

A Study to Evaluate the Knowledge Regarding Computer Vision Syndrome among Medical Students

Senthil Kumar B

Department of Anatomy, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital, Vinayaka Mission's Research Foundation (Deemed to be University), Salem, Tamil Nadu, India.

*Corresponding Author E-mail: skdrchinu88 @ gmail.com

<http://dx.doi.org/10.13005/bpj/1907>

(Received: 30 January 2020; accepted: 26 March 2020)

The computer usage, even for few hours per day, leads to various health ailments. The computer dependents of this modern era may give rise to enormous visual problems which are called as Computer Vision Syndrome (CVS). Aim of the study is to evaluate the knowledge about computer vision syndrome among the medical students and to study the effect of prolonged computer use on the eyes and factor affecting it and to raise the concern of medical students about the severity of eye symptoms after prolonged computer use. The Cross sectional pilot study was performed in 60 medical students of I Medical profession (30 males & 30 females) of VMKV Medical College and Hospitals, Salem. A survey was done among the participants using a pre-tested, validated, structured questionnaire. The eye symptoms were recorded. The data from the questionnaire was analyzed. The practices on ergonomics principles were compared between male and female and male factors ergonomics practices were predominant than female. 85% of the students had some or the other symptoms of computer vision syndrome. The medical students were not aware about computer vision syndrome along with the effect of prolonged computer use on the eyes and factor affecting it. The concern of medical students about the severity of eye symptoms after prolonged computer use has to be taken care by creating awareness to them.

Keywords: Awareness; Computer Vision Syndrome; Knowledge; Medical Students.

Electronic gadgets play a vital role in the society of this globalization era. Global awareness is not possible without these advances in technology. The trend of using notebooks, tablets, smartphones and digital devices had become the routine of our day today life. People use digital display devices starting from official work to playing video games. In this tech-savvy era, children are smarter to use smart phones, touch screen devices like iPads to play and learn. Almost every colleges, institutions, universities and homes started using computers in some or the other way.

Using computers had become a necessity of this 21st century.¹ The computer usage, even for few hours per day, leads to various health ailments. The dependents of computer in this modern era may give rise to enormous ophthalmic problems which are collectively called as Computer Vision Syndrome (CVS).¹ Common visual symptoms of CVS includes eye strain, blurred vision, headache along with other complications of shoulder or neck pain on prolonged usage that generally increase in severity on prolonged use. The prevalence of CVS among computer users ranges from 64% to 90%.

^{2,3} A survey reported that around 60 million people suffer from CVS around the world and a million new cases of CVS occur every year.⁴ Enormous studies were reported on the association between prolonged computer use, poor postures while using computers and various musculoskeletal discomforts, all these reports were based on western adult population.^{5,6} In a national survey reported by Ophthalmologist it was stated that more than 14% of the patients had vision related symptoms.⁷ The prevalence of eye straining symptoms among prolonged computer users were in a range of 25-93% as reported by surveys.⁸ Very few research has been conducted so far on the effects of prolonged computer usage on Indian medical college students, so a preliminary survey for the medical students was planned and designed to assess their knowledge regarding computer vision syndrome.

Aim and Objectives

Evaluate the knowledge about computer vision syndrome among the medical students.

Primary Objectives

- To study the effect of prolonged computer use on the eyes and factor affecting it.
- To assess the knowledge of medical students regarding computer vision syndrome.

Secondary Objective

- To raise the concern of medical students about the severity of eye symptoms after prolonged computer use.

MATERIALS AND METHODS

The present cross sectional study was approved by Institutional Ethical Committee of VMKV Medical College, (Tracking No. VMKVMC/IEC/18/49) Salem. The study was performed in 100 medical students of I Medical profession (50 males & 50 females) of VMKV Medical College and Hospitals, Salem. All those students who had used computer for duration of minimum 1 month before the study were included. Participants, who do not wish to take part in

Table 1. Survey conducted from medical students on ergonomic principles of computer usage

Practices on ergonomics principles		Males (n=30)	Females (n=30)	Total (%)	P value
Usage timings	Less than 3 hrs	17	10	27 (45%)	0.251 [#]
	3 hours to 6 hrs	16	12	28 (46.6%)	
	More than 6 hrs	3	2	5 (8.4%)	
Usage Time	Day	2	3	5 (8.4%)	0.212 [#]
	Night	24	11	35 (58.3%)	
	Equal	13	7	20 (33.3%)	
Resting time	Always	8	5	13 (21.7%)	0.349 [#]
	At times	24	18	42 (70%)	
	Not at all	3	2	5 (8.3%)	
Glasses / contact lens	Using	28	7	35 (58.3%)	0.120 [#]
	Not using	12	8	20 (33.3%)	
	At times	5	0	5 (8.4%)	
Screen brightness	Low	21	15	36 (60%)	0.192 [#]
	Medium	12	6	18 (30%)	
	High	6	0	6 (10%)	
Environmental Lighting	Well lighted	44	8	52 (86.7%)	0.20 [#]
	Poor lighted	6	2	8 (13.3%)	
Viewing Distance of computer	10-20 cm	23	0	23 (38.3%)	0.08 [#]
	20-40cm	31	16	47 (61.7%)	
Cleaning display	Rare	13	2	15 (25%)	0.388 [#]
	Often	12	33	45 (75%)	

n = 60 (30 males & 30 females), # - non significant, * - significant, P value *P<0.05

the study and those with major vision problems were excluded from the study. A survey was taken among the participants using a pre-tested, validated questionnaire. The questionnaire includes the demographic data, computer usage by the participants every day, along with the frequency of break while working on computers. The eye symptoms include redness, burning sensation in the eye, headache, blurred/double vision, dry eyes and neck and shoulder pain along with other associated symptoms.¹ The data from the questionnaire was analyzed using mean and percentage calculation and compared among male and female by student t test.

