COMPUTER VISION SYNDROME AMONG MEDICAL AND ENGINEERING STUDENTS, RUPANDEHI, NEPAL

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ABSTRACT

INTRODUCTION

Computers and laptops have become an integral part of our daily life. We interact with computer screens for minutes to hours depending upon our need, for entertainment or official purposes. Using computers has become a 21st century necessity. The expansion of information technologies in recent decades has resulted in increased use of video display terminals (VDT) in the workplace. The American Optometric Association (AOA) defines Computer Vision Syndrome (CVS) as the complex of eye and vision problems related to near work, which are experienced during or related to computer use. CVS is characterised by visual symptoms resulting from interaction with a computer display or its environment. This study aimed to assess the prevalence of computer vision syndrome among medical and engineering students of Rupandehi, Nepal.

MATERIAL AND METHODS

A cross sectional study was conducted among final year medical and engineering college students of Universal College of Medical Sciences and Lumbini Engineering College, Rupandehi, Nepal. Sixty-three students were included in the study based on inclusion/exclusion criteria in one-month period (from 1 September 2020 - 30 September 2020). The participants were surveyed using a validated structured questionnaire and the data were analysed using SPSS software version 20.0.

RESULTS

Out of total 63 respondents (32 medical students and 31 engineering students), more than half (60.32%) were male. Majority of the respondents (73.01%) had ocular symptoms of CVS among medical and engineering students. Among medical and engineering students the most common symptoms were redness, which was present in 51 (80.95%) of the students, followed by foreign body sensation present in 48(76.19%) and itching in 45(71.43%) of the students.

CONCLUSION

This study concludes that more than half of the students complained of any one of the symptoms of CVS. Although CVS has not been found to cause any permanent damage to the eyes, yet it's painful symptoms can affect the performance.

KEYWORDS

Computer vision syndrome, Engineering students, Medical students, Prevalence.

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INTRODUCTION

Computers and laptops have become an integral part of our daily life. We interact with computer screens for minutes to hours depending upon our need, for entertainment or official purposes. Almost all institutions, colleges, universities and homes today use computer regularly. Using computers has become a 21st century necessity.[1] The expansion of information technologies in recent decades has resulted in increased use of video display terminals (VDT) in the workplace. The European Working Conditions Survey (EWCS 2010) notes that about 30% of workers use computers all the time during their working day and 25% use them between 1/4 and 3/4 of the time.[2] As the use of computers have grown in recent time, so has the eye related problems because of extended use of video display. Moreover, as of recent times digital electronic screen is no longer restricted to desktop computers located in the workplace.

Today's visual requirements may include viewing laptop and tablet computers, electronic book readers, smart-phones and other electronic devices either in the work-place, at home or in the case of portable equipment, location. This has also added to the visual symptoms which mainly includes eyestrain, tired eyes, irritation, burning sensation, redness, blurred vision, and double vision.[3] The American Optometric Association (AOA) defines Computer Vision Syndrome (CVS) as the complex of eye and vision problems related to near work, which are experienced during or related to computer use. CVS is characterised by visual symptoms resulting from interaction with a computer display or its environment. In most cases, symptoms occur because the visual demands of the task exceed the visual abilities of the individual to comfortably perform the task.[4] Prevalence of CVS ranges from 64% to 90% among computer users.[5] Nearly, 60 million people suffer from CVS globally. A million new cases of CVS occur each year.[6]

Though college students are on continuous interaction with their computer screens, tablets and mobiles, the effect exerted by the exposure has been hugely understudied among them. Thus, this study aimed to assess the prevalence of computer vision syndrome among medical and engineering students of Rupandehi, Nepal.

MATERIAL AND METHODS

A cross-sectional study was conducted among final year medical and engineering college students Universal College of Medical Sciences and Lumbini Engineering College, Rupandehi, Nepal. Sixty-three students were included in the study based on inclusion/exclusion criteria in one-month period (from 1 September 2020 - 30 September 2020. The study was approved by Institutional Review Committee with registration number (UCMS/IRC/012/20).

