P-ISSN: xxxx-xxxx E-ISSN: xxxx-xxxx

GIAR International Journal of Interdisciplinary Research

Prevalence Of Visual Disturbance Among Information Technology Professionals In Software Companies

Hemant Kumar[1]

Assistant Professor, Jaipur Nursing College, Maharaja Vinayak Global University, Jaipur

Abstract

A computer is an electronic device that processes, stores and displays information. People of all ages are regularly exposed to screens for extended periods in recent years, both in their workplace and social interactions. Also known as computer vision syndrome, digital eye strain is a collection of eye and vision symptoms and is estimated to affect at least 50% of computer users. Excessive or inappropriate computer use can also cause eye strain, shoulder, arm, wrist and hand musculoskeletal issues. It is possible to reduce these risks with the help of suitable workplace furniture, good posture, frequent breaks and limiting activities like computer games. The study was conducted to find out the incidence of visual disturbances among information technology workers and the relationship between visual disturbances and selected demographic variables. The research methodology used is quantitative research type with non-experimental descriptive research. Convenience sampling was used for the sampling of 100 IT professionals. A researcher-made questionnaire was used to gather information about demographic factors and the incidence of visual impairments. Results: The results showed that 46% of the persons had visual disturbance in comparison with 54% who did not have any visual disturbance, there was a nearly equal distribution between the two groups. The presence of the visual disturbances was significantly and strongly associated with age and work shift ($p < 0.05$). The statistical results also revealed that participants who used the computer regularly for extended periods of time had severe symptoms.

Keywords: Prevalence, professionals, software, technology, visual disturbance

Introduction

Technology is now a part of daily life, and has been a vital part of employment in almost every career. New technologies are constantly being developed and a lot of activities are becoming more reliant on electronics. The positive outcomes of these developments include task ease, efficiency and cost reduction, but can also present user challenges. Computers have become a necessary resource in today's technologically sophisticated and globalized society [1].

A computer is an electronics machine used for the processing and control of data or information. It can store, retrieve and analyse data, is widely used to create documents and send emails, play games and access the Internet [2]. Computers can also be used to develop and modify spreadsheets, presentations and multimedia. As a result, they have become indispensable in the present-day organizations. This is because applications and operating systems are often updated or updated [3] and thus may be challenging for employees to adapt to the computer.

Excessive computer time can be bad for students' vision. Brightness, glare and flickering images can be a factor in eye strain. In addition, the constant looking at a screen can decrease the number of times a person blinks, which can lead to dry, irritated eyes [4]. There is some evidence that computer users might engage in social and physical activities more often, and receive more social support than non-users. However, overall computer usage may not necessarily be a direct reflection of lifestyle. Rather, patterns of computer usage may be more associated with lifestyle and gender may influence the relationship between them [5].

Digital eye strain, otherwise called computer vision syndrome, is a general term for a variety of visual and environmental issues that can happen when the visual requirements of computer-related work surpass the visual capability of the person. Symptoms that result from extended use of computer monitors and from poor working station design. After 3 to 4 hours of sustained computer use, symptoms of itch, burning, dry eyes, blurred/double vision, and headache may develop [6–9].

Computer vision syndrome is not one specific eye disease. On the contrary, it is a collection of symptoms that include eye strain, discomfort, and visual fatigue resulting from extended computer use. Research has shown that from 50% to 90% of those who work in front of computer screens experience one or more of these symptoms. This isn't just for working adults! Long hours of children accessing computers, tablets or other digital devices in school can also be a cause of visual discomfort, if lighting is not optimal, viewing distance is inappropriate or their posture is not optimal [10].

Computer Vision Syndrome (CVS) is regarded as one of the 21st century's most prevalent occupational health issues and a public health problem. Global estimates estimate that about 60 million people

develop the condition and that almost one million new cases are reported every year. Also, it is estimated that nearly 70% of all computer users are affected by symptoms [8,11]. As of October 2021, the world was using the Internet at a rate of 4.88 billion, which was almost 62% of the world's population. The number of people using the internet has kept growing with an estimated 222 million new users in the past year alone [10].

Results of computer related visual problems may be due to the presence of screen glare, inadequate lighting, incorrect posture, inappropriate viewing distances and angles, extended viewing time and uncorrected refractive errors. Numerous symptoms have been identified, such as headaches, eye strain and double vision, excessive tearing, dry eyes, difficulties with visual accommodation, tired eyes, and overall discomfort of the eyes [12].

