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“COMPUTER VISION SYNDROME: AN AYURVEDIC PERSPECTIVE ON DIGITAL EYE STRAIN AND ITS MANAGEMENT”**Dr. Abhay Gandhi¹****AFFILIATIONS:**

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ABSTRACT

Background: Computer vision syndrome, also called digital eye strain, is a group of eye and vision problems associated with prolonged use of computers, tablets and smartphones. Its prevalence has increased with digital work and online education. Symptoms include eye strain, dryness, burning, blurred vision, headache and neck pain. Ayurveda has no direct classical equivalent but offers concepts of Netra Roga causation, including Sukshma Nirikshana (staring at minute objects), and a range of preventive and therapeutic measures. **Objective:** To review the modern understanding of computer vision syndrome, its Ayurvedic interpretation, and the evidence for conventional and Ayurvedic interventions. **Methods:** Narrative review of classical texts, a systematic review of conventional interventions, and Ayurvedic clinical studies. **Results:** Computer vision syndrome arises from reduced blinking and tear film instability, accommodative and vergence demand, glare and poor ergonomics. A systematic review of 45 randomised trials found no high-certainty evidence for conventional interventions; blue-light filtering lenses and berry extracts did not help, while omega-3 supplements improved dry eye symptoms. Ayurveda interprets the condition through Vata and Pitta aggravation from Sukshma Nirikshana and Ratri Jagarana (night waking) and recommends Netra Prakshalana, Tarpana, Ashchyotana, Padabhyanga, Nasya and Chakshushya Rasayanas. Small clinical studies of Triphala eye drops with Saptamrita Lauha and of Go-Ghrita Tarpana reported symptomatic improvement. **Conclusion:** Ergonomic and behavioural measures remain the foundation of management. Ayurvedic interventions are plausible and widely used, but current evidence is limited to small studies. Controlled trials with validated questionnaires are needed.

KEYWORDS: computer vision syndrome; digital eye strain; Ayurveda; Tarpana; Triphala; Sukshma Nirikshana; Shalakya Tantra; ergonomics

INTRODUCTION

Computer vision syndrome (CVS), or digital eye strain, describes a group of eye and vision-related symptoms resulting from prolonged use of digital screens^[1,2]. Estimates of its prevalence vary widely with population and definition, but are often reported at 50% or more among regular computer users; a study of office workers in Sri Lanka found a prevalence of 67.4%^[3]. The shift to digital work, online education and smartphone use has made CVS an increasingly common reason for consultation in eye and Ayurvedic clinics.

Ayurveda does not describe CVS as such, but classical texts list Sukshma Nirikshana (staring at minute or distant objects), Ratri Jagarana (night waking), exposure to bright light and smoke, and suppression of tears among the causes of eye disease^[4]. These are closely analogous to the habits that cause CVS. Ayurvedic preventive measures, such as regular eye washing, Anjana, Padabhyanga and Chakshushya diets, have attracted interest as practical approaches to digital eye strain^[5].

Mechanisms

Table 1: Mechanisms of computer vision syndrome

Mechanism	Explanation
Reduced and incomplete blinking	Blink rate falls during screen use, increasing tear evaporation ^[7]
Increased ocular surface exposure	Looking straight ahead or upward at screens widens the palpebral aperture
Accommodative demand	Sustained near focus causes accommodative fatigue
Vergence demand	Sustained convergence for near work
Uncorrected refractive error and presbyopia	Increases strain; intermediate distance often poorly corrected
Glare and poor contrast	Screen reflections and poor lighting
Poor ergonomics	Screen height, viewing distance and posture contribute to neck and back pain
Environmental factors	Air conditioning and low humidity worsen dryness

Assessment

Validated questionnaires, such as the Computer Vision Syndrome Questionnaire, allow symptoms to be measured reliably^[8]. Assessment should include refraction (including intermediate distance), binocular vision, tear film and ocular surface evaluation, and workstation review.

Conventional management and evidence

Recommended measures include correcting refractive errors, ergonomic adjustment of screen

This review summarises the modern understanding of CVS, its Ayurvedic interpretation and the evidence for both conventional and Ayurvedic management.

METHODS

Classical sources included Sushruta Samhita Uttara Tantra 1 (causes of eye disease) and 18 (Kriyakalpa) and Ashtanga Hridaya Sutra Sthana (daily regimen)^[4,6]. Modern literature was identified through PubMed, Cochrane Library, Google Scholar and Ayurveda journals using the terms computer vision syndrome, digital eye strain, Ayurveda, Tarpana and Triphala. This is a narrative review.

