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Computer vision syndrome prevalence, knowledge and associated factors among Saudi Arabia University Students: Is it a serious problem?

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ABSTRACT

Objectives: Computers and other visual display devices are now an essential part of our daily life. With the increased use, a very large population is experiencing sundry ocular symptoms globally such as dry eyes, eye strain, irritation, and redness of the eyes to name a few. Collectively, all such computer related symptoms are usually referred to as computer vision syndrome (CVS). The current study aims to define the prevalence, knowledge in community, pathophysiology, factors associated, and prevention of CVS.

Methods: This is a cross-sectional study conducted in Qassim University College of Medicine during a period of 1 year from January 2015 to January 2016 using a questionnaire to collect relevant data including demographics and various variables to be studied. 634 students were inducted from a public sector University of Qassim, Saudi Arabia, regardless of their age and gender. The data were then statistically analyzed on SPSS version 22, and the descriptive data were expressed as percentages, mode, and median using graphs where needed.

Results: A total of 634 students with a mean age of 21. 40, Std 1.997 and Range 7 (18-25) were included as study subjects with a male predominance (77.28%). Of the total patients, majority (459, 72%) presented with acute symptoms while remaining had chronic problems. A clear-cut majority was carrying the symptoms for <5 days and >1 month. The statistical analysis revealed serious symptoms in the majority of study subjects especially those who are permanent users of a computer for long hours.

Conclusion: 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.

Keywords: Computer vision syndrome, computers, duration of computer use, myopia, use of lens

Introduction

The introduction of computers and visual display terminals have brought a phenomenal change in our lives and soon have become an integral part of our daily life.[1-3] The term computer vision syndrome (CVS) is applied collectively to a set of different symptoms in computer users who are either habitually or on compulsion are using computers for a long time during day and night.[4-6] With the continuous improvement in the computer-related devices and an enhanced audio-visual experience, even the elderly people are using it with great interest to stay active in this ignorant society. The children and students of any age have very gradually switched on to computer-based learning thinking that it's a better option than classroom teachings. This paradigm change very slowly has penetrated in our youth as well as most of the business-related activity are based on the use of computers. This has led to a compulsive use of computers by the employees whose job demands long continued hours of sitting in front of computers.[7-10] A very long list of symptoms has been reported by different studies including headache, eye strain, double vision, watering, dryness of eyes, accommodation problems, tired eyes, and irritation.[1,11] This study is conducted to find out the prevalence of deteriorating effects of prolonged computer use among the university students and to find out the effect on corrected version eyes and normal vision eyes.

Materials and Methods

A total number of 634 university students were included in this descriptive cross-sectional study extended over 1 year.

The study subjects were selected randomly at their own will, regardless of age and gender and regardless of their visual status, be it normal or corrected by glasses or contact lenses. Those who did not give consent or were not willing to participate were excluded from the study. The variables studied included both ophthalmic and non-ophthalmic problems associated with an excessive use of computers and visual display terminals. The variables studied included demographics and ocular symptoms such as redness, tiring eyes, watering, and burning as well as extraocular symptoms such as neck stiffness, shoulder and neck pain, and headache. The most common symptoms and their association with the hours using a computer were determined. The data collected was analyzed statistically using SPSS version 22. The descriptive data were presented as mean, mode, standard deviation, and range.

Results

A total 634 study subjects included in this study comprising a vast majority of males as shown in the demographics presented in Table 1. A large proportion of the patients (371, 58.51%) were using a computer or other visual display terminals for more than 8 hours a day as shown in Figure 1. Of the total population, majority (72.39%) presented in emergency with acute symptoms while 27.60% presented with chronic symptoms. A vast majority (62.14%) presented with eye strain while the second common symptom was burning sensation in eyes complained by 7.57% of the patients. Redness of eyes, dryness and irritation of eyes, neck stiffness, shoulder pain, watering of eyes, and focus problems were other symptoms found in remaining patients. Of the total study population, 493 (77.76%) were found to be myopic while 141 (22.23%) were having normal vision. Myopia is found to have a significant relation with computer-related visual symptoms in our study ($P < 0.001$) as shown in Table 2. The visual status of the study population is shown in Figure 2. Our study reports that most severe and common symptoms are seen in patients whose myopia is corrected with contact lenses as shown in Table 3. The study highlights the harmful effects of long hours of computer use as well as other similar devices.