RESULTS

A total of 60 participants were enrolled in this study, of which all of them responded the questionnaire completely (response rate 100%) (Table 1). The computer usage timings were in the range of less than 3hrs and 3 to 6 hours predominantly used by male during the night time when compared to that of female. The male study participants were found to rest at times during usage followed by females. Predominantly males were found to use power glasses than that of female (Table 1). The male study participant used the computer mostly on low screen brightness with well-lighted environment than that of female.

Table 2. Ocular and other complains due to computer usage by medical students

Ocular complaints	Participants (n=30)
Eye strain	25 (41.7%)
Dryness	4 (6.7%)
Blurred vision	12 (20%)
Watery eye	17 (28.3%)
Double vision	1 (1.7%)
Irritation	3 (5%)
Redness	7 (11.7%)
Itch	5 (8.3%)
Light sensitivity	3 (5%)
Coloured vision	1 (1.7%)
No symptoms	15 (25%)
Other Complaints	
Neck pain	9 (15%)
Back pain	9 (15%)
Head Ache	16 (26.6%)
No Symptoms	26 (43.3%)

The viewing distance was found to be more in males (20-40cm) than female. When compared to female were found to clean the computer screens very often (Table 1). All the data were analysed by student t test and were found to be statistically not significant as the study was done in a small group of population for piloting.

Table 2 shows the various ocular and other complaints reported by the study participants after prolonged use of computer and the eye strain was found to be the most predominant ocular complaints in the study followed by watery eye and blurred vision.

DISCUSSIONS

Computer Vision Syndrome (CVS) had become a global health issue faced by most of the computer users. Frequent or prolonged computer usage increases the risk of neck and shoulder pain, low back pain and also arthritis in fingers. Symptoms of VDT users were not clear and it was reported widely in different ideology in various literatures. The visual complaints experienced by prolonged computer users include eyestrain associated with redness, irritation, eye fatigue and burning sensations, blurred / double vision, and xerophthalmia. Other associated symptoms includes headache, pain in the shoulders, neck, or back.⁹ However, eye related symptoms were predominantly reported as the most common health issues among VDT users.⁹

In the present study, the practice of ergonomics principles while using the computers by medical students showed that 85% of them had some or the other symptoms of computer vision syndrome. When compared this with earlier studies of Richa et al around 76% are affected by CVS, in another study report it showed that 72.1% of office workers were suffering from eye strain or pain.^{10,11} In another study higher prevalence of 46% to 87% of various eye symptoms was reported.¹²

Nearly 61.7% of the students reported they practice a viewing distance of between 20 and 40 inches. On studying the association of viewing distance and symptoms of CVS experienced, students who were viewing the computer at a distance of less than 20 inches were at higher risk developing burning sensation, headache, blurred vision and dry eyes compared to students who

were viewing computer at a distance of more than 20 inches. The following survey and study were reported with 2 main ocular complaints and other complaints by different author¹, Shrestha *et al* (2011) reported headache (13.3%) tired eyes (12.5%)¹³, Edema (2010) reported tired eyes (62.5%) and blurred vision (59.4%)¹⁴, Megwas (2009) reported headache (41.7%) and pain in eyes (31.5%)¹⁵, Bali *et al* (2007) reported eye strain (97.8%) and headache (82.1%)¹⁶, Singh *et al* (2007) reported burning sensation (31%) and tired eyes (25%)¹⁷, Smith *et al* (1981) reported eye strain (91%) and painful or stiff neck and shoulder (81%)¹⁸ whereas the Present Study reported headache (26.6%) and eye Strain (41.7%).

The awareness about Computer Vision Syndrome was surveyed among the medical students and their responses were as follows, 20% were aware of it whereas 80% were not aware of the syndrome.

Prevention of CVS

- Prolonged computer use more than 3 hours per day can be avoided.
- Breaks should be taken after every 1 hour of computer usage.
- Well lit environment should be provided for computer user so that their eyes are protected from eye strain.
- Non-power glasses should be given to a non-low sightedness computer user.
- We can reduce the computer usage or prevent the continuation usage of computer for a long period.

CONCLUSION

The level of perception of computer ergonomics and the relevant computer-related health risks among the medical students was low. The above findings of the study suggest the need of preventive intervention consisting of awareness / education regarding computer vision syndrome. Around 26.6% of study group stated headache, 15 % with neck pain and back pain. Many participants in the study reported predominantly pain in the wrist and neck. Around (58.3%) of the study participants were using refractive corrections but still they all had higher scores of CVS (Computer Vision Syndrome) which includes xerophthalmia, eye fatigue, headache and burning sensation.

ACKNOWLEDGEMENT

The present study was fully supported and guided by the Institutional Ethical committee of VMKVMCH, Salem. I am thankful to all my colleagues of the department who provided expertise guidance that greatly assisted the research. I also thank each and every one of the participant for their active participation in the study.

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