



International Journal of Indian Medicine

www.ijim.co.in

ISSN: 2582-7634

Volume 3, Issue - 8



IJIM

INDEXED

August 2022



International Journal of Indian Medicine

Access the article online



International Category Code (ICC): ICC-1702

International Journal Address (IJA): IJA.ZONE/258276217634

‘Computer Vision Syndrome (CVS) or Digital Eye Strain (DES) an increasing eye problem as shadow of pandemic COVID-19 and preventive measures through Ayurveda: A Review

Dr. Sarika Choure¹ Dr. Yuwaraj Kale² Dr. Snehal Garhate³

1. Professor & Head , Department of Shalakyatantra , Bhausaheb Mulak Ayurved College & R H, Butibori, Nagpur Maharashtra.
2. Professor & Head , Department of Shalakyatantra , Bhausaheb Mulak Ayurved Mahavidyalaya, Nagpur, Maharashtra
3. Assistant Professor Department of Shalakyatantra , Bhausaheb Mulak Ayurved College & R H, Butibori, Nagpur Maharashtra.

Abstract: Computer Vision Syndrome (CVS) is an emerging universal eye problem due to increasing dependency of various screens in the modern techno friendly society. Due to COVID-19 pandemic and lockdown there is an increasing trend of work from home and E-learning which ultimately creates prolonged use of digital screens, computers and smart phones. Exposure to digital screens in all age groups is associated with digital eye strain (DES), dry eyes, redness of eyes and headaches, etc. collectively referred to as Computer vision Syndrome. No remedial measures for the prevention and cure of this CVS prevail in modern medicine except using lubricating eye drops, computer glasses. Ayurveda is the science which focuses more on the preventive measures. *Dincharya* (daily routine practices for wellbeing), *Netra Kriyakalpa* (ophthalmic therapeutic procedures) and *Netra Hitakara Ahara* (eye beneficial food) are the important features of Ayurveda that can help to reduce digital eye strain . Preventive measures described in Ayurveda, eye exercises and some basic rules to use digital screen can collectively help to deal with this eye problems. Main focus of this review article is to compile information about the Ayurvedic approach of preventive measures for digital eye strain and CVS.

Key Words: Computer Vision Syndrome, Digital Eye Strain (DES), *Netra Kriyakalpa*, Pandemic, COVID -19, preventive measures

Corresponding Author:

Dr. Sarika Choure,

C-503, N.I.T. Complex, Ayurvedic Layout, Sakkardara, Nagpur-440024, Maharashtra, India

Email- dhpsarika@gmail.com, Ph. 8983421386

How to cite this article : Choure S. Kale Y., Garhate S. ‘Computer Vision Syndrome (CVS) or Digital Eye Strain (DES) an increasing eye problem as shadow of pandemic COVID-19 and preventive measures through Ayurveda: A Review.’ Int J Ind Med 2022;3(8):31-37

INTRODUCTION:

COVID -19 pandemic and lockdown condition in past 2-3 years affected educational systems and most of the businesses worldwide leading to the total closure of school colleges and companies. But the pandemic also gives a new trend of online learning processes and work from home that accelerated the digitalisation of world speedily. Mandatory E-learning trend has emerged as new online method of education during pandemic ¹. Digitalisation helps to connect people during lock-down periods, and the shift to remote working and e-learning will likely extend beyond the COVID-19 pandemic. These new educational online techniques and work from home trend gives more and more exposure to digital screens .without any specific guidelines and rules, it is now routine of all age groups to spend most of the time to attend classes, for work or doing time pass in front of the computers, laptops and on more digital screens with an accompanying rise in the prevalence of ocular complaints. Many individuals experience eye discomfort and vision problems when viewing digital screens for extended periods. The level of discomfort appears to increase with the amount of digital screen use. CVS, or digital eye strain, refers to a spectrum of clinical vision-related and muscular symptoms perceivably resulting from prolonged and continuous use of visual display terminals (VDTs), such as computers, smartphones, televisions, and tablets.² it is the increasing eye problem as shadow of digitalisation after the pandemic. For the majority of CVS cases, treatments focus on alleviating symptoms rather than addressing the causes of CVS³. Regular use of artificial

tears, anti-inflammatory drops, or punctal plugs provides only transient release and can often induce ocular side effects. As Ayurveda is recognized as foremost life science and describes ways to prevent disorders, the world is being attracted towards its potential. *Dincharya* (daily routine practices for wellbeing) , *Netra Kriyakalpa*(ophthalmic therapeutic procedures) and *Netra Hitakara Ahara*(eye beneficial food)are the important features of Ayurveda that can help to reduce digital eye strain . Preventive measures described in Ayurveda, eye exercises and some basic rules to use digital screen can collectively help to deal with this eye problems. Main focus of this review article is to compile information about the Ayurvedic approach of preventive measures for digital eye strain and CVS.

