



## Review Article

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### CONCEPT OF PREVENTIVE OPHTHALMOLOGY IN AYURVEDA

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#### ABSTRACT

Prevention of ocular disorders and preservation of ocular health has become essential, as changing lifestyle has resulted in many eye disorders and brought miseries to daily life. Our ancient seers have also given prime importance to eye by considering it as the most vital sense organ among all sense organs. To name a few diseases like dry eye, computer vision syndrome, age related macular degeneration, glaucoma, cataract, diabetic retinopathy, hypertensive retinopathy etc may occur due to defective life style changes particularly in the busy modern life. Association between such defective lifestyle measures and subsequent eye diseases and their prevention procedures are searched and reviewed from different Ayurvedic literatures and online sources. Ayurveda found to describe vividly about ocular health and hygiene. So an attempt has been made to explore the procedures for preservation of eye health in relation to certain factors like- relation of eye diseases with mind, diet and activities, sleep, daily and seasonal regimen related to eye health, occupational eye health and disorders, aging process and poor vision and rasayan (Rejuvenation) therapy for preserving good vision. Time tested procedures like Anjana (collyrium), Aschyotan (eye drop), Snana(bath), Padabhyanga(foot massage with oil), Nasya (nasal application of drugs), Abhyanga (oil massage) are considered as highly effective daily procedures for the maintenance of eye health. Various Yogasan and Satkriya are also effective for ocular health and better eye sight.

**Key words:** Preventive ophthalmology, Life style Eye disorders, Eye Care, Ayurveda.

#### INTRODUCTION

Ayurveda is ancient system of medicine which aims not only in cure of the disease but also prevent the humanity from all categories of physical, mental, intellectual and spiritual miseries. Among all the sense organs eyes are considered to be very important because vision is crucial for social and intellectual development of a person. It is rightly quoted by Vagbhatacharya, stating the importance of eyes "Once the vision is lost, the different kind of things of the world will all become one kind only that of darkness". It is also emphasized that "an eye can perceive forms, it adorns the face". It is a source of direct knowledge and it is a guide to avoid wrong deeds. It is proved that about 80% of the knowledge we gain is through the eye. So the existence and status of a person in this universe is directly influence by the eye. Hence in ayurvedic samhitas like Sushruta Samhita a wide description are available pertaining to eye diseases and it's management. Sushruta has given more importance to eye as it is evident from the fact that the Uttaratantra of Sushruta Samhita start with eye disease and out of which 19 chapters are devoted only to eye disease. So one has to take necessary efforts to take care of the methods for prevention of eye diseases. A faulty life style has been linked to many human illness and much has been emphasized about life style disorders like cardiovascular disorders, diabetes mellitus, kidney diseases and their preventive methods. But unlikely the preventive aspects of ocular health and eye diseases not been given due importance in daily life. Vision is also affected as consequence of faulty lifestyle. Smoking cigarette, tobacco, alcohol consumption, high fat diet and junk food, chronic stress, prolong exposure to bright light, working in computer for long time etc are few example which exerts damage to the

eye. Clinical conditions which may occur due to faulty life style are Age Related Macular Degeneration (ARMD), Diabetic/Hypertensive retinopathy, computer vision syndrome and many more. For preventing these type of eye diseases and for maintaining ocular health much has been described in texts of ayurveda, in the form of Dinacharya(daily regimen), Ritucharya (seasonal regimen) and specific therapies like kriya kalpa are useful to restore eye health and proper vision. The eye diseases can be prevented and proper vision can be restored for long time by following certain points in daily life like dinacharya, ritucharya, sadvritta and swasthabritta and taking chakshusyasa rasayana drugs described in ayurvedic texts. The importance of preserving eye health and vision is rightly quoted by Vagbhata that "all effort should be made by men to protect the eyes, throughout the life; for the man who is blind this world is useless, the day and night are the same even though he may have wealth" <sup>1</sup>.

