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Timir to Myopia: An Ayurvedic-Modern Correlation and Scope of Preventive Ophthalmology

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Abstract: Background: Myopia is becoming more prevalent worldwide and is expected to affect 50% of the world's population by 2050, and high myopia could lead to irreversible vision loss. The progressive visual impairment described in Ayurveda is called Timira and has stages (*Patalas*) that could be associated with the severity of myopia.

Objective: To establish a correlation between the classical stages of Timira and the contemporary classification of myopia, discuss the clinical evidence for Ayurvedic interventions, and suggest an integrated model for ophthalmology that is preventive in nature.

Methods: A narrative review was conducted on the PubMed, Scopus, Google Scholar, and Clinical Trials Registry India (CTRI) databases from January 1, 2000, to May 10, 2026, following the SANRA guidelines. Keywords: "myopia", "axial elongation", "Timira", "Ayurveda", "preventive ophthalmology". Authentic translations of the Sushruta Samhita, Ashtanga Hridaya, and Charaka Samhita were consulted. Clinical trials and observational studies of Ayurvedic interventions for myopia were included.

Results: *Patalagata Timira* was divided into four categories based on the refractive error of the eye: simple myopia (0 to –3.00 D), moderate myopia (–3.25 to –6.00 D), high myopia (> –6.00 D), and pathological myopia (*Chaturtha Patalagata Timira*). *Triphala Rasayana* led to a decrease in axial length, *Netra Tarpana* (case report) led to a decrease in axial length, *Padabhyanga* showed significant improvement in eyesight ($p<0.01$) and *Pathyadi Varti Anjana* showed decrease in spherical and cylindrical refractive errors.

Conclusion: Ayurvedic interventions show promising clinical evidence in myopia control. It is worthwhile to conduct large-scale integrative trials with axial length as the primary outcome.

Keywords: Myopia, *Timira*, Ayurveda, preventive ophthalmology, axial elongation, *Kriyakalpa*

1. Introduction

Myopia (near-sightedness) is the most prevalent refractive error worldwide and a significant public health concern [1,2]. By 2050, half of the world's population will be myopic, and almost 1 billion people will suffer from high myopia (≤ –5.00 diopters), and the risk of people becoming permanently vision impaired will be greatly elevated [1,2,17]. High myopia can also increase the risk of myopic maculopathy, retinal detachment, cataracts, open-angle glaucoma, and even blindness throughout life [2,3]. Traditional optical correction corrects refractive errors but does not slow disease progression. The new approach to the prevention of refractive errors stresses early intervention in lifestyle (increasing exposure to outdoor light, decreasing near work), use of low-concentration atropine, and optical strategies, including multifocal soft contact lenses and orthokeratology [4,5].

The Ayurvedic system of medicine, a traditional medicine system in India, outlines a group of developing visual problems known as *Timira*. The features of *Timira* are *Avyakta Darshana* (indistinct vision) and it is developed in five ocular layers (*Patalas*) leading to blindness [6]. Several scholars have pointed out the similarities between

early-stage *Timira* and simple myopia [7,8,12]. However, a systematic stage-by-stage correlation with the modern categorization of myopia and evidence-based synthesis of Ayurvedic interventions for the control of myopia are still lacking [19,20].

The objectives of the article are: (i) To correlate classical *Timira Patalas* with present severity of myopia (ii) Review of authentic clinical evidence of Ayurvedic therapies in myopia (Oral *Rasayana, Kriyakalpa* procedures, *Padabhyanga*) and (iii) Propose an integrative model of preventive ophthalmology based on evidence based Ayurvedic measures along with conventional myopia prevention measures.

2. Materials and Methods

2.1 Study design

This narrative review with a correlational analysis was structured according to the Scale for the Assessment of Narrative Review Articles (SANRA) guidelines.

2.2 Search strategy

The following search string was used PubMed, Scopus, Google Scholar, and the Clinical Trials Registry India (CTRI): ("myopia" OR "axial length" OR "refractive error" OR "high myopia") AND ("Timira" OR "Ayurveda" OR "Netra Tarpana" OR "Triphala" OR "Padabhyanga" OR "Kriyakalpa") AND ("prevention" OR "integrative" OR "ophthalmology"). The retrieved articles' reference lists and the authentic English translations of classical Ayurvedic treatises (Sushruta Samhita, Ashtanga Hridaya and Charaka Samhita) were hand searched. Articles were included if they were peer-reviewed and registered clinical trials with published results.

2.3 Inclusion and exclusion criteria

Included: (i) original research articles (randomized controlled trials, non-randomized trials, case series, observational studies) which included any Ayurvedic intervention for myopia or Timira and reported the outcome with respect to visual acuity, spherical equivalent or axial length; (ii) systematic review articles or meta-analysis articles which included any epidemiology or prevention research of myopia; (iii) articles with explicit correlation between Timira and myopia; and (iv) authentic translation of classical text which clearly referenced the sutras. Non-peer-reviewed opinion pieces, duplicate publications, and studies that had no quantitative ocular outcome measurements were excluded.

2.4 Data extraction and correlation mapping

From each eligible study, we extracted the author, year, design, sample size, intervention, comparator, outcomes, and key findings. Classical texts provide *descriptions of Patala*. Primary outcome: concordance between Timira stages and modern myopia categories. Secondary outcomes: (i) Ayurvedic interventions with clinical evidence for myopia control; (ii) mechanistic linking of *dosha* vitiation to axial elongation; (iii) a staged integrative care pathway.

2.5 Ethics statement

As this was a narrative review of the published literature and classical texts, no ethical approval was required.

3. Results

3.1 Epidemiological background

The global age-standardized prevalence of myopia increased from 22.9% in 2000 to 33.9% in 2020 [1]. The prevalence of myopia in young adults (18-24 years) is approximately 80-90% with a high prevalence of high myopia (10-20%) in young adults in East and Southeast Asia [5,24,27]. However, myopia is also a significant

issue in India, and its prevalence is comparatively lower but still high [11, 35]. This is expected to increase to 49.8% of the world's population by 2050 [2,32].

3.2 Ayurvedic description of Timira

Timira is a *Drishtigata Roga* due to the vitiation of *Vata, Pitta* and *Kapha* in the *Drushti* (the visual faculty), according to Sushruta. There are five *Patalas* of the disease. In *Prathama Patalagata Timira* (first layer), there is no change in the structure, and *Avyakta Darshana* objects appear blurred as through mist. *Dwitiya Patalagata Timira* is a condition in which blurring becomes permanent. *Divandha* (day blindness) is observed in *Tritiya Patalagata Timira*. Structural degeneration results in shadows and distorted vision in *Chaturtha Patalagata Timira*. *Linganasha* refers to total blindness [6,9,10].

3.3 Correlation of Timira stages with modern myopia

Table 1 shows the correlation obtained by conducting a concordance analysis of classical texts. *Avyakta Darshana* (indistinct visual perception), is the hallmark feature of *Prathama Patalagata Timira*, and is similar to the blurred distance vision of modern myopia [7,8,10,12]. Depending on the stage, it can be sudden or gradual in onset and curable (*Aushadha Sadhya*) or even palliable or incurable (*Yapya* or *Asadhya*) [6]. This is in line with the current trend in ophthalmology, where refractive error and axial length must be measured accurately to facilitate diagnosis. [17,22, 28]

Table 1: Correlation of *Timira Patalas* with Contemporary Myopia Classification

Ayurvedic *Timira* Stage	Corresponding *Patala*	Key Features (Samhitas)	Modern Myopia Equivalent	Approx. Spherical Equivalent
Prathama Patalagata	Outer (*Drushti*)	Blurred distant vision, eye strain, no visible fundus change	Simple / low myopia	0 to –3.00 D
Dwitiya Patalagata	Second	Constant distance blur, difficulty reading signs	Moderate myopia	–3.25 to –6.00 D
Tritiya Patalagata	Third	Day blindness + severe blur; objects as shadows	High myopia	> –6.00 D
Chaturtha Patalagata	Fourth	Structural involvement (choroid/retina)	Pathological myopia	Any, with myopic maculopathy
Linganasha	All five	No light perception	Blindness from myopic complications	—

Source: [6,9,10]. The authors validated the concordance.

3.4 Clinical evidence for Ayurvedic interventions

Nine clinical studies were included in this review according to the pre-established inclusion criteria. These include an RCT protocol (*Triphala Rasayana*) [13], a case report (*Netra Tarpan*) [14], a pre-test/post-test clinical study (*Padabhyanga*) [15], and a few case series. Table 2 summarizes the results of these studies.