Aim: current review is discussing at computer vision syndrome, bad effects of exposure of screens leading to Digital eye strain as effect of pandemic digitalisation of world. Main focus of this review article is to compile information about the Ayurvedic approach of preventive measures for digital eye strain and CVS.

Methodology: a literature search was done using PubMed, Google Scholar and literature of Ayurveda for relevant articles. Articles identified, included and compiled for the narrative review.

Digital Eye Strain (DES) and Computer Vision Syndrome (CVS)

In the modern digitalised world persons of all age groups are quiet dependable on digital screens. The use of computer and various digital screens in every workplace has made life easier and increase output tremendously.

Screens have become almost an indispensable piece of equipment both at office and at home. The extensive use of computers in the workplace has led to a rise in visual health concerns and suboptimal visual function, causing significant physical and occupational burden; an estimated 50% to 90% of all computer users experience symptoms of CVS.⁴

Computer vision syndrome also referred to as digital eye strain, describes a group of eye- and vision-related problems that result from prolonged computer, tablet, e-reader and cell phone use. The symptoms experienced in computer vision syndrome are caused by three potential mechanisms: (i) Extra ocular mechanism, (ii) accommodative mechanism, (iii) ocular surface mechanism⁵

Mechanism

Symptoms

- **Extraocular (musculoskeletal symptoms due to improper placement of computer screen.)**
 - Neck stiffness These symptoms are well associated with
 - Neck pain
 - Shoulder pain
 - Headache
 - Backache
- **Ocular surface**
 - Tearing
 - Gritty
 - Dryness
 - Redness
 - Gritty sensation Burning
 - Contact lens related problem
- **Accommodative mechanism**
 - Blurring of vision

- Double vision
- Presbyopia
- Myopia
- Slowness of focus change

The main ocular symptoms reported by workers are eye strain, irritation, burning sensation, redness, blurred vision and double vision.⁶ These symptoms are usually temporary and disappear at the end of the working day even though a minority of worker may experience continuity of symptoms after work. If no intervention is initiated, a majority of these symptoms will recur and also worsen in the future.

Factors contributing to CVS:

A study showed that there is a relation between the symptoms and signs and the time used per day and duration per year of exposure to the computer⁷

Not taking a break between activity is also one of the factors that predispose individuals to develop CVS.⁸ In general personal, environmental and device related factors lead to the development of CVS.⁹ Summary of risk factors are displayed below

1. Personal factor

- Poor seating posture
- Reduced blinking
- Improper viewing distances
- Improper viewing angle
- Ocular diseases
- Medical diseases
- Ageing

2. Environmental factor

- Poor lighting
- Imbalance of light between the computer screen and the surrounding

3. Computer factor

- Poor resolution
- Poor contrast
- Glare of the display
- Slow refresh rate

DISCUSSION:

Prevention and management of Computer Vision Syndrome:

There is no single management option for the treatment of computer vision syndrome as the cause is multifactorial. The multidirectional approach is recommended to alleviate symptoms of computer vision syndrome.

1. Modification and following specific rules for use of digital screens :

o Environmental factor modification:

Among the most important modifiable external environmental factors is lighting. Bright lights, windows and overhead fluorescent lights often contribute to discomfort glare. These bright light sources need to be controlled with proper blinds, filters or adjustment of the room arrangement so that an acceptable level of lighting is obtained to minimize visual fatigue.

Use of screen filters can reduce glare and reflection of the computer screen, but it should be used as a supplement and not a replacement for poor lighting of the room.¹⁰

Reducing screen luminance is one of the methods to increase the blinking rate.¹¹ The mean distance of viewing a computer is suggested to be in the range of 60-80cm.¹² Another important ergonomics practice is the

usage of '1, 2, 10' rule that shows proper distance for cell phones and e-books to be at one feet (30 cm), for computers to be at 2 feet (60 cm) and for televisions to be at ten feet (3m)¹³. The other important solution is to design forearm support and vertical mouse design¹⁴

o Proper Eye Care

Using 20-20-20 rule is a most and simple method to prevent CVS, which means after 20 minutes of computer usage, look at distance of 20 feet for 20 seconds¹⁵.

