Clinical Profile of Patients with Computer vision syndrome

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Abstract-
Purpose - *to study Clinical Profile of Patients with Computer vision syndrome, visiting OPD of Maharani Laxmi Bai Medical College, Jhansi*
Materials and Methods-*The study was conducted at Maharani Laxmi Bai Medical College, Jhansi between July 2019- January 2020. The study includes a total of 250 patients presenting to OPD of Maharani Laxmi Bai Medical College, Jhansi with symptoms of computer vision syndrome.. All cases underwent detailed history and ocular examination.*
Results: *Out of 250 cases, 190 were males and 60 were female. 36% were age group of 25-30 years and 24% were in the age group of 20 to 25 years & 20% in the age group 30-35 years. Males were affected 3.1 times more than females and most common symptom of computer vision syndrome is eye strain (40%).*
Conclusion*: Visual problems constitute an important part of computer vision syndrome. This warrants vigilance in identifying and effectively treating this condition. The study has also thrown light on various ergonomic factors contributing to its occurrence. Effective management requires a multidirectional approach combining health education, modification of ergonomics and appropriate ocular therapy.*
Keywords: *Asthenopia, Computer vision syndrome, Ergonomics, Health education, Software professionals.*

I.   Introduction

Computer use has become a part and parcel of everyday life. This increase in the use of computers has led to a rise in the number of people with ocular complaints which are being grouped together as computer vision syndrome (CVS). 'Computer Vision Syndrome' is defined by the American Optometric Association as a complex of eye and vision problems related to the activities which stress the near vision and which are experienced in relation to or during the use of computers.1 Blehm et al have divided the symptoms of CVS broadly into four categories[1]-

1.   Asthenopic – eye strain, tired eyes and sore eyes
2.   Ocular surface related- watering, irritation and dry eye (Burning and red eyes)
3.   Visual- blurred vision, slowness of focus change, double vision and changes in color perception
4.   Extraocular- neck pain, backache and shoulder pain[2].

Prolonged work on computers may lead to diminished power of accommodation, removal of near point of convergence and deviation of phoria for near[3]. Non-ocular symptoms can occur due to improper working conditions and poor work habits. Vision-related problems are the most frequently reported health-related problems, occurring in over 70% of computer workers[4]. It is estimated that nearly 60 million people suffer from CVS globally, and that a million new cases occur each year. Since personal computers are one of the commonest office tools used extensively, CVS will continue to cause significant and growing contribution to diminished productivity at work while also reducing the quality of life of a computer worker.

II.   Method And Material

A prospective study was conducted over a period of 7 months in all patients of computer vision syndrome visit to OPD of Ophthalmology, M.L.B. Medical college, Jhansi during the study period were included.

Inclusion Criteria:

1.   Patients between 15 and 48 years of age.
2.   Computer users complaining of eye strain, dry eyes, blurred vision, redness, burring eyes, excessive tears, double vision, headache, glare sensitivity, fatigue, neck, shoulder and back pain.

3. Patients having minimum two symptoms of CVS as mentioned above.
4. Minimum 1 hour exposure to any type of VDT like desktop, laptop or both daily.
5. Minimum 1 year esposure to any type of above-mentioned VDTs.

Exclusion Criteria:
1. Patients of age below 15 years or above 40 years.
2. Those having symptoms due to direct physiological effects of substance (e.g., drug abuse, medication) or a general medical condition (e.g., hypothyroidism).
3. Patients suffering from infectious conditions of the eye like conjunctivitis, scleritis, uveitis, glaucoma, style, blepharitis, etc.
4. Patients having any fundus pathology like optic atrophy, diabetic retinopathy, hypertensive retinopathy, papilledema, etc.

A total of 250 patients were examined & data was collected. The demographic data of each patient including age, sex, address, occupation & financial status were recorded. A detailed history was obtained regarding symptoms of computer vision syndrome, details of computer usage, potential risk factor and knowledge of symptoms of computer vision syndrome. The literacy was determined on the basis of educational status as told by the patient. Detailed ophthalmological examination of all patients was carried out. Snellen's chart was used to record visual acuity.

Statistical Analysis
The data was entered regularly. Nominal data was presented as numbers & percentage. Data analysis & percentage calculation was done using Microsoft Office Excel.

III. Results

250 participants were included in this study. Out of them 190 (76.0%) were males and 60 (24.0%) were females. Females had more disturbing symptoms than males. The mean age of the study subjects was 26.6 (6.3) years with the majority of population between 20-29. Among all study participants, the eldest person was 48 years. Male to female ratio was 1.3:1. 200 (80%) out of 250 subjects had one or more complaints suggestive of CVS. 36.0% (90) subjects complained of symptoms suggestive of CVS were in the 25-29 year age group. The most disturbing symptom was eye strain (40.0%). The most disturbing visual complaint was eyestrain (40.0%) followed by headache.