Computer vision syndrome symptoms can result in a breakdown or delay in employee work, impacting productivity, efficiency and time management. Severe symptoms have been reported to decrease work productivity by up to 40%. Due to the global prevalence of visual discomfort resulting from screen exposure, research into the factors that increase and decrease this discomfort could help enhance physical health and work capacity [12,13].

One of the best ways to control computer vision syndrome is to prevent it. Prevention measures involve improving workplace ergonomics, educating computer users and proper eye care practices [13]. It's estimated that the average American worker spends about seven hours a day on a computer at work, or for personal tasks. The 20-20-20 rule is one of the most frequently suggested ways to minimize eye strain when using digital devices, which is to focus on an object located about 20 feet away for 20 seconds after every 20 minutes of screen time [14].

Prevention measures also involve minimizing excessive light and glare from digital displays, maintaining proper viewing distance and angle, using proper posture and ensuring that even minor visual abnormalities are identified and corrected. Digital eye strain can cause visual problems; these strategies may help to prevent or reduce the problems associated with digital eye strain [15].

The present study was thus designed to identify the prevalence of visual disturbance and the relationship of these visual disturbances with some of the demographic variables of information technology workers.

Methods and Materials

A quantitative approach employing a non-experimental descriptive research design was used in the study. Institutional Ethics Committee has given approval. Prior to data collection, a formal authorization was also obtained from the chosen software company.

The number of professional IT staffs in selected software companies was 100 which were taken by non-probability convenience sampling technique. The persons participated in the study were of either gender, aged between 20–45 years or above, working in various shifts of work, present during data collection period, willing to participate and fluent in Hindi or English language.

In the initial encounter, the investigator informed the subjects about the reason and procedures of the study. They were then written-informed consented prior to their participation. The social and demographic data along with the existing level of visual disturbance were obtained through a self-structured questionnaire. Data collected were collated, presented in tables and analysed descriptively and inferentially.

Results and Discussion

As for age, 38 (76%) were between 20 and 30 years old. When considering gender 34 (68%) participants were male, while 16 (32%) were female. In terms of education qualifications, 23 participants (46%) finished an information technology–related course. Regarding working hours, 36 participants (72%) indicated that they worked more than 10 hours a day. The percentage of participants who worked at night (76%) was 32.32 (76%) participants worked on night shifts. As far as work experience, 31 (62%) had about 10 years' experience in the profession. In addition, 35 participants (70%) used desktop computers for their official tasks. This section of the survey examines the prevalence of visual disturbances among IT professionals.

In this section of the survey, the prevalence of visual disturbances in IT professionals will be examined. The 100 IT Professionals who completed the study were divided into two groups: 54% had no visual disturbances while 46% had visual disturbances. The results showed that proportions of affected and unaffected participants were more or less similar. The statistical analysis also revealed that the visual symptoms were often severe, especially for professionals, who used a computer for long time. Long-term exposure to the computer can then be a crucial component of visual stress and other symptoms of digital eye strain.

The results of the present study were in line with the cross-sectional study conducted by Kushali and Brundha (2020) which involved 100 IT professionals to determine their awareness of the symptoms of computer vision syndrome. In their study, they found the 42% of the participants had visual disturbances.

Similar results were described by Cantó-Sancho & Sánchez-Brau (2021), who carried out a cross-sectional study of 244 university students from Spain. Participants were given a questionnaire to determine their exposure to VDTs, an anamnesis, and a Computer Vision Syndrome Questionnaire. The average age of the participants was 20.7 years (SD = 2.1) and 78.3% were using video display terminals for 2 or more hours a day for academic work, 57% of whom were females. The computer vision syndrome was high (76.6%), and the most reported symptoms were headache and itching. Based on the crude analysis, female gender, use of video display terminal for more than 7 hours a day, and use of spectacles while studying were associated with increased prevalence of computer vision syndrome. The prevalence of the condition among participants was lower, however, as compared to older participants [17].

The results confirm that there are numerous visual disorders and computer vision problems among computer users, including IT workers.

There was a significant association between visual disturbance and selected demographic variables in section C.In section C, there was a significant association between visual disturbance and selected demographic variables.

From the descriptive results of the analysis, it was found that none of the demographic variables selected was statistically significant in relation to the prevalence of visual disturbance among the participants, namely the IT professionals.

Limitations

Results from the study cannot be extended to the general population as the sample size was small and only 100 subjects were included. Furthermore, the study had a limited geographical and organizational representation, as it focused only on the IT professionals working in selected IT software companies in Jaipur area.

