prospective study was conducted in the Optometry lab of the Paramedical College at UPUMS, Saifai, Etawah during the month of December, 2018. 120 subjects (mean age= 25 ± 1.14 years) having visual acuity of at least 0 log unit as well as not having any refractive error, amblyopia, squint or ocular surgery were consecutively enrolled and were subjected to a questionnaire based survey and the responses were evaluated to know the prevalence and the major cause of CVS. It was found that out of 120 subjects, 63 (=52.5%, $p < 0.05$) were suffering from CVS and remaining 57 (=47.5%, $p < 0.05$) were normal. The common symptoms including headache, neck pain, blurred vision & watery eyes were observed. The age group of 16-20 years were having the most (=27, 22.5%) subjects with the symptoms of CVS. Most common symptom was Headache (24%) while blurred vision (6%) was the least commonly experienced symptom. Subjects who used to work over computer continuously for long hours were found to have more severe problem of CVS.

Keywords: Computer Vision Syndrome, Cause of CVS, Optometry, Prevalence.

INTRODUCTION

With the advancement in the technologies, the computer has become an integral part of our everyday life as a result more and more people are experiencing variety of ocular symptoms related to its use. These include eyestrain, redness, blurred vision, watery eyes, dry eyes collectively referred as computer vision syndrome (CVS).¹ The aim and purpose of this survey based pilot study was to determine the prevalence of computer vision syndrome and to determine the most prominent symptom of CVS among the students. Also, the purpose was to create awareness about the harmful effects of digital device and to spread information about the protection and prevention our eyes from such devices.

CVS is the physical eye abnormality felt by many individuals after spending two

or more hours of time in front of digital screen.

When viewing near object, the mechanisms of miosis, accommodation and convergence take place simultaneously. Prolonged work at computer terminals has been associated with changes in both relative accommodation and vergence. *Wiggins et al.*² reported that there was a significant increase in the symptoms during the computer work if there was a residual astigmatism of up to 1D.

According to *M Logaraj et al.*³, those students who were using computer continuously for more hours were at higher risk developing CVS syndrome compared to students who spend less hours and took frequent breaks. *Rosenfield M. et al.*⁴ - The principal ocular causes for CVS is oculomotor anomalies and dry eye. Accommodation and vergence responses to

electronic screens appear to be similar to those found when viewing printed materials, whereas the prevalence of dry eye symptoms is greater during computer operation. *Sultan H Al Rashidi et al*⁵ stated that the continuous use of computers for long hours is found to have severe problems of vision especially in those who are using computers and similar devices for a long duration.

MATERIAL AND METHODS

A prospective pilot survey-based study was conducted in the optometry lab of the paramedical college at UPUMS, Saifai, Etawah during the month of December 2018. A total of 120 consecutive subjects were enrolled at their own will (Informed consent was taken from each subject enrolled in the study), regardless of age and gender on the basis of below mentioned inclusion and exclusion criteria.

Inclusion Criteria: Subjects having visual acuity of at least 0 log unit on LogMAR Chart measured at a distance of 4 meters.

Exclusion Criteria: Subjects having any refractive error, amblyopia, squint or ocular surgery.

Finally after going through clinical screening, all those who fulfilled the inclusion and exclusion criteria were subjected to a questionnaire. The questionnaire evaluated personal, environmental, ergonomic factors and physiological response of computer users. During evaluation following questions were asked from the subjects-

- 1- Duration of computer usage?
- 2- What kind of sitting posture while using the computer?
- 3- What amount of Illumination of computer screen?
- 4- What kind of Illumination of room?
- 5- The distance between eyes and computer screen while working?

Lastly, the responses were statistically evaluated by MS Excel Data analysis to know the prevalence and the major cause of CVS in those subjects.

Ethical clearance was obtained from institutional ethical committee.

RESULTS AND DISCUSSION

Total 120 subjects reported for the check-up and out of which 63 (52.5%, $p < 0.05$) subjects were having symptoms of CVS and remaining 57 (47.5%, $p < 0.05$) were normal.

Based on this data, it was found that the age group 16-20 were suffering more from CVS. Out of 120 subjects 55 subjects were of the age group of 16-20 out of which 27 i.e. 22.5% were suffering from CVS. (Table-1. & Fig.-1.)

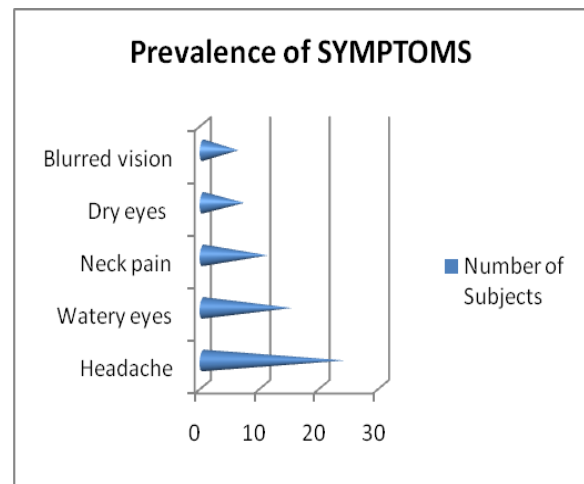


Fig-1. Prevalence of SYMPTOMS

Symptoms	Number of Subjects	Percentage
Headache	24	38
Watery eyes	15	24
Neck pain	11	17
Dry eyes	7	11
Blurred vision	6	10