Discussion

Visual problems due to overuse of computer and other visual display devices are a fairly serious concern for the ophthalmologists.[12-14] The syndrome is comprised various visual and non-visual symptoms among computer users who are using these devices for an unduly long period.[15,16] The various symptoms are frequently seen in college and university students because of a paradigm shift to internet studies by all the different categories of students.[17-19] This study was conducted to find out computer associated visual problems in Qassim university students. The mean age of our study subjects is consistent with other similar studies.[20-22] The most common symptoms in our study were eye strain and burning sensation

Table 1: Demographic detail (n=634)

Characeteristics	n (%)
Age (in years), mean±SD (range)	21.40±1.997 (18-25)
Age in group (years)	
18-22	429 (67.66)
23-25	205 (32.33)
Gender	
Males	490 (77.28)
Females	144 (22.71)
Mode of presentation	
Acute	459 (72.39)
Chronic	175 (27.60)
Duration of symptoms	
15 days	20 (3.15)
1 month	288 (45.42)
2 months	142 (22.39)
<5 days	184 (29.02)

Table 2: Myopics versus clinical findings crosstabulation

Parameters	Clinical exam		Total	P
	Not significant	Positive changes		
Myopics	35 (5.52)	458 (72.23)	493	
Non-myopics	1	140 (22.23)	141	0.001
Total	36	598 (94.32)	634	

Table 3: Corrected vision ×clinical examination crosstabulation

Parameters	Clinical examination		Total
	Not significant	Positive changes	
Corrected vision			
With glasses	11	135	146
With contact lenses	22	325	347
Normal vision	3	138	141
Total	36	598	634

P<0.013

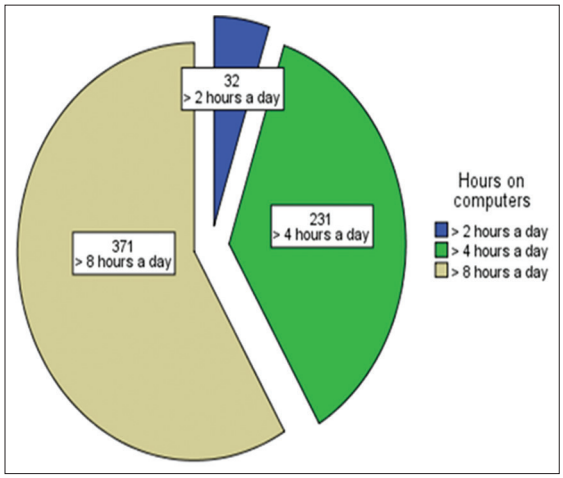

Figure 1: Hours on computers

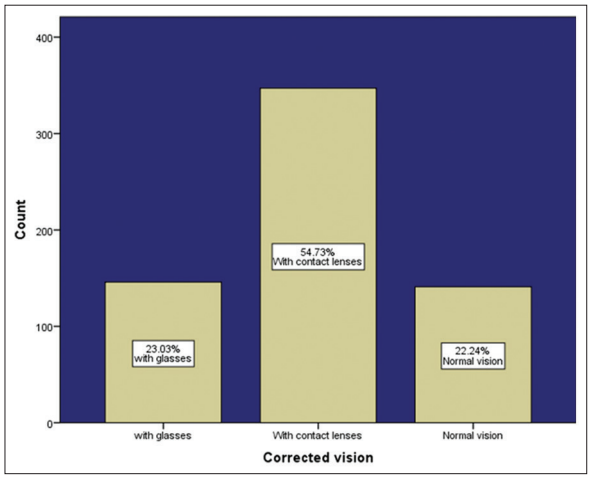

Figure 2: Visual status of study population

in the eyes. These findings are consistent with other similar reports claiming frequent eye strain and burning sensation in their study subjects.[11,23] Our study shows a very significant relation of myopia with computer-related visual symptoms ($P < 0.001$). This is a unique association for which there are very scanty reports. This study shows worst results with longer hours of computer and other similar devices. This is in line with reports of other studies.[24] We report an increased incidence of various ocular symptoms in those myopic subjects whose vision was corrected by contact lenses compared to power glass users. Tauste *et al.*[2] and Kojima *et al.*[25] report a similar association of contact lense use and gravity of CVS.

The current study has pointed out a very alarming relation between the hours spending in front of computers and other visual display terminals with the development of serious visual problems.

Conclusion

Computers and other visual display devices have definitely brought a tremendous change in the overall lifestyle but there is an alarmingly high incidence of serious visual problems associated with a prolonged use of such equipment. A serious attention is needed on this global problem.