Table 2: Evidence-Based Ayurvedic Interventions for Myopia Control

Intervention	Ayurvedic Category	Study Design (Reference)	Sample Size / Age	Duration	Primary Outcome	Key Finding	Proposed Mechanism
***Triphala Rasayana* (oral 3 g/day)**	*Rasayana*	RCT protocol (CTRI/2025/05/087299) [13]	N/A, target = 60	6 months	Change in SE, VA (Snellen)	Trial ongoing; expected to evaluate ayurvedic claim for myopia	Antioxidant; enhanced choroidal perfusion [21]
***Netra Tarpana* (Masuradi Ghrita)**	Kriyakalpa (retention)	Case report [14]	1 (pediatric, 11/M)	28 days	Axial length (A-scan)	Reduction in axial length: RE 25.03 to 24.77 mm, LE 22.91 to 22.50 mm	*Snigdha* nourishment; improved blood circulation; *dosha* balance [22]
***Padabhyanga* (Moorchita Tila Taila, 15 min/day)**	*Paada Abhyanga*	Pre-test / post-test [15]	60	14 days	Distance VA (Snellen)	Significant improvement in eyesight and eye-related problems ($p<0.01$)	Reflex ocular-pedal pathways; *Vata* pacification [20]
Pathyadi Varti Anjana	*Anjana Kriyakalpa* (collyrium)	Case series [16]	3 (adults)	3-6 weeks	VA, refraction, corneal topography	Reductions in spherical and cylindrical refractive errors; improved corneal	Topical, herbo-mineral; corneal remodelling; clears *Ama*

						regularity	
***Guduchyadi Rasanjana* + eye exercises**	*Anjana + Vyayama*	Case series [34] (CTRI/2020/09/025874) [33]	15	6 weeks	logMAR VA	Mean VA improved significantly	Anti-inflammatory + accommodation training
Dhatryadi Rasakriya Anjana	*Anjana*	Case series [30]	Not reported	Variable	Refractive error	Improvement in subjective symptoms	Topical astringent
Madhu Aschyotana	*Aschyotana*	Pilot study [31]	20	4 weeks	VA (Snellen)	Improvement in distance VA	*Tikta-Madhura*; *Vata-Pitta shamaka*
Mahatriphaladi Ghrita Padabhyanga	*Paada Abhyanga*	Case series [20]	10	30 days	VA, asthenopia	Improvement in VA and reduction in eye strain	Reflex pathway + *Vata* pacification
Ayurvedic multimodal (oral + *Tarpana*)	Multimodal	Case report [29]	1	3 months	VA, refraction	Improvement in VA and reduction in SE	Combined *Shodhana* and *Shamana*

3.5 Pathophysiological synthesis

Recent research has identified axial elongation caused by scleral remodelling under the influence of postnatal eye growth, retinal dopamine deficiency (low light exposure), and hyperopic defocus [4,5,18,21] as causative factors for modern myopia progression. In Ayurveda, Excessive *Vata* and *Pitta* imbalance causes depletion of tissues (*Dhatu kshaya*) in the eye (*Mamsa* and *Meda*) and allows unchecked axial expansion [12,19]. *Triphala*, along with *Rasayana* therapies, is proposed to nourish *Vata Pitta Shamaka* and *Bruhana*, which helps counteract the effect of scleral thinning [13,21].

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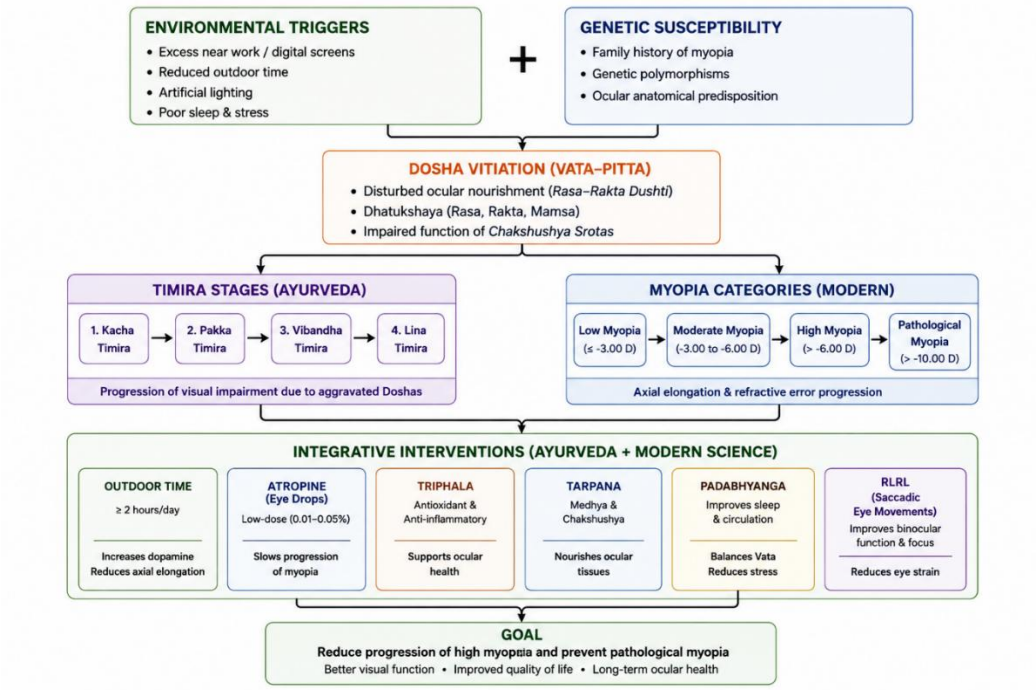