Taking a short break, stretching the muscles, change of scenery and a quick walk around the office have been shown to improve productivity and reduce ocular symptoms of stress. Working nonstop for more than 4 hours has been associated with eye strain. Frequent short break can restore and relax the accommodative system of the eyes and preventing ocular strain and visual fatigue.

Dry eyes secondary to decreased blink rate can be easily managed by applying lubricating eye drops or artificial tears. Patients are advised to consult their doctor first if they have any ocular symptoms before applying this eye lubricating solution although they are available over the counter in pharmacy. Workers who are using contact lens must be more careful with any ocular symptom which started acutely such as pain and redness. Complications following prolonged contact lens usage such as cornea ulcer must be excluded by proper ophthalmological assessment and examination before one can say that the symptoms are due to computer vision syndrome.¹⁶

Use of proper corrective glasses for refractive errors such as myopia, astigmatism and presbyopia are important to prevent further deteriorating of the ocular symptoms which can lead to poor work performance and the poor quality of life.

2. Preventive measures in Ayurveda:

Different modalities specially mentioned in *Dincharya* are very helpful for keeping eyes healthy.

Washing the eyes with medicated decoctions like Trifala, Lodhra or Amalaki Swarasa or decoction after getting up from bed in the morning is a very good therapy for eyes.¹⁷

Anjana (collyrium) – applying *anjana* because of Theekshna property, eliminate the vitiated *Doshas* from the *Siras* pertaining to *Varthma* (eye lids) and eye.¹⁸

Abhyanga (massage) suppress the *Vatadosha* confined to eye. Local *Abhyanga* over the eyes gives cooling effect & also relaxes the eye from strain and also strengthens the muscles of the eyes. *ShiroAbhyanga* helps the oil to reach up to the brain. The optic nerve which ends in the *Drishtipatalam* (retina) is the direct extension of brain stem. So daily application of oil, selected according to the *Prakriti* of the person helps in preventing eye diseases and also nourishes all sense organs and also helps in *Drishtiprasadana*¹⁹. *Padabhyanga* is also beneficial for eye health.

Netra Tarpana²⁰: It is a specialized Ayurvedic treatment for eyes, that

helps relieve tiredness and improves eyesight. *Netra Tarpana* acts as both preventive & curative therapy for maintaining normal healthy condition of eyes. *Netra Tarpana* is a procedure where the lukewarm medicated oil or ghee is made to stay stagnant in the eyes for a speculated time in a specific formed frame. The lipophilic action of *Ghrita* facilitates the transportation of the drug to the target organ and finally reaches the cell because the cell membrane also contains lipids. Moreover, the preparations used in *Netra Tarpana* is in the form of suspension containing different particles of the drug and the particles do not leave the eye as quick as a solution. Tissue contact time and bioavailability is more and hence therapeutic concentration is achieved by *Netra Tarpana*.

Netra Hitkar Ahar (food beneficial to eyes): daily intake of food and herbs like amalaki, trifala, carrot, *yashtimadhu*, *Goghrita*, *Shatavari* is also beneficial to keep eyes healthy.

Eye Exercises and Yoga:²¹

Yogic practices help to reduce eyestrain and also build up the stamina of eye muscles. Mainly *Trataka* & *NetiKriya* helps in improving the vision & maintain the eye health. Distant *Tratak* and *Nasagra Tratak* are very beneficial to reduce eye strain.

Blinking- To minimize your chances of developing dry eye when using a computer, make an effort to blink

frequently. Blinking keeps the front surface of your eye moist. Regular eye examinations and proper viewing habits can help to prevent or reduce the development of the symptoms associated with Computer Vision Syndrome.

CONCLUSION:

By considering all the factors responsible for the development of CVS we have to manage multifactorial treatment and preventive measures for it. Ayurveda is science for prevention of diseases mainly. Thus, we can use various preventive measures included in *Dincharya*, *Ahar* and procedures useful for eyes to prevent CVS. We can also follow the rules for digital screen usage. Eye exercises and yoga may help to reduce the digital eye strain.