Table 1-Sex wise distribution of computer vision syndrome

Sex	Number of Patients [n=250]	Percentage (%)
Male	190	76.00%
Female	60	24.00%

Table 2- Distribution of visual complaints among software   professionals

Sl. no	Symptoms	Number of patients	Percentage (%)
1.	Eye strain	100	40%
2.	Headache	60	24%
3.	Neck/shoulder/wrist ache	45	18%
4.	Dry/irritated eyes	25	10%
5.	Backache	20	8%

Non ocular symptoms included neckache and backache. 51.2% of the participants practiced one or more of the following measures during computer use: Taking regular breaks, looking at far-off objects in between work and use of eye drops.

Table 3- Distribution of visual complaints among different age group.

Sl. no	Age	Number of patients	Percentage (%)
1.	15-20	30	12%
2.	20-25	60	24%
3.	25-30	90	36%
4.	30-35	50	20%
5.	35-48	20	8%

IV.   Discussion

Majority of the subjects (36.0% /90) were in the 25-29 year age group in our study. Talwar et al in their study found 58.5% of subjects being in the age group of 20-29 years.[8]

We found that females had more CVS symptoms than males which was similar to shantakumari et al who also reported higher symptoms in females.[6]

The difference in the prevalence rate of computer-related problems in various studies depend upon factors like knowledge and awareness levels, workstation set up, degree of immobilization and levels of constrained postures, and practices of workers regarding computer ergonomics.4 Present study had statistical significance with few of the ergonomic factors with the occurrence of symptoms of computer vision syndrome (Table-3).

30.8% of study population were aware of CVS. Thus the knowledge of study subjects were assessed. Majority of the symptoms were in the 4-8 hour group.

The most disturbing symptom in our study was eye strain (40.0%) followed by headache (24.0%) similar to Shantakumari et al who also reported eye soreness (53.3%) as the common symptom.[6] Akinbinu and Mashalla also found eyestrain (30.9%) and headache (30.9%) as most disturbing complaint.1

Visual problems were found to be directly related to average computer hours per day. Our study found that majority of symptoms were in people who used computers 4-8 hours /day (36.8%) followed by subjects who used more than 8 hours/day (31.9%). The reduced number of symptoms in subjects using computers for more than 8 hours/day could be explained by some form of alternate mechanisms to prolonged exposure that happens resulting in reduced sensitivity and less response of the employee.[1] Lograj et al in their study also did not find statistically significant difference for the symptoms of CVS between those who used computers for more than 6 hours and less than 4 hours.4

V.   Conclusion

Computers are an essential part of modern life. The exponential increase in their use have ushered in a new era of occupational hazard collectively known as computer vision syndrome. A variety of ergonomic factors like level of top of display screen, viewing distance from the screen, position of AC, brightness of the room, use of anti-glare filters, regular breaks, etc. play an important role in the development of this syndrome. Emphasis on proper computer ergonomics can go a long way in reducing the burden of visual problems. Despite its wide prevalence, CVS remains an underestimated and poorly defined issue at the workplace. Primary prevention lies in creating awareness and providing health education to the general public, health professionals, the government and private industries. Effective management of CVS requires a multidirectional approach combining health education, modification of ergonomics.

References

[1].   Akinbinu TR, Mashalla YJ. Knowledge of computer vision syndrome among computer users in the workplace in Abuja, Nigeria. Journal of Physiology and Pathophysiology. 2013;4:58-63.
[2].   Blehm C, Vishnu S, Khattak A, Mitra S, Yee RW. Computer vision syndrome: a review. Survey of ophthalmology. 2005;50:253-62.
[3].   Bali J, Navin N, Thakur BR. Computer vision syndrome: A study of the knowledge, attitudes and practices in Indian Ophthalmologists. Indian journal of ophthalmology. 2007;55:289.
[4].   Shrivastava SR, Bobhate PS. Computer related health problems among software professionals in Mumbai: A cross-sectional study. International Journal of Health and Allied Sciences. 2012;1:74.
[5].   Reddy SC, Low CK, Lim YP, Low LL, Mardina F, Nursaleha MP. Computer vision syndrome: a study of knowledge and practices in university students. Nepalese Journal of Ophthalmology. 2013;5:161-8.
[6].   Shantakumari N, Eldeeb R, Sreedharan J, Gopal K. Computer Use and Vision. Related Problems Among University Students In Ajman, United Arab Emirate. Annals of medical and health sciences research. 2014;4:258-63.
[7].   Logaraj M, Madhupriya V, Hegde SK. Computer vision syndrome and associated factors among medical and engineering students in Chennai. Annals of medical and health sciences research. 2014;4:179-85.
[8].   Talwar R, Kapoor R, Puri K, Bansal K, Singh S. A study of visual and musculoskeletal health disorders among computer professionals in NCR Delhi. Indian journal of community medicine. 2009;34:326.
[9].   Chiemeke SC, Akhahowa AE, Ajayi OB. Evaluation of Vision-Related Problems amongst Computer Users: A Case Study of University of Benin, Nigeria. In World Congress on Engineering. 2007;1:2-6.