

Prevalence of computer vision syndrome in Erbil

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Abstract

Background and objective: Nearly all colleges, universities and homes today are regularly using video display terminals, such as computer, iPad, mobile, and TV. Very little research has been carried out on Kurdish users to reveal the effect of video display terminals on the eye and vision. This study aimed to evaluate the prevalence of computer vision syndrome among computer users.

Methods: A hospital based cross-sectional study was conducted in the Ophthalmology Department of Rizgary and Erbil teaching hospitals in Erbil city. Those used computers in the months preceding the date of this study were included in the study.

Results: Among 173 participants aged between 8 to 48 years (mean age of 23.28±6.6 years), the prevalence of computer vision syndrome found to be 89.65%. The most disturbing symptom was eye irritation (79.8%), followed by blurred vision(75.7%). Participants who were using visual display terminals for more than six hours per day were at higher risk of developing nearly all symptoms of computer vision syndrome. Significant correlation was found between time-consuming on computer and symptoms such as headache ($P < 0.001$), redness ($P < 0.001$), eye irritation ($P < 0.001$), blurred vision ($P < 0.001$) and neck pain ($P < 0.001$).

Conclusion: The present study demonstrates that more than three-fourths of the participants had one of the symptoms of computer vision syndrome while working on visual display terminals.

Keywords: Computer vision syndrome; Headache; Neck pain; Blurred vision.

Introduction

The commonest office tools nowadays are personal computers that are widely used in our homes, and different organizations and institutions whatever their specialties.¹ Nonetheless, the user of this technology will be susceptible to many health problems including computer vision syndrome (CVS), neck pain, eye pain and psychosocial stress, if the minimum daily usage time reached 3 hours.² CVS is the combination of visual and musculoskeletal problems that related to incorrect usage of computers.³ Symptoms of CVS include a headache, eye strain, blurred vision and neck pain that usually surge in severity with the amount of video display terminal (VDT) use. Development of one or more

symptoms as a result of excessive use of computer regarded as computer vision syndrome (CVS).⁴ Prevalence of CVS ranges from 64% to 90% between visual display terminals users.⁵ A hundred thousand of recent cases of CVS occur each year and about 60 million people complain about CVS worldwide.² Many research and studies have recounted the relationship between prolonged computer use, abnormal postures at work offices and different musculoskeletal discomforts.^{3,4,6} Very little studies have been performed to assay the effects of computer use on the physical health of Kurdish users. Therefore, this study was conducted to assess the prevalence of CVS amongst VDT users at home and work, especially students.

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Methods

A hospital based cross-sectional study was carried out. All those participants who used the computer one month preceding the date of this study expending 2 hours and more per day, aged 7 to 70 years, free from any eye diseases. e.g., infection, allergic conjunctivitis, history of trauma and rheumatoid arthritis, were included in this study.

Setting: The study was conducted in ophthalmology department of both Rizgary Teaching Hospital and Erbil Teaching Hospital in Erbil city.

Time and duration: The study was conducted in eight months from June 2015 to February 2016.

Participants: One hundred seventy three participants included in the study.

Sampling method: Non-probability convenience sampling from the outpatient departments.

Instruments and equipment:

Detailed ophthalmological examination performed for 173 patients by Topcon slit-lamp microscope PS- 66E and indirect ophthalmoscopy by a +90D lens. Refractive error was measured in Diopters with the help of Topcon Auto-refractometer RM 8800, then subjective refraction with best corrected visual acuity using Snellen's chart test and the Schirmer test was performed without anesthetic (5 minutes, closed eye, >10mm wetting of strip was regarded as normal, while <10mm wetting considered abnormal Schirmer test) as recommended by the National Eye Institute report on clinical trial in dry eye.⁷ The strip was placed over the inferior lid margin toward the lateral canthus.

Data collection:

Questionnaire design: The questionnaire was designed by the researcher through review of relevant literature. It was reviewed by the supervisor of the research. It consisted of some demographic data including age, sex, occupation, address, and ethnicity and the duration of a computer use.

Statistical analysis and data management:

The data was entered and analyzed by using the statistical package of the social science computer program (version 18). Descriptive statistics were used to calculate frequency, means, and standard deviation. Cross-tabulation (Chi-square test) was used to assess the associations between computer use and vision-related problems. The data of identified CVS cases was calculated by Chi-square analysis. A *P* value of less than 0.05 was considered significant.