#### Dinacharya (Daily Regimen)

Dinacharya regarding maintaining eye health is vividly described in Charak Samhita, Sutrasthan Swatha chatuska, Sushruta Samhita Chkitchashthan 24<sup>th</sup> chapter, Astanghrudaya uttarsthan 13<sup>th</sup> chapter and pathya, apathy in eye diseases described in Yogratnakar, Bhaisjyarnavali in netrarogadhikar adhyayas. While Charak starts daily regimen with anjan, Sushrut advised for netraprakshalana (eye wash) with Lodhra (*Symplocos racemosa*) kasaya (decoction). So the daily regimen can be summarized in a more practicable way as follows.

**Netraprakshalana (Eye Wash):** washing eyes with decoction of Lodhra (*Symplocos racemosa* Roxb.) or with Amalaka

(*Emblica officinalis*) swarasa (juice) after getting up from bed in the morning<sup>2</sup>.

#### **Anjana (Collyrium)**

Anjana is a method in which the medicine is applied along the inner surface of the eye lid. Souveeranjan or darvi rasa kriya can be mixed with honey can be applied in the eye for kapha sodhana as eye is pitta predominant in nature and should be protected from kapha dosha. So daily practice of anjana as Dinacharya is best simple ophthalmic medication to prevent eye diseases<sup>3</sup> Action of Anjana can be attributed to – dissolving the accumulated vitiated kapha and drains it out, it dilates the blood vessels and increase the blood flow and maintaining of netra srotas intact.

#### **Abhyanga**

Abhyanga is a procedure in which oil is applied in the head. oil is best for vata dosha. The vata dosha confined to eye is pranavayu and the seat of pranavayu is in the head (murdha). The brain stem is kept protected inside the scalp. When oil applied over the scalp, the medicinal effect reaches up to the brain. The optic nerve which ends in dristipatalam (Retina) is the direct extension of brain stem. So the oil applied over the head, especially at the region of moordha acts on the dristipatalam through the optic nerve. So daily application of oil, selected and medicated according to “prakriti” of person is a preventive measure of the eye diseases<sup>4</sup>. Abhyanga nourishes all sense organs and also acts as Dristiprasadana<sup>5</sup>.

#### **Snanam (Bath)**

Generally, the sense organs get freshness with bath. The temperature mechanism is maintained and blood circulation is kept intact. Hot water is preferably for body bath and cold water for head bath. Hot water for head bath will adversely affect the hair and eyes<sup>6-7</sup>.

#### **Nasya**

The procedure in which, medicines are applied through the nasal cavity to nourish the organs above the clavicle called Nasya. Nasal cavity anatomically leads to structures of the head and so it is considered as the natural route to the head. Due to anatomical communications the medicine applied through the nasal cavity reaches all the areas, particularly strengthens the “Sringatak Marma” (cavernous sinus) which is the seat of all the centers of eye, ear, nose and tongue<sup>8</sup>. In short, Nasya always has action on the srotas (channels) and it cleans the Shirosothas. So that accumulation of vitiated kapha in the srothas of the eye can be prevented by daily application of Pratimarsh Nasya<sup>9</sup>.

#### **Kaval and Gandoosha**

The special methods of medication in which the medicines are applied in the mouth in the form of liquid and semi solid are called Kaval and Gandoosha. In Kaval, medicine is filled in mouth to such an extent that we can shake it. The medicine is in liquid form so that while shaking the medicine reaches all parts of the oral cavity. The ophthalmic branch of facial artery lies along the cheek. Medicine may get absorbed through mucous membrane due to pressure effect of the liquid medicine. The structure of the eye may get nourished, stimulated, evacuated or maintained by the medicinal value of the drugs used for Kaval. In Gandoosha the same function can be explained due to increase in permeability of vessels, which in turn facilitates more absorption of medicines as well the nerve endings of oral cavity stimulated and brings reflex action in the eyes.

#### **Mukhalepa**

Application of medicines on face in the form of poultice is called mukhalepa. Mukhalepa is of three types Doshahara, Vishahara and Varnakara. The facial artery, facial nerve and trigeminal nerve are lying along the cheek, having branches to the eye. So the medicinal value of the mukhalepa in turn affects the eye also<sup>10</sup>.

#### **Padavyanga, Padaprakshalan and Padatra Dharan**

Taking care of foot is also essential as foot is connected to the eye<sup>11</sup>. Foot is the end organ and so the nerve endings are highly sensitive. The stimulation of the nerve endings of the foot reflects in the eye via sympathetic and parasympathetic supply. So foot should be kept clean, abhyanga and footwear should be used to avoid physical injuries to the foot as padavyanga, padaprakshalana (cleaning foot) and padatra dharana (using footwear) has chakshyushya effect (improves vision)<sup>12-14</sup>.

#### **Use of umbrella**

Use of umbrella protects the eyes from sun shine, heat, dust and smoke and it is chakshyushya<sup>15</sup>.

#### **Trayopasthambha (Tripods of Life) and Eye Health**

Ahara, Swapna and Brahmacharya –these three are the tripods of life which sustain and maintain the life if followed properly. Ahara (Diet) plays major role in keeping eyes healthy. Virudha Ahara (incompatible foods) may leads to poor vision or cause blindness<sup>16</sup>. So in this context hita (wholesome) and ahita (unwholesome) ahara (diet) vihara (activities) which affect eye can be summarized as follows in the Table 1.<sup>17-19</sup>

#### **Nidra (Sleep) and Eye Health**

Sleep rejuvenates the mind and body. Sound sleep is absolutely necessary for the eyes. During sleep, the eye is at complete rest and retains functional capacity. Normally 6-8 hours of sleep is necessary for a normal adult. Sleep deprivation leads to many eye disorders like floppy eye lid syndrome, dry eye, asthenopic symptoms, sudden vision loss after awakening becomes permanent (AION), swelling of optic nerve, blurred vision, change in colour perception. When natural urge of sleep is hold it leads to Akshigaurabam (heaviness and fatigue in eyes). In the context of etiological factors responsible for eye diseases Sushruta has mentioned “Swapnaviparyayat” (faulty sleep)<sup>20</sup>.

#### **Mana (Mind), Stress and Eye Health**

A good, balanced mental status is essential for proper functioning of the eyes because sense organs can perceive the objects only in the presence of mind<sup>21</sup>. To maintain proper eye health and vision Vagbhata advised “manaso nibrutti” i.e. withdrawing mind from all the sensual functions<sup>22</sup>. Stress hormones like cortisol are secreted and activation of hypothalamic pituitary adrenocorticoid leads to further arteriole dilation and venous constriction. So eye disease like Central Serous Chorioretinopathy (CSR) is believed to be exacerbated by stress and corticosteroid use. A clinical condition likes Myokemia (twitching of eye lid) and dry eye are other effect of oxidative stress. Again stress induced hypertension may lead to retinal vein occlusion and other vascular disorders of retina.

#### **Vegadharana (Suppression of Natural Urges)**

Though suppression of natural urges has impact on whole body but in the context of eye diseases Sushruta has mentioned Vegbinirahat (suppression of natural urge) and particularly Baspagrahat (suppression of tears). Charka has mentioned Nidra(sleep) and Baspa vega(Suppression of tear urge) causes heaviness in eyes and various diseases of eye respectively. It is quite evident that in modern age life style, people used to

suppress natural urge due to various reasons like busy work schedule, frequent travelling and many other reasons.

### Yoga and Eye Health

Yoga especially Shat Kriya's like Trataka and Neti Kriya may help to improve vision and maintain the eye health. Hathayoga Pradipika and Gheranda Samhita clearly mention that accepting procedures like Trataka and Neti Kriya helps to improve vision and prevent the diseases of eye<sup>23-24</sup>.

### Ageing, Eye Diseases and Rasayana Therapy

As per Sarangadhra due to normal ageing process vision becomes poor in 6<sup>th</sup> decade of life<sup>25</sup>. According to modern medicine age related macular degeneration (ARMD), Age related Cataract are diseases which occur due to ageing and oxidative stress in day to day life process. To avoid these problems or slow down the process of ocular degeneration Ayurved advocates Chakshushya Rasayan therapy. Chakshushya Rasayan described in different samhitas are as followed in the Table 2<sup>26</sup>. The person who follows regular diet and regularly takes Triphala powder along with honey and Ghee in the night is always free from diseases of eye<sup>27-28</sup>.

Table 1: Pathya Apathya for Eye diseases<sup>17-19</sup>

Ahara/Vihara (Food/Activities)	Pathya (wholesome diet)	Apathya (Unwholesome diet)
Rasa (Taste)		Amla (Sour), lavana (Salt), Katu (Hot), Kshara (Alkali)
Sukadhanya (Monocotyledons)	Lohitasali (Red rice), Yava (barley)	Virudhadhanaya (Over ripe/sprouted/germinated cereals)
Simbi dhanya (Dicotyledons)	Mudga (Green gram), Vanyakulattha ( <i>Dolichos biflorus</i> )	Masha (Horse gram)
Shakavarga (Green vegetables)	Jeevanti ( <i>leptadenia reticulata</i> ), Vaastuka ( <i>Chenopodium album</i> ), Punarnava ( <i>Boerhavia procumbens</i> ), Patola ( <i>Trichosanthes dioeca</i> ), Karavella (Bittergourd), Kakamachhi ( <i>Solanum nigrum</i> ), Kumari ( <i>Aloe vera</i> ), Matsyakshi ( <i>Hincha repens</i> ), Meghanada ( <i>Amaranthus polygonoides</i> )	Kalingaka patrasaka ( <i>Hoarrrhaena antidysentrica</i> )
Ikshu varga (Derivatives of sugar cane)	Sita (sugar)	Phanita
Sugandhi dravya (aromatic drugs)	Chandana, Karpura	Tambula ( <i>Piper betel</i> )
Mamsa varga (Meat)	Mayura (peacock), Kurma mamsa (Turtle flesh), Vihanga mamsa (flesh of birds)	Matsya (fish), Ajangala mamsa (flesh of animals living in semi arid tropics)
Phala varga (Fruits)	Draksha (grapes), Kustumburu (seeds of coriander), Triphala	
Dugdha (Milk)	Nari paya (human milk), Go (cow), Hasteeni paya (elephant milk)	
Ghrit (Ghee)	Streenam sarpi (ghee prepared from human milk), Ajaghrit (ghee prepared from goat milk).	
Dadhi (Curd)	Aswa dadhi	Go dadhi
Takra (Buttermilk)	Kheertha takra (butter milk)	
Ahara kalpana (gruel etc)	Peva, vilepi, vusha	
Madya (alcohol)		Atimadyapana (excessive alcohol consumption)
Sandhana kalpana		Sura, Sukta, Aranala
Taila (Oil)		Katu taila, pinyaka (oil cake)
Manasikbhavas (psychological factors)	Mano nivrutti (Self-control), Angra puja (Guru puja)	Krodha (anger), Shoka (sorrow), Ashrupaata (continuous crying), abhighata (trauma), Baspanigraha (withholding tears)
Loha varga	Swarna (gold), Kamsya (bronze)	
Ratna Varga	Mukta (pearl), Vidruma (coral), Vajra (Diamond), Sphatika (Alum)	
Chikitsa karma	Prapuran, Seka, Pratisarana, Lepana, Ajyapana, Virechana, Nasya, Langhana, Raktamokshana	
Yogasana	Sarvangasana, Bhujangasana, Vajrasana, Ushtrasana, Matshasana	
Eye Exercise	Cleansing (Netraprakshalana), Palming, Candle gazing	
Pranayama	Nadisodhana, Sheetali	
Shatkriya	Jala neti, Trataka	