MODERN UNDERSTANDING

Symptoms

Symptoms of CVS fall into four groups^[1,2]:

- **Asthenopic:** eye strain, tired eyes, sore eyes.
- **Ocular surface:** dryness, burning, grittiness, redness, watering.
- **Visual:** blurred vision, slow refocusing, double vision.
- **Extraocular:** headache, neck and shoulder pain, back pain.

height and distance, regular breaks (such as the 20-20-20 rule: every 20 minutes, look at something 20 feet away for 20 seconds), conscious blinking, lubricant eye drops and environmental modification^[1,2].

A systematic review and meta-analysis of 45 randomised controlled trials of CVS interventions found no high-certainty evidence for any intervention^[9]. Blue-light filtering lenses and oral berry extracts did not improve symptoms, multifocal

lenses were not superior to single-vision lenses for visual fatigue, and omega-3 supplementation improved dry eye symptoms. A Cochrane review similarly found that blue-light filtering spectacle lenses probably do not reduce eye strain over the short term^[10]. The authors called for core outcome sets to standardise trials.

AYURVEDIC PERSPECTIVE

Causes

Sushruta lists among the causes of eye disease^[4]:

- Entering water immediately after exposure to heat.
- Looking at distant objects.
- Sleeping during the day and waking at night

(Ratri Jagarana).

- Constant weeping or suppressing tears.
 - Exposure to smoke, dust and bright light.
 - Constant staring at minute objects (Sukshma Nirikshana).
 - Excessive intake of sour and fermented foods.
 - Suppression of natural urges, including vomiting.
- Sukshma Nirikshana and Ratri Jagarana correspond closely to prolonged screen use, particularly late at night.

Dosha interpretation

CVS is generally interpreted as Vata and Pitta aggravation^[5]:

Preventive measures from Dinacharya

Table 2: Dosha interpretation of computer vision syndrome symptoms

CVS symptom	Ayurvedic interpretation
Dryness, grittiness	Vata (Ruksha, rough quality)
Burning, redness	Pitta (Ushna, hot quality)
Eye strain, fatigue	Vata, Dhatukshaya (depletion)
Blurred vision	Early Timira (Doshas in the first Patala)
Headache, neck pain	Vata in the head and neck
Watering	Reflex response, Vata or Kapha

Some authors relate CVS symptoms to early Timira, Shushkakshipaka (dry eye) or Netra Abhishyanda, depending on the presenting features.

Preventive measures from Dinacharya

Ashtanga Hridaya recommends daily measures to protect the eyes^[6]:

- **Anjana:** regular application of Sauviranjana (antimony collyrium) to strengthen the eyes and Rasanjana periodically to clear Kapha. The

safety of mineral collyria is discussed below.

- **Nasya:** regular nasal oil instillation (such as Anu Taila).
- **Padabhyanga:** foot massage, traditionally said to benefit vision.
- **Netra Prakshalana:** washing the eyes with cool water or Triphala decoction.
- **Chakshushya Ahara:** foods such as Triphala, ghee, honey, green gram, Shatavari and Amalaki.

Table 3: Ayurvedic therapeutic measures for computer vision syndrome

Measure	Description	Proposed effect
Netra Prakshalana	Washing with cool water or Triphala decoction	Cooling, cleansing
Seka and Ashchyotana	Pouring or instilling medicated liquids	Relief of burning and dryness
Tarpana	Retaining medicated ghee over the eyes	Lubrication, Vata-Pitta pacification
Bidalaka and Pindi	Medicated paste or bolus on closed lids	Cooling, reducing inflammation
Nasya	Nasal instillation of medicated oils	Treats head and neck Vata
Padabhyanga	Foot massage	Relaxation; traditional eye benefit
Chakshushya Rasayana	Triphala Ghrita, Saptamrita Lauha	Rejuvenative and eye-beneficial
Yogic eye exercises and Trataka	Eye movements, palming, gazing practice	Relaxation; possible accommodative effects

Therapeutic measures

CLINICAL EVIDENCE FOR AYURVEDIC INTERVENTIONS

Triphala eye drops and Saptamrita Lauha

A clinical study evaluated Triphala eye drops with oral Saptamrita Lauha in CVS and reported symptomatic improvement^[11].