References

1. Ranasinghe P, Wathurapatha WS, Perera YS, Lamabadusuriya DA, Kulatunga S, Jayawardana N, *et al.* Computer vision syndrome among computer office workers in a developing country: An evaluation of prevalence and risk factors. BMC Res Notes 2016;9:150.
2. Tauste A, Ronda E, Molina MJ, Segui M. Effect of contact lens use on computer vision syndrome. Ophthalmic Physiol Opt 2016;36:112-9.
3. Tauste Francés A, Ronda-Pérez E, Seguí Crespo Mdel M. Ocular and visual alterations in computer workers contact lens wearers: Scoping review. Rev Esp Salud Publica 2014;88:203-15.
4. Parihar JK, Jain VK, Chaturvedi P, Kaushik J, Jain G, Parihar AK. Computer and visual display terminals (VDT) vision syndrome (CVDTS). Med J Armed Forces India 2016;72:270-6.
5. Blehm C, Vishnu S, Khattak A, Mitra S, Yee RW. Computer vision syndrome: A review. Surv Ophthalmol 2005;50:253-62.
6. Gowrisankaran S, Sheedy JE. Computer vision syndrome: A review. Work 2015;52:303-14.
7. Rosenfield M. Computer vision syndrome: A review of ocular causes and potential treatments. Ophthalmic Physiol Opt 2011;31:502-15.
8. Chu C, Rosenfield M, Portello JK, Benzoni JA, Collier JD. A comparison of symptoms after viewing text on a computer screen and hardcopy. Ophthalmic Physiol Opt 2011;31:29-32.
9. Rosenfield M, Hue JE, Huang RR, Bababekova Y. The effects of induced oblique astigmatism on symptoms and reading performance while viewing a computer screen. Ophthalmic Physiol Opt 2012;32:142-8.
10. Klamm J, Tarnow KG. Computer vision syndrome: A review of literature. Medsurg Nurs 2015;24:89-93.
11. Barar A, Apatachioaie ID, Apatachioaie C, Marceanu-Brasov L. Ophthalmologist and 'computer vision syndrome'. Oftalmologia 2007;51:104-9.
12. Loh K, Redd S. Understanding and preventing computer vision syndrome. Malays Fam Physician 2008;3:128-30.
13. Thomson WD. Eye problems and visual display terminals-the facts and the fallacies. Ophthalmic Physiol Opt 1998;18:111-9.
14. Reddy SC, Low CK, Lim YP, Low LL, Mardina F, Nursaleha MP. Computer vision syndrome: A study of knowledge and practices in university students. Nepal J Ophthalmol 2013;5:161-8.
15. Lodin C, Forsman M, Richter H. Eye-and neck/shoulder-discomfort during visually demanding experimental near work. Work 2012;41 Suppl 1:3388-92.
16. Logaraj M, Madhupriya V, Hegde S. Computer vision syndrome and associated factors among medical and engineering students in Chennai. Ann Med Health Sci Res 2014;4:179-85.
17. Shantakumari N, Eldeeb R, Sreedharan J, Gopal K. Computer use and vision-related problems among university students in Ajman, United Arab emirate. Ann Med Health Sci Res 2014;4:258-63.
18. John LJ, Ahmed S, Anjum F, Kebab M, Mohammed N, Darwich H, *et al.* Prevalence of allergies among university students: A study from Ajman, United Arab Emirates. ISRN Allergy 2014;2014:502052.
19. Maducdoc MM, Haider A, Nalbandian A, Youm JH, Morgan PV, Crow RW. Visual consequences of electronic reader use: A pilot study. Int Ophthalmol 2016;37:433-9.
20. Jomoah IM. Work-related health disorders among Saudi computer users. Sci World J 2014;2014:723280.
21. Bali J, Navin N, Thakur BR. Computer vision syndrome: A study of the knowledge, attitudes and practices in Indian ophthalmologists. Indian J Ophthalmol 2007;55:289-94.
22. Hamilton AG, Jacobs K, Orsmond G. The prevalence of computer-related musculoskeletal complaints in female college students. Work 2005;24:387-94.
23. Eichenbaum JW. Computers and eyestrain. J Ophthalmic Nurs Technol 1996;15:23-6.
24. Kowalska M, Zejda JE, Bugajska J, Braczkowska B, Brozek G, Malinska M. Eye symptoms in office employees working at computer stations. Med Pr 2011;62:1-8.
25. Kojima T, Ibrahim OM, Wakamatsu T, Tsuyama A, Ogawa J, Matsumoto Y, *et al.* The impact of contact lens wear and visual display terminal work on ocular surface and tear functions in office workers. Am J Ophthalmol 2011;152:933-40.e2.