Table 2: Chakshushya Rasayan described in different samhitas<sup>26</sup>

Charak Samhita	Sushruta Samhita	Astanga Samgraha
Jivaneya drug Yasthimadhu (Ch.Su.4/11)	Suvarna (Gold) -Su.Su.46/325	Triphala Rasayan-A.S.Su.12/47
Netra roga rasayan Dronipravesikrasayan-Ch.Chi.1-4/7	Bijaksaradi yoga- Su.Chi.27/12	Mustadi yapana Vasti A.S.Ka.5/11
	Vidanga Tandula Yoga (2 <sup>nd</sup> ) Su.Chi.27/8	Tuvarak Taila-A.S.U.49/55
		Kanchuki Vividha yoga A.S.U.49/178
		Shiva Gutika-A.S.U.49/193
		SwarnaMakshik-S.U.49/199
		Kustha vividha yoga-A.S.U.49/218
		Sarpi Guda-A.S.Chi.7/52

## DISCUSSION

Present day lifestyle choices i.e. low activity level, sedentary lifestyle, and progressive weight gain also contribute significantly to the risk of developing the metabolic syndrome, which consequently have their ill effect on the most vital organ Eye. The research data suggests that the metabolic syndrome is associated with micro vascular changes in the retina. And the finding reflects, in part, the associations of individual syndrome components with retinal micro vascular abnormalities. On keen observation we find a close similarity between the etiologies of eye diseases and the lifestyle choices of the present era. The causative factors for eye diseases explained in the classical texts exactly fit the present day Lifestyle practices which in turn generate eye diseases. To name a few- By food habits - Shukta aranaala, amla, kulatha, maasa, ushna, kshara, katu rasa predominant diet resembles the spicy and junk foods, by Activities Swapna viparyayaat (Night shifts), atimadyapaana (Alcoholism), dhumanishevana (Smoking), atidravannapaana (cold drinks), pratata ekshana atideepta darshana, ati sameepa darshana (Spending long hours in front of computer) and Manasika- Kopa, shoka, klesha (Stress induced agony). Other activity such as reading while travelling produces difficulty in accommodation and thus causes ailments of vision. It was found that persons with an active lifestyle (Defined as regular activity three or more times weekly) were 70% less likely to develop neo-vascular AMD compared with persons without an active lifestyle. Physical activity also reduces systemic inflammation and endothelial dysfunction<sup>29</sup>. Physical activity would be expected to have a beneficial effect on diabetic retinopathy through an attendant reduction in weight and decrease in blood pressure and systemic inflammation<sup>30</sup>. Prevention modalities have an equal role in fighting the emergence of diseases as that of treatment modalities. Prevention of Diseases is possible by Lifestyle regulation and adopting Ayurvedic principles<sup>31</sup>. Kriya kalpas have a major role as a remedy for Lifestyle induced eye diseases. Kriya Kalpas such as Aschyotana, Anjana, and Nasya etc are both prevention as well as treatment modalities. Aschyotana (Eye drops) is a basic therapeutic intervention which is beneficial in wide variety of Eye diseases. Eye diseases due to ageing process are inevitable but can be delayed by taking Chakryushya Rasayana (Rejuvenation therapies for eyes) described in prescribed table.

## CONCLUSION

Thus various lifestyle exposures are found closely associated with eye diseases. Their causes are pursued to be the result of metabolic changes influenced by processes of growth and aging. The prevention modalities advocated in Ayurveda such as Aschyotana, Anjana, Nasya, Yogasana etc. along with a few positive life style modifications may help considerably reducing the impact of ocular diseases in general population.

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