

Prevention of Eye Disorders through Healthy Lifestyle with special reference to *Padabhyanga*

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ABSTRACT

Among five sense organs or *Gyanendriyas* 'Eyes' are considered as most important sense organs. They are said to be the path to mind and seat of *Tejas* (Light). Now a days due to their overuse and negligence in maintenance we are facing many eye related problems like Dry Eye Syndrome, Cataract, Age related Macular Degeneration, Glaucoma, Computer Vision Syndrome etc. To observe the association of defective lifestyle and related eye problems with their preventive measures, different Ayurvedic procedures are reviewed from ancient literatures and some modern researches. *Dinacharya* (Daily regimen) explained in Ayurveda helps to prevent many derangements. Lifestyle modification in terms of proper daily regimen and dietary regimen could help to prevent eye problems. *Padabhyanga* (foot massage) is one of the procedures mentