

The Prevalence and Manifestations of Computer Vision Syndrome among Software Employees in Andhra Pradesh

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Abstract

Background: One of the most often utilized office supplies is the computer. Long-term computer use increases the risk of COMPUTER VISION SYNDROME. The leading occupational health issue of the twenty-first century is computer vision syndrome, particularly in software workers.

Aim: To study the effect of prolonged computer usage on the eyes of individuals.

Methods: The study was conducted on 500 software employees aged 25 to 40 years with minimum exposure of two years to the computer every day for about 8 hours per day were included. A validated structured questionnaire was developed to analyze the data from those individuals. These symptomatic patients were called to OPD in a tertiary care hospital in Andhra Pradesh and evaluated further. Anterior segment examination with slit lamp bio microscopy, Schirmer's test, and tear film break up time and posterior segment with slit lamp bio microscopy using 90D lens. Results: It was observed that 72.6% suffer from eye strain, 65.3% from dry eyes, 52% from headache, and 49.3% from watering and redness.

Conclusion: Most individuals suffer from the symptoms of computer vision syndrome. Optimizing the exposure time and improving the awareness of safety measures in preventing computer vision syndrome plays a vital role.

Keywords: Computer Vision Syndrome" (CVS); Video Display Terminals [VDTs].

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Introduction

"The American Optometric Association defines Computer Vision Syndrome" (CVS) as a complex of eye and vision problems related to activities that stress the near vision and which are experienced concerning or during the use of computers [1]. Computer screens, tablets, e-readers, cell phones, and other electronic gadgets are called video display terminals.

Continual usage of video display terminals (VDTs) has been linked to computer vision syndrome, a visual and ergonomic problem.

The most common causes are prolonged computer use, uninterrupted periods, and inadequate sleep, preventing ocular muscles from recovering from strain.

Symptoms of CVS include headache, blurred vision, eye fatigue, strain to the eye, neck

pain, dry eyes, diplopia, polyopia, and difficulty refocusing the eyes[2].

According to estimates, 60 million people worldwide have CVS, and a million new cases are reported every year.[3] Because of technological improvements, computer-based learning is now regarded as being preferable. As a result, kids and students of all ages gradually shifted to using computers, laptops, mobile devices, and tablets for pleasure and education. Youth have been affected by this paradigm shift because so much of what they do in education, entertainment, and work involves computers.[4]

The usage of electronic devices such as computers, laptops, mobile phones, tablets, etc., has increased significantly, necessitating lengthy, continuous hours of staring at screens, which can damage eyesight and lead to the development of computer vision syndrome.

Given how many pupils use computers daily and how that number is rising, such preventive measures are urgently needed.[5]

Aim of the Study

- To ascertain the prevalence of computer vision syndrome in software workers in Andhra Pradesh who spend at least 8 hours a day in front of a screen.

Results

All 500 individuals fulfilling the inclusion criteria responded to a questionnaire

Table 1

Symptoms	Total Individuals- 500	Percent
Eye Strain	363	72.6
Dry Eyes	327	65.4
Headache	260	52
Watering and Redness	246	49.2
Blurred Vision	205	41

- To assess the relationship between various risk factors associated with computer use and symptoms.

Material & Methods

- A cross-sectional study was conducted on 500 software employees of Andhra Pradesh.
- Five hundred software employees were given a validated questionnaire to get their information regarding computer usage.

Inclusion Criteria

- Age group 25 to 40 years
- Minimum exposure of 2 years to the computer every day for about 8 hours.
- Should not suffer from any ocular diseases other than refractive error were included.

Exclusion Criteria

- Allergic conjunctivitis
- Cataract
- Glaucoma
- Keratoconus
- Ocular disorders chronic ocular allergy
- Pterygium
- A validated questionnaire focused on computer vision syndrome characteristics was used to gather the data.

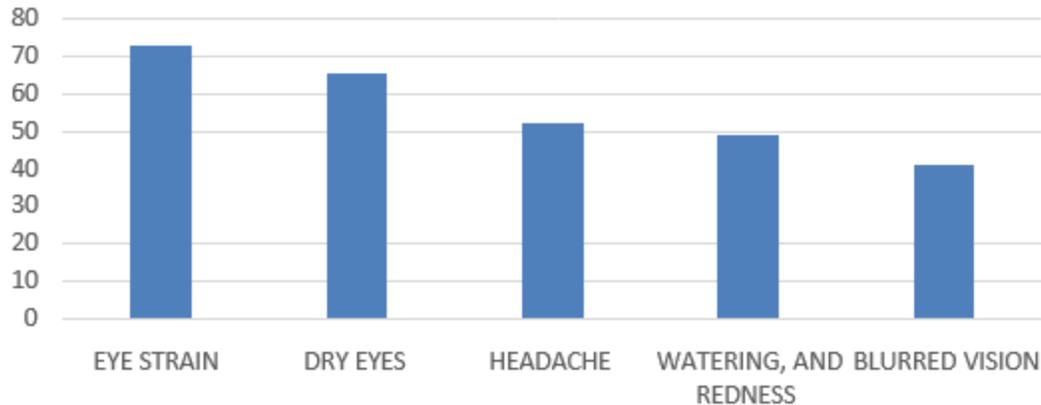


Figure 1

Discussion

In our study, we observed the prevalence of eye strain to be 72.6 %, dry eyes at 65.4%, headache at 52%, watering and redness at 49.2%, and blurred vision at 41%.

In our study, eyestrain (72.6%), dryness (65.4%), and headache (52%) were the most prevalent complaints. According to Natnael *et al.*, headache (23.0%), redness (23.0%), and blurred vision (42.4%) were the most prevalent symptoms.[6]

According to Awrajaw and his colleagues, the most often reported symptoms of CVS were blurred vision, eyestrain, and ocular irritation, with proportions of 62.60%, 47.63%, and 47.40%, respectively.[7]

According to P. Ranasinghe *et al.*, the most frequent complaint was a headache (45.7%), followed by dry eyes (31.1%) and a change in color vision (9.3%).[8]

When utilizing a screen for a prolonged period, eye tiredness and discomfort are caused by the eye's continual focus and refocusing. A high viewing angle exposes the more significant part of the cornea and conjunctiva to air and increases dryness and irritation.

According to numerous studies, wearing corrective eyewear for refractive problems increases the likelihood of developing CVS.

This is because the letters on monitors are represented by small dots called pixels, forcing the eyes to adapt more to focus on a much sharper image.[9-10]

The length of computer uses significantly influenced CVS risk as well. These results are supported by evidence from numerous other investigations. [11-12]

Inappropriate sitting position leads to discomfort and stress to the eye and causes eye muscles to be more spastic and experience symptoms of computer vision syndrome.

Spectacles prescribed by professionals with anti-reflection protective surfaces decrease computer vision syndrome symptoms.

Working on a computer for more than 7 hours per day was a strong predictor for CVS, according to Rahman and Sanip's study.[13]

Conclusion

1. Most employees develop one or more symptoms of computer vision syndrome.
2. Improving the awareness of safety measures in preventing computer vision syndrome plays a vital role.
3. Keeping eye strain to a minimum, minimizing screen distance, taking frequent, brief rests, maintaining proper posture while sitting, and having

sufficient room lighting are all helpful in reducing computer vision syndrome.

References

1. American Optometric Association. Guide to the clinical aspects of computer vision syndrome. St. Louis: American Optometric Association; 1995.
2. Esteban P, Alvaro MP, Amalia L. Visual and ocular effects from using flat panel displays. *Int J Ophthalmol.* 2016;9(6):881-5.
3. Sen A, Richardson S. A study of computer-related upper limb discomfort and computer vision syndrome. *J Hum Ergol.* 2007;36(2):45–50
4. Rosenfield M. Computer vision syndrome: A review of ocular causes and potential treatments. *Ophthalmic Physiol Opt.* 2011; 31:502–15
5. Dhaliwal, N., 2002. CVS affects physically and mentally. *Reader's Digest.* 2002; 75:38-57
6. Assefa NL, Zenebe D, Weldemichael, Alemu HW, Anbesse DH. Prevalence and associated factors of computer vision syndrome among bank workers in Gondar City, northwest Ethiopia, 2015. *Clin Optom.* 2017; 9:67-76
7. Awrajaw Dessie, Fentahun Adane, Ansha Nega, Sintayehu Daba Wami, and Daniel Haile Chercos. Computer Vision Syndrome and Associated Factors among Computer Users in Debre Tabor Town, Northwest Ethiopia. *J Environ Public Health.* 2018
8. P. Ranasinghe, W. S. Wathurapatha, Y. S. Perera, D. A. Lamabadusuriya, S. Kulatunga, N. Jayawardana, P. Katulanda. Computer vision syndrome among computer office workers in a developing country: an evaluation of prevalence and risk factors. *BMC Res Notes.* 2016; 9:150.
9. Rahman ZA, Sanip S. Computer user: demographic and computer related factors that predispose user to get computer vision syndrome. *Int J Bus, Humanit Technol.* 2011;1(2):84- 91.
10. 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(2):179-85
11. Reddy SC, Low C, Lim Y, Low L, Mardina F, Nursaleha M. Computer vision syndrome: a study of knowledge and practices in university students. *Nepal J Ophthalmol.* 2013;5(2):161-8
12. Portello JK, Rosen Eld M, Bababekova Y, Estrada JM, Leon A. Computer- related visual symptoms in office workers. *Ophthalmic Physiol Opt.* 2012;32(5):375-82
13. Rahman ZA, Sanip S. Computer user: demographic and computer related factors that predispose user to get computer vision syndrome. *Int J Bus, Humanit Technol.* 2011;1(2):84- 91.