All those students who were using computer, tablets or smart phones in one month preceding the date of the study were included in the study. The data were collected through online Google forms. Those who did not consent to participate in the study were excluded. The participants were surveyed using a validated structured questionnaire, which included the basic demographic profile, hours of computer use per day, frequency of break while working on computers. Pre-validated scoring system was used to determine the presence or absence of the computer vision syndrome.[7] Data were analysed using Statistical Package for Social Science (SPSS) software version 20.0

RESULTS

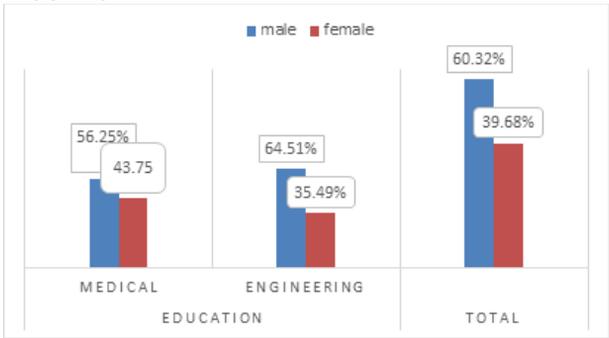

Figure 1. Sex distribution in percentage of medical and engineering students (n=63)

Figure 1 shows a total of 63 respondents included in this study of which 38 (60.32%) were male and 25 (39.68%) were female. Out of 32 medical students, 18 (56.25%) of the respondents were male and 14 (43.75%) were female. Out of 31 engineering students, 20 (64.51%) of the respondents were male and 11 (35.49%) were female.

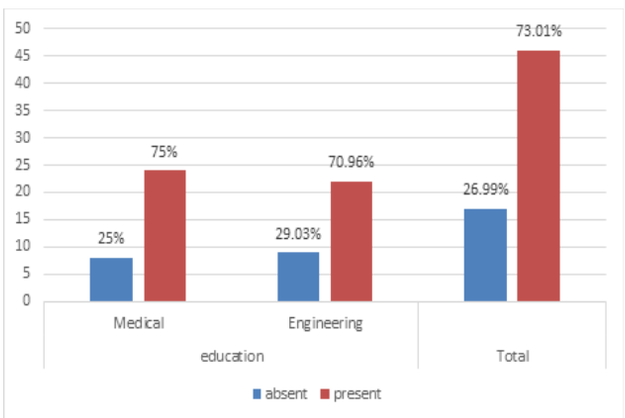

Figure 2. Prevalence of CVS in medical and engineering students

Figure 2 shows among 32 medical students, 24(75%) of the respondents had CVS. Similarly, among 31 engineering students, 22(70.96%) of the respondents had CVS and 9(29.03%) had no CVS. Among 63 participants, 46(73.01%) had CVS.

Table 1. Frequency of symptoms of CVS among medical and engineering students.

Symptoms		Frequency		
		Never	Occasionally	Often/Always
Burning	Medical	11	18	3
	Engineering	12	18	1
Total		23	36	4
Itching	Medical	7	22	3
	Engineering	11	19	1
Total		18	41	4
Tearing	Medical	13	17	2
	Engineering	20	11	0
Total		33	28	2
Excessive blinking	Medical	20	10	2
	Engineering	18	12	1
Total		38	22	3
Redness	Medical	7	20	5
	Engineering	5	24	2
Total		12	44	7
Pain	Medical	14	16	2
	Engineering	27	4	0
Total		41	20	2
Dryness	Medical	12	13	7
	Engineering	16	14	1
Total		28	27	8
Blurred	Medical	14	18	0
	Engineering	21	9	1
Total		35	27	1
Double vision	Medical	30	2	0
	Engineering	30	1	0
Total		60	3	0
Difficulty focusing near	Medical	12	15	5
	Engineering	27	4	0
Total		39	19	5
Sensitivity to light	Medical	15	14	3
	Engineering	13	18	0
Total		28	32	3
Coloured halos	Medical	26	5	1
	Engineering	25	6	0
Total		51	11	1
Feeling that sight is worsening	Medical	20	11	1
	Engineering	26	5	0
Total		46	16	1
Headache	Medical	8	21	3
	Engineering	13	17	1
Total		21	38	4
Heavy eyelids		9	18	5
Medical		15	14	2
		24	32	7
Engineering				
Total				
Foreign body sensation		7	23	2
Medical		8	20	3
		15	43	5
Engineering				
Total				

Table 1 shows the reported frequency of symptoms of CVS among medical and engineering students. The most common symptom was redness, which was present in 51 (80.95%) of the students, followed by foreign body sensation and itching respectively while least reported symptom was double vision which was present in only 3 (4.76%) of the students.