Ethical Considerations

This study was approved by the Research Ethics Committee of the College of Medicine of Hawler Medical University, and an informed consent was taken from each participant before being enrolled in the study.

Results

A total of 173 participants were included in the study based on the inclusion criteria. The study conducted in Rizgary Teaching Hospital and Erbil Teaching Hospital. The majority of the respondents were males accounting for 78% (135/178), the remaining 22% (38/173) were females. The age of the participants ranged from 8-48 years with a mean± SD was 23.28±6.6 years. The most common visual problems reported were irritated eye (79.8%), blurred vision(75.7%), redness (72.3%), dry eye (71.1%), headache (67.1%) and neck pain(60.1%) as shown in Table1. Table 2 shows that there is significant correlation between symptoms and time spent on computer, the more the hours of watching VDT, the more the prevalence of headache (*P* <0.001), redness (*P* <0.001), eye irritation (*P* <0.001), blurred vision (*P* <0.001), and neck pain (*P* <0.001). Among the all participants(26.6%) were using VDT less than 4 hours/day, while those using VDT for more than six hours/day were (44.5%). Table 3 reveals the Schirmer

test result, the majority of participants (dry eyes) Schirmer test.
71.1% (123/173) found to have abnormal

Table1: Distribution of sample by symptoms and signs of computer vision syndrome.

Symptoms of CVS	Frequency	Percent N=173
Irritated eye	138	79.8
Blurred vision	131	75.7
Redness	125	72.3
Dry eye	123	71.1
Headache	116	67.1
Neck pain	105	60.7

Table 2: Association between hours of computer use per day and symptoms of CVS.

Symptoms	VDT			Total N=173 No. (%)	P value
	<4hr N=46 No. (%)	4-6hr N=50 No. (%)	>6hr N=77 No. (%)		
Irritated eye	17(37)	46(92)	75(97.4)	138(79.7)	<0.001
Blurred vision	16(34.7)	40(80)	75(97.4)	131(75.7)	<0.001
Redness	14(30.4)	36(72)	75(97.4)	125(72.2)	<0.001
Headache	12(26)	31(62)	73(94.8)	116(67.1)	<0.001
Neck pain	8(17.4)	28(56)	69(89.6)	105(60.6)	<0.001

Table 3: Distribution of sample by Schirmer test results.

Type	Schirmer test	No.	%
Normal	>10mm	50	28.9
Abnormal	<10mm	123	71.1
Total		173	100.0

Discussion

The current study was conducted on 173 participants attending ophthalmological department and the prevalence of CVS in the study was found to be 89.02%. (69.36% of participants (120/173) were males, 19.65% (34/173) were females). The prevalence was higher as compared to other research. Rahman and Sanip recounted 68.1% prevalence of CVS among university employees in Malaysia.⁸ On the other hand, Subratty and Korumtolee reported 59.5% prevalence of CVS among visual display terminals users.⁹ Iwakiri *et al.* reported that CVS prevalence was 72.1% between office workers and recounted having eye strain and/or pain.¹⁰ Sen and Richardson in their research reported a lower prevalence of 46% to 87% for the different eye symptoms.² Females were at a higher risk of developing symptoms of eye irritation, blurred vision, and headache. Males were at a significantly higher risk of developing neck and shoulder pain compared to females. Toama *et al.*, in their study, recounted that the percentage of females with CVS was more compared to males.¹¹ The same results were reported by other researchers.^{2,12,13} It is estimated that nearly 45 million workers are directly watching VDTs for hours continuously.¹⁴ In addition, a number of researchers have shown that visual symptoms occur in 75–90% of VDT workers.⁸ Hence, computer users are invariably unprotected from the high risk of developing CVS, which may cause a marked decline in performance. The main limitations include the research was cross-sectional, the sample size was so little that we cannot generalize it to the whole population. The seasonal variation of symptoms was not included such as dryness of eye during winter and summer. Moreover, in this study, most of the participants were males, that was why males reported a higher range of developing CVS than females.

Conclusion

The present study demonstrates that more than three-fourths of the participants had one of the symptoms of CVS while working on visual display terminals. Although, there was no documented study confirms that excessive time consuming on the computer may cause permanent damage to eyes, but the research has proven that temporary discomfort may decline the performance during the work and then productivity. As the usage of visual display terminals had become widespread in higher education colleges, the issue of prevention and protection from CVS and related discomfort must become the primary plan and course in higher institutions. Future studies need to include and collect bigger sample size in their research, and conducting the research in different seasons.

Competing interests

The authors declare that they have no competing interests.

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