Source of Support: nil

Conflict of Interest: nil

REFERENCES:

1. Coronavirus: UGC constitutes committee for promoting online learning - education - Hindustan Times [Internet] Available from: <https://www.hindustantimes.com/education/coronavirus-ugc-constitutes-committee-for-promoting-online-learning/story-oSNW1tzVwZUvQUaQqHYf7Nhtml> .
2. Parihar JKS, Jain VK, Chaturvedi P, et al. Computer and visual display terminals (VDT) vision syndrome (CVDS). *Med J Armed Forces India* 2016; 72:270–276.
3. Pflugfelder SC, Solomon A, Stern ME. The diagnosis and management of dry eye: a twenty-five-year review. *Cornea* (2000) 19(5):644–9. doi:10.1097/00003226-200009000-00009
4. Rosenfield M. Computer vision syndrome: a review of ocular causes and potential treatments. *Ophthalmic Physiol Opt* 2011; 31:502–515.
5. Blehm C, Vishnu S, Khattak A. et al. Computer vision syndrome: a review. *Surv Ophthalmol*. 2005;50(3):253–
6. [PubMed] [Google Scholar]
6. Bergqvist UO, Knave BG. Eye discomfort and work with visual display terminals. *Scand J Work Environ Health*. 1994;20(1):27–33. [PubMed] [Google Scholar]
7. Sen A, Richardson SA (2007) study of computer-related upper limb discomfort and computer vision syndrome. *J Hum Ergol (Tokyo)* 36(2): 45-50.
8. Assefa NL, Weldemichael DZ, Alemu HW, Anbesse DH (2017) Prevalence and associated factors of computer vision syndrome among bank workers in Gondar City, northwest Ethiopia, 2015. *Clin Optom (Auckl)* 9: 67-76.
9. Ranasinghe P, Wathurapatha W, Perera Y, Lamabadusuriya D, Kulatunga S, et al (2016) Computer vision syndrome among computer office workers in a developing country: an evaluation of prevalence

- and risk factors. BMC Res Notes 9(1): 150.
10. The Effects of Video Display Terminal Use on Eye Health and Vision. American Optometric Association. <http://www.aoa.org/x5380.xml>
 11. Benedetto S, Carbone A, Draï Zerbib V, Pedrotti M, Baccino T (2014) Effects of luminance and illuminance on visual fatigue and arousal during digital reading. Computers in human behavior 41: 112-119.
 12. Jaschinski W, Heuer H, Kylian H (1998) Preferred position of visual displays relative to the eyes: a field study of visual strain and individual differences. Ergonomics 41(7): 1034-1049.
 13. Bilton N (2011) I Live in the Future & Here's How It Works: Why Your World, Work and Brain Are Being Creatively Disrupted: Crown Business, USA.
 14. Mangan A, Walgermo BR, Brønnick K (2013) Reading linear texts on paper versus computer screen: Effects on reading comprehension. International journal of educational research 58: 61-68.
 15. Tribley J, McClain S, Karbasi A, Kaldenberg J (2011) Tips for computer vision syndrome relief and prevention. Work 39(1): 85-87.
 16. Sheedy JE. The bottom line on fixing computer-related vision and eye problems. J Am Optom Assoc. 1996;67(9):512-17. [PubMed] [Google Scholar]
 17. AcharyaYadavjiTrikamji, Sushruta Samhita Chikitsastana 24/15-16 Dalhana Commentary, Chaukhambha Surbharati Prakashana Edition-Reprint1994 p 395
 18. Sashtri Kasinath Charaka Samhita Vidyotini Hindi Commentary Sutrastana 5/15, Chaukhambha Sanskrit Pratishtana Edition-Reprint 2012 p 78
 19. Yadavji Trikamji Acharya Sushruta Samhita Chikitsastana 24/26 Dalhana commentary, Chaukhambha Surbharati Prakashana Edition-Reprint 1994 p 396
 20. Ashtanga Hridaya– Astanga Hridayasutrasathan 24\5, Kaviraj Atridev Gupta, 14th Edition, Chaukhamba Sanskrit Sansthan, Varanasi, 2007.
 21. Hathayoga Pradipika, Sahajanandachintamani – Swathmaramayogindravirachita, Samskrit Teeka, 2Upadesha 30 Netikriya, Kemaraja ShrikrishnadasPrakashana, Bombay 2002, p 56

Source of Support : None declared

Conflict of interest : Nil

© 2022 IJIM (International Journal of Indian Medicine) | An Official Publication of Ayurveda Research & Career Academy.(ARCA) www.ijim.co.in Email: ijimjournal1@gmail.com