Table 2. Intensity of symptoms of CVS among Medical and Engineering students

Symptoms		Intensity		
		Never	moderate	Intense
Burning	Medical	11	18	3
	Engineering	12	19	0
Total		22	38	3
Itching	Medical	7	21	4
	Engineering	11	19	1
Total		18	40	5
Foreign body sensation	Medical	7	20	5
	Engineering	8	19	4
Total		15	39	9
Tearing	Medical	13	15	4
	Engineering	20	8	3
Total		33	23	7
Excessive blinking	Medical	20	11	1
	Engineering	18	13	0
Total		38	24	1
Redness	Medical	7	21	4
	Engineering	5	25	1
Total		12	46	5
Pain	Medical	14	16	2
	Engineering	27	4	0
Total		40	20	2
Heavy eyelids	Medical	9	22	1
	Engineering	15	15	1
Total		24	37	2
Dryness	Medical	12	16	4
	Engineering	16	14	1
Total		28	30	5
Blurred	Medical	14	18	0
	Engineering	21	9	1
Total		35	27	1
Double vision	Medical	30	2	0
	Engineering	30	1	0
Total		60	3	1
Difficulty focusing near	Medical	12	17	3
	Engineering	27	4	0
Total		39	21	3
Sensitivity to light	Medical	15	14	1
	Engineering	16	15	0
Total		31	29	1
Coloured halos	Medical	26	5	1
	Engineering	25	6	0
Total		51	11	1
Feeling that sight worsening	Medical	20	11	1
	Engineering	26	5	0
Total		46	16	1
Headache	Medical	8	21	3
	Engineering	13	18	0
Total		21	39	3

Table 2 shows the reported intensity of symptoms of CVS among medical and engineering students. Regarding, heavy eyelids, 22(68.75%) had moderate and 1(3.12%) had intense heavy eyelids and regarding double vision, 2(6.25%) had moderate intensity and none of them had intense blinking among medical students. Likewise, regarding redness, 25(80.64%) had moderate intensity and 1(3.22%) had intense redness and regarding double vision, 1(3.22%) had moderate

intensity and none of them had intense double vision among engineering students.

DISCUSSION

The present study was conducted among 63 medical and engineering college students and the prevalence of CVS in the study population was 73%. The prevalence was almost similar between the medical and engineering students, 75% and 70.96% respectively. This result was consistent with the study conducted by Logaraj M, Madhupriya V, and Hegde SK which showed the prevalence rate of 78.6% and 81.9% among medical and engineering students respectively.[8]

Anshel J. reported that 75 to 90% of those who work on computers experience at least some of the symptoms of CVS which was comparable to our study. Nearly 80% of those who work on a computer for more than two hours a day suffer from the symptoms of CVS.[1] The higher prevalence of CVS in our study may be attributed to the relatively small sample size and to the fact that mobile and laptops, now days is used for a prolonged period of time. However, duration of usage of such device was not included in our study. The most frequent ocular complaint reported was redness (80.9%) and foreign body sensation (76.19%) then itching (71.42%) followed by headache (66.66%). In study carried out in Iran, most frequent ocular problem was pain in eyes (41%) then excessive watering (18%) followed by burning and itching in eyes (15%).[9]

Burning sensation was the most common symptom reported in 65% of medical students and 61.2% engineering students in the study done by Sen A and Richardson S which was consistent with our finding (63.49%).[6] However, much lower prevalence (28.9%) was reported by Talwar R et al.[10] Forty-seven percent of the participants in our study reported tearing which was consistent with the study conducted by Abdullah A et al in Saudi Arabia which reported tearing in 58% of the health science students.[11] Double vision was the least reported symptom in our study which was reported by only 4 participants (6.34%). Though, double vision was the least reported symptom in previous studies, the prevalence was higher than in our study.[5,8]

CONCLUSION

The majority of the medical and engineering students experienced one or more symptoms of computer vision syndrome. The most common symptoms were redness, burning sensation, itching and headache. Even though, use of computer had not yet proven to cause any permanent damage to eyes, but studies have proven that temporary discomfort reduces the efficiency of work and thereby productivity. Health and Education professionals have suggested the need for teachers and students to be ergonomically conscious when using computers. As the use of computer had become universal in higher education institutions, students should be made aware of the symptoms of computer vision syndrome.

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