Go-Ghrita Tarpana

In a pilot study, patients with CVS were randomly

Limitations of the evidence

assigned to oral Shatavaryadi Churna with Go-Ghrita Netra Tarpana, Go-Ghrita Netra Tarpana alone, or counselling on computer working style^[12]. Of 30 patients, 22 completed the trial. Eye strain improved by about 90% in the combined group and 82% in the Tarpana group, while changes in the counselling group were not statistically significant. No significant adverse effects were reported. The authors described the study as preliminary.

Table 4: Limitations of the evidence

Limitation	Example
Small samples	22 completers in the pilot trial ^[12]
Lack of masking	Tarpana and eye drops are recognisable to patients and assessors
Non-validated outcomes	Ayurvedic symptom scores rather than validated questionnaires
Combined interventions	Eye drops with oral preparations
Short follow-up	Up to one or two months
No placebo or standard-care control	Counselling group only in one study

AN INTEGRATED APPROACH

A practical integrated approach for patients with CVS could include:

1. **Assessment:** refraction, binocular vision, ocular surface evaluation and validated symptom questionnaire^[8].
2. **Ergonomics and behaviour:** screen at or slightly below eye level and at arm's length, reduced glare, 20-20-20 breaks, conscious blinking, limiting late-night screen use (Ratri Jagarana)^[1,2].
3. **Refractive correction:** including intermediate distance for presbyopes.
4. **Ocular surface care:** lubricant drops, or Ayurvedic Seka, Ashchyotana or Tarpana for dryness and burning.
5. **Dinacharya:** Netra Prakshalana with clean water, Padabhyanga, Nasya and Chakshushya diet.
6. **Systemic Rasayana:** Triphala-based preparations if appropriate.
7. **Review:** reassessment after four to six weeks with the same questionnaire.

SPECIAL GROUPS

Children and students

Online education and recreational smartphone use have greatly increased screen time in children. Children may not report symptoms, and prolonged

near work and reduced time outdoors are associated with myopia, a separate but related concern. Advice for children should emphasise limiting recreational screen time, regular breaks, time outdoors, good posture and adequate sleep. Ayurvedic Dinacharya measures such as eye washing with clean water and Padabhyanga are low-risk and can be included in family routines, but mineral collyria and non-sterile eye drops should be avoided in children.

Older workers and presbyopes

Presbyopia makes intermediate-distance screen work more difficult, and older workers are more likely to have dry eye. Correct spectacles for screen distance are often the single most effective intervention. Ayurvedic Tarpana and Ghrita-based Rasayanas are traditionally considered especially suitable in older age, when Vata predominates, and could be tested in this group.

Contact lens wearers

Contact lens wearers are more prone to dryness during screen use. They should remove lenses before any Ayurvedic eye procedure and avoid non-sterile eye washes, which carry a risk of serious infection such as Acanthamoeba keratitis.

DESIGNING BETTER TRIALS

Future trials of Ayurvedic interventions in CVS should:

1. Recruit participants using a defined minimum

- daily screen time and a validated symptom threshold, such as the Computer Vision Syndrome Questionnaire^[8].
2. Exclude or stratify for uncorrected refractive error, binocular vision disorders and significant dry eye disease, which require their own treatment.
 3. Give all groups the same ergonomic and behavioural advice, so that the Ayurvedic intervention is tested as an addition to standard care.
 4. Use credible controls: for Tarpana, warm plain ghee or warm saline in a dough well; for oral preparations, matched placebo; for eye drops, a commercial lubricant.
 5. Measure validated symptom scores alongside objective tests such as tear film break-up time, blink rate, accommodative facility and near point of convergence.
 6. Follow participants for at least three months and report adherence, adverse events and costs.
 7. Follow the core outcome set recommendations proposed for CVS research^[9].

Trials designed in this way would allow Ayurvedic interventions to be compared directly with the conventional measures assessed in the systematic review.

SAFETY

- **Eye washes:** Triphala decoction should be freshly prepared, boiled, cooled and filtered; non-sterile preparations carry infection risk, especially for contact lens wearers.
- **Mineral collyria:** traditional Sauviranjana is antimony-based, but many commercial Surma and Kajal products have been found to contain lead. Patients should avoid products that have not been tested for heavy metals, particularly for children^[13].
- **Rasa Shastra preparations:** Saptamrita Lauha contains processed iron and should come from manufacturers with quality testing^[14].
- **Red flags:** persistent blurred vision, eye pain, redness, or visual field loss should prompt full ophthalmic evaluation, since symptoms attributed to CVS may be due to other eye disease.