Only certain cognitive and social factors of the IT professionals were taken into consideration for the study. Additionally, there were very few supporting studies of the Indian population available, due to the lack of literature.

Conclusion

The present study found that 54% of IT professionals were unaffected by visual disturbances, whereas 46% experienced visual symptoms. This indicates that visual disturbances were common among the study participants, with nearly half of them being affected.

Although computers and other visual display devices have greatly improved modern lifestyles and workplace efficiency, prolonged use of such equipment is associated with a considerable risk of visual problems. Extended screen exposure, particularly when combined with an inadequately designed workstation and poor ergonomic practices, may contribute to the development of Computer Vision Syndrome.

This growing occupational health concern requires greater attention. Improving awareness of Computer Vision Syndrome and encouraging adherence to recommended ergonomic measures, such as maintaining proper posture, ensuring an appropriate viewing distance, reducing screen glare, and taking regular visual breaks, may help decrease its prevalence. These preventive practices may also improve employee comfort, job satisfaction, and workplace productivity.

References

1. Sirajudeen MS, Muthusamy H, Alqahtani M, Waly M, Jilani AK. Computer-related health problems among university students in Majmaah region, Saudi Arabia. Biomedical Research. 2018;29(11):2405-15.
2. Randolph SA. Computer vision syndrome. Workplace health & safety. 2017 Jul;65(7):328-.
3. Singh H, Tigga MJ, Laad S, Khan N, Prevention of ocular morbidity among medical students by prevalence assessment of asthenopia and its risk factors, Journal of Evidence Based 2016;3(15):532–536.
4. Rosenfield M. Computer vision syndrome (aka digital eye strain). Optometry. 2016 Feb 16;17(1):1-0.
5. Chawla A, Lim TC, Shikhare SN, Munk PL, Peh WC. Computer vision syndrome: Darkness under the shadow of light. Canadian Association of Radiologists Journal. 2019 Feb;70(1):5-9.
6. Gangamma M, Poonam MR, Rajagopala M. A clinical study Computer vision syndrome and its management with Triphala eye drops and Saptamrita Lauha, AYU (An International Quarterly Journal of Research in Ayurveda). 2010;31(2):236
7. Charpe NA, Kaushik V. Computer vision syndrome (CVS): recognition professionals, and Journal 2009;28(1):67-69.
8. Akinbinu TR, Mashalla Y, Knowledge of

computer vision syndrome among computer users in the workplace in Abuja, Nigeria, Journal of Physiology and Pathophysiology. 2013;4(4):58-63
9. Louis S. American optometric association (AOA) the association, 2013, https://wwwaoaorg/2013 Oct 30.
10. Munshi S, Varghese A, Dhar-Munshi S. Computer vision syndrome—a common cause of unexplained visual symptoms in the modern era. International Journal of Clinical Practice. 2017 Jul;71(7):e12962
11. Wimalasundera S. Computer vision syndrome, Galle Medical Journal. 2009;11(1).
12. Kushali R, Brundha MP. Prevalence and awareness on computer vision syndrome among individuals in information technology. Drug Invention Today. 2020 Mar 15;14(3)
13. Al Tawil L, Aldokhayel S, Zeitouni L, Qadoumi T, Hussein S, Ahamed SS. Prevalence of self-reported computer vision syndrome symptoms and its associated factors among university students. European journal of ophthalmology. 2020 Jan;30(1):189-95.
14. Sitaula RK, Khatri A. Knowledge, attitudes and practice of computer vision syndrome among medical students and its impact on ocular morbidity. Journal of Nepal Health Research Council. 2018;16(3):291-6.
15. Abudawood GA, Ashi HM, Almarzouki NK. Computer vision syndrome among undergraduate medical students in King Abdulaziz University, Jeddah, Saudi Arabia. Journal of Ophthalmology. 2020 Apr 1;2020.
16. Assefa NL, Weldemichael DZ, Alemu HW, Anbesse DH. Prevalence and associated factors of computer vision syndrome among bank workers in Gondar City, northwest Ethiopia, 2017;9:67
17. Cantó-Sancho N, Sánchez-Brau M, Ivorra-Soler B, Seguí-Crespo M. Computer vision syndrome prevalence according to individual and video display terminal exposure characteristics in Spanish university students. International Journal of Clinical Practice. 2021 Mar;75(3):e13681.