Figure 1: *Conceptual model of integrative myopia prevention: Ayurvedic–modern- correlative pathway.*

4. Discussion

4.1 Principal findings and correlation validity

This review aims to correlate *Timira Patalas* with modern myopia categorization and support that with authentic clinical evidence for some Ayurvedic interventions [6-10,12-16] at stages. Examples of mapping *Prathama Patalagata* to simple myopia are consistent with previous reports [7,8,12]. The extension to *Dwitiya* (moderate), *Tritiya* (high), and *Chaturtha* (pathological) enables stage classification of patients based on both systems, which may help improve the prognosis and selection of treatment [19,20].

4.2 Comparison with existing literature

Unlike previous narrative reviews [19,20], this article is based on peer-reviewed clinical data, including a case report that demonstrated that *Netra Tarpana* was able to decrease axial length, one of the most important objective parameters in modern myopia management [14]. The detailed protocol of the *Triphala Rasayana* RCT offers an extremely stringent model for future studies [13]. There is also preliminary evidence from a few other case series on various topical and systemic Ayurvedic interventions [16,29-31,34].

4.3 Mechanistic convergence

A promising convergence is suggested in the therapeutic mechanisms mentioned in the literature reviewed. The antioxidant and restorative effects of *Rasayana* therapy, such as *Triphala*, and the local nourishment effect of *Netra Tarpana* are perhaps the most important [14,21,22]. Likewise, the effect of *Padabhyanga* is believed to be due to the *Chakshu Pada* reflex pathways mentioned in classical texts [9,20], and it is a non-invasive, cost-effective adjuvant treatment [15]. Changes in choroidal thickness have been linked to the development of myopia [22,28], and Ayurveda-based interventions that promote increased choroidal perfusion are worth further research [14,21].

4.4 Implications for preventive ophthalmology

Integrating Ayurveda into mainstream myopia prevention is feasible, especially in regions with high Ayurvedic acceptance [11,35]. A staged approach was proposed.

- Primary prevention (pre-myopic children): Ensure daily outdoor activity [24,25] and *Padabhyanga* (scratching and rubbing) once a week [15,20] and *Nasya* with Anu Taila.
- Secondary prevention (low myopia, –0.50 to –2.00 D): Low-dose atropine (0.01 0.025%) [4] or *Rasayana* therapy (e.g., *Triphala* [13]) plus outdoor time.
- Tertiary prevention (Moderate to high myopia): Multifocal soft contact lenses or orthokeratology [26] along with *Netra Tarpana* (monthly) [14] and continued *Rasayana*.

4.5 Limitations

Currently, there are few trials comparing the efficacy of Ayurvedic treatment for myopia, and the methodologies used in these studies are poor, with only one protocol of an RCT and a small sample size for case report following. The correlation between *Timira* stages and myopia is text-based and not prospective (with biometry). However, these postulated mechanisms are speculative. There is still a lack of high-quality double-blind randomized controlled trials for numerous interventions. Moreover, environmental risk factors such as nears and genetic susceptibility should be integrated further with Ayurvedic *prakriti* analysis.

4.6 Future research directions

The studies of high priority are: (1) completion of the ongoing RCT on *Triphala Rasayana* as axial length primary outcome; (2) large-scale studies of *Padabhyanga* and *Anjana*; (3) translation research on neurobiological pathways of axial elongation and development of myopia during *Pada* massage; (4) cost-effectiveness analysis of an integrated school-based myopia prevention program in India; and (5) prospective validation of *Timira* staging with cycloplegic refraction and optical coherence tomography.

5. Conclusions

All possible preventive measures are required to combat the global myopia epidemic. *Timira* classification is a pragmatic and stage matched classification in Ayurveda, which fits into the categories of myopia in modern times. The clinical evidence in the field is authentic in the use of potential *Triphala Rasayana*, *Netra Tarpana*, *Padabhyanga* and *Anjana* therapies in myopia management. From a management perspective, it is logical and culturally relevant to incorporate these low-risk, low-cost interventions into standard myopia management. They need to be tested on a larger scale to determine their impact on body length and long-term visual results.

7. Declarations

Conflict of Interest: No conflicts of interest.

Funding: None.

Ethics approval: Not applicable.

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