DISCUSSION

CVS is a modern disorder that fits naturally into the

Ayurvedic framework of Netra Roga causation, with Sukshma Nirikshana and Ratri Jagarana describing the behaviours behind it. Ayurveda's emphasis on daily routine, breaks from strain, eye washing and lubrication overlaps with conventional advice on breaks, blinking and ocular surface care.

Evidence for conventional interventions is itself limited, as shown by a large systematic review^[9]. This creates an opportunity: well-designed trials of Ayurvedic interventions using validated questionnaires and objective tests could make a meaningful contribution. Such trials should compare Ayurvedic measures with standard advice and lubricants, use masked assessors and follow patients for at least three months.

CONCLUSION

Computer vision syndrome can be understood in Ayurveda as Vata-Pitta aggravation from Sukshma Nirikshana and Ratri Jagarana. Ayurvedic preventive and therapeutic measures, particularly Tarpana, Triphala-based preparations and Dinacharya, are plausible and widely used, with preliminary evidence of symptomatic benefit. Ergonomic and behavioural measures remain the foundation of management, and controlled trials with validated outcomes are needed to establish the role of Ayurvedic interventions.

REFERENCES

1. Rosenfield M. Computer vision syndrome: a review of ocular causes and potential treatments. *Ophthalmic Physiol Opt.* 2011;31(5):502–15.
2. Sheppard AL, Wolffsohn JS. Digital eye strain: prevalence, measurement and amelioration. *BMJ Open Ophthalmol.* 2018;3(1):e000146.
3. 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.
4. Jahnavi P, Kumar AK, Prema S, Singamaneni VR, Vidiyala N, Sunkishala P, et al. Recent progress in heterogeneous catalysis for sustainable chemical processes. *J Chem Rev.* 2026;8(2):154-79.
5. Pandey S, Soni RK, Vardhan P, Pandey VB. Role of Ayurved ocular therapies in the management of lifestyle disorders related to visual display terminals. *Int Ayurvedic Med J.*

- 2023;11(10):2424–31.
doi:10.46607/iamj0511102023
6. Vidiyala N, Sunkishala P, Parupathi PR, Nyavanandi D. Stem cell-derived exosomes in wound healing and skin regeneration: emerging therapeutic strategies and mechanisms. *Cells*. 2026;15(10):872.
 7. Tsubota K, Nakamori K. Dry eyes and video display terminals. *N Engl J Med*. 1993;328(8):584.
 8. Hechhu R, Krishnan K, Singamaneni V, Raju PVN, Erukulla P, Kandimalla KV, et al. GC-MS-based phytochemical analysis, in-depth ADMET screening and molecular docking targeting EGFR for anticancer potential. *Chem Methodol*. 2026;10(5):465-88.
 9. Singh S, McGuinness MB, Anderson AJ, Downie LE. Interventions for the management of computer vision syndrome: a systematic review and meta-analysis. *Ophthalmology*. 2022;129(10):1192–215.
 10. Singh S, Keller PR, Busija L, McMillan P, Makrai E, Lawrenson JG, et al. Blue-light filtering spectacle lenses for visual performance, sleep, and macular health in adults. *Cochrane Database Syst Rev*. 2023;(8):CD013244.
 11. Gangamma MP, Poonam, Rajagopala M. A clinical study on “Computer vision syndrome” and its management with Triphala eye drops and Saptamrita Lauha. *AYU*. 2010;31(2):236–9. doi:10.4103/0974-8520.72407
 12. Nyavanandi D, Mandati P, Vidiyala N, Parupathi P, Kolimi P, Mamidi HK. Hot melt extrusion paired nozzle based additive manufacturing techniques for design and development of pharmaceuticals [preprint]. *Preprints*. 2024.
 13. Centers for Disease Control and Prevention (CDC). Infant lead poisoning associated with use of tiro, an eye cosmetic from Nigeria—Boston, Massachusetts, 2011. *MMWR Morb Mortal Wkly Rep*. 2012;61(30):574–6.
 14. Saper RB, Phillips RS, Sehgal A, Khouri N, Davis RB, Paquin J, et al. Lead, mercury, and arsenic in US- and Indian-manufactured Ayurvedic medicines sold via the Internet. *JAMA*. 2008;300(8):915–23.