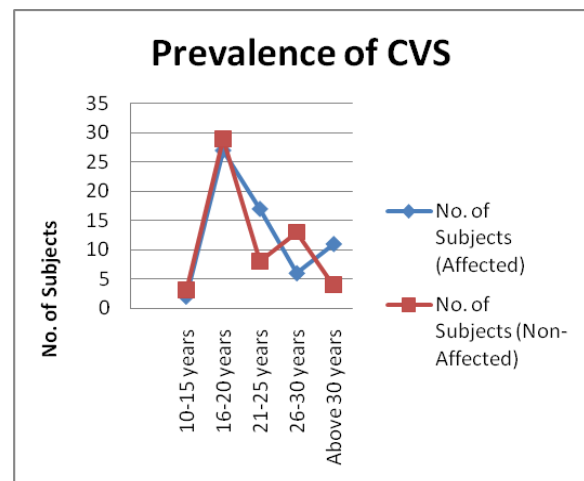


Fig-2: Prevalence of CVS

The Basic reason behind this probably because the people of this age group are more addicted to visiting social sites and spent more time on social media. Another possible reason could be keeping wrong posture while using devices which must have resulted in symptoms of CVS like neck pain, headache, etc.

It was also found that the most prominent symptoms of CVS in this survey were HEADACHE (24%), and other symptoms were watery eyes (15%) and neck pain (11%) while Dry eyes (7%) and blurred vision (6%) were the least commonly experienced symptoms. (Table-2 & Fig-2)

Table-2: Prevalence of CVS

Age group	No. of Subjects (Affected)	No. of Subjects (Non-Affected)	Total No. of Subjects	PERCENTAGE	PERCENTAGE
				(AFFECTED Subjects)	(NON-AFFECTED Subjects)
10-15 years	2	3	5	1.66%	2.50%
16-20 years	27	29	56	22.50%	24.16%
21-25 years	17	8	25	14.16%	6.66%
26-30 years	6	13	19	5%	11%
Above 30 years	11	4	15	9.16%	3.33%
Total	63	57	120	52.50%	47.50%

On comparison of the three studies (Table-3.), it was found that due to more advancement in technology and gadgets like computers, laptops, smart phones as well as prolonged use of their devices, more people are suffering from ocular disorders. One of the limitation of our study was the subjects were from different area (urban or rural), not purely representing the rural subjects.

Table-3. Comparison of the various relevant studies of Computer Vision Syndrome

	<i>Present Study(2018)</i>	<i>Mowatt L et al.(2017)⁶</i>	<i>Sultan H et al.(2017)⁵</i>
1	A prospective survey based study was conducted in the Saifai (Etawah) during the month of December 2018.	A prospective study was conducted in the University of the West Indies, Mona, Jamaica during the month of October 2017.	A prospective survey based study was conducted in the University of Saudi Arabia in the month of November-December 2017.
2	Total 120 subjects participated and out of which 52.5% were found to have CVS.	Total 409 students participated out of which 78% females while remaining 22% were males.	A total of 634 university students were included out of which 58.51% were having CVS.
3	The most common symptom that was reported during check-up was Headache (24%) while blurred vision (6%) was the least commonly experienced symptom.	The most common symptom that was reported during check-up were Neck pain (75.1%) while Dry eyes (26.2%) was the least commonly experienced symptom.	The most common symptom that was reported during check-up were Eye strain (62.14%) while Burning eyes (7.57%) was the least commonly experienced symptom.
4	The aspects such as shoulder pain and back pain were not included.	It was found that posture related problems like shoulder pain and back pain also arose due to CVS.	The aspects such as shoulder pain and back pain were not included.

CONCLUSION AND RECOMMENDATION

Persons who continuously use computer for long hours were found to have more severe problem of vision. While diagnosing the near work related problem/ CVS, we have to consider all the aspects like Ocular, Extra-ocular, Ergonomic and work place related modification.

Treatment of CVS involves proper identification of the etiologic factors and correction of visual errors if existent. Special attention should be paid to

ergonomic factors like correct posture in chair, lighting arrangement, and antiglare screen on the computer/laptop, follow 20-20-20 rule and establishing proper working habits. And require a multidirectional approach combining ocular therapy (Orthoptic Eye Exercises), Physiotherapy with adjustment of the work station and regular work breaks may help improve visual and body comfort.

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REFERENCES

1. Bali J, Neeraj N, Bali RT. Computer vision syndrome: A review. *J Clin Ophthalmol Res* 2014; 2:61-8.
2. Wiggins NP, Daum KM. Visual discomfort and astigmatic refractive errors in VDT use. *J Am Optom Assoc.* 1991; 62:680-4.
3. Logaraj M, Madhupriya V, Hegde SK. Computer vision syndrome and associated factors among medical and engineering students in Chennai. *Ann Med Health Sci Res.* 2014; 4:179–185.
4. Rosenfield M. Computer vision syndrome: A review of ocular causes and potential treatment. *Ophthalmic Physiol Opt.* 2011; 31:502–15.
5. Sultan H. Al Rashidi, H. Alhumaidan. Computer vision syndrome prevalence, knowledge and associated factors among Saudi Arabia University Students: Is it a serious problem? *Int J Health Sci (Qassim).* 2017 Nov-Dec; 11(5): 17–19.
6. Mowatt L, Gordon C, Santosh ABR, Jones T. Computer vision syndrome and ergonomic practices among undergraduate university students. *Int J Clin Pract.* 2017;72: e13035.

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