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 permanen 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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DOI: https://doi.org/10.3126/jucms.v10i01.47248
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 computers regularly. 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 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. 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. 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. Prevalence of CVS ranges from 64% to 90% among computer users. Nearly, 60 million people suffer from CVS globally. A million new cases of CVS occur each year.

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 University 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. Data were analysed using Statistical Package for Social Science (SPSS) software version 20.0.
Table 1. Frequency of symptoms of CVS among medical and engineering students

| Symptoms                     | Medical (Never) | Medical (Occasionally) | Medical (Often/Always) | Engineering (Never) | Engineering (Occasionally) | Engineering (Often/Always) |
|------------------------------|-----------------|------------------------|------------------------|---------------------|---------------------------|---------------------------|
| Burning                      | 11              | 18                     | 3                      | 12                  | 18                        | 1                         |
| Tearing                      | 13              | 17                     | 2                      | 20                  | 11                        | 0                         |
| Excessive blinking           | 20              | 10                     | 2                      | 18                  | 12                        | 1                         |
| Redness                      | 7               | 20                     | 5                      | 12                  | 24                        | 2                         |
| Pain                         | 14              | 16                     | 2                      | 27                  | 4                         | 0                         |
| Dryness                      | 12              | 13                     | 7                      | 28                  | 27                        | 8                         |
| Blurred                      | 14              | 18                     | 0                      | 21                  | 9                         | 1                         |
| Difficulty focusing near     | 12              | 15                     | 5                      | 27                  | 4                         | 0                         |
| Sensitivity to light         | 15              | 14                     | 3                      | 39                  | 19                        | 5                         |
| Coloured halos               | 26              | 5                      | 1                      | 25                  | 6                         | 0                         |
| Feeling that sight is worsening | 20            | 11                     | 1                      | 26                  | 5                         | 0                         |
| Headache                     | 8               | 21                     | 3                      | 13                  | 17                        | 1                         |
| Heavy eyelids                | 9               | 18                     | 5                      | 15                  | 14                        | 2                         |
| Foreign body sensation       | 7               | 23                     | 2                      | 8                   | 20                        | 3                         |

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                     | Medical (Never) | Medical (Moderate) | Medical (Intense) | Engineering (Never) | Engineering (Moderate) | Engineering (Intense) |
|------------------------------|-----------------|-------------------|------------------|---------------------|------------------------|-----------------------|
| Burning                      | 12              | 18                | 3                | 12                  | 19                      | 0                     |
| Tearing                      | 22              | 38                | 3                | 11                  | 19                      | 4                     |
| Excessive blinking           | 18              | 40                | 5                | 18                  | 40                      | 5                     |
| Redness                      | 15              | 39                | 9                | 15                  | 39                      | 9                     |
| Pain                         | 35              | 24                | 1                | 35                  | 24                      | 1                     |
| Dryness                      | 27              | 14                | 4                | 27                  | 14                      | 4                     |
| Blurred                      | 24              | 37                | 2                | 24                  | 37                      | 2                     |
| Difficulty focusing near     | 35              | 27                | 1                | 35                  | 27                      | 1                     |
| Sensitivity to light         | 60              | 3                 | 1                | 60                  | 3                       | 1                     |
| Coloured halos               | 39              | 21                | 3                | 39                  | 21                      | 3                     |
| Feeling that sight is worsening | 26            | 16                | 1                | 26                  | 16                      | 1                     |
| Headache                     | 21              | 18                | 0                | 21                  | 18                      | 0                     |
| Heavy eyelids                | 24              | 27                | 4                | 24                  | 27                      | 4                     |
| Foreign body sensation       | 8               | 21                | 3                | 8                   | 21                      | 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.
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.

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. 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 (66.6%). 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%).

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%). However, much lower prevalence (28.9%) was reported by Talwar R et al. 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. 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 in our study.

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.

We would like to acknowledge all the final year medical and engineering college students of Universal College of Medical Sciences and Lumini Engineering College, Rupandehi who participated in the study for immense support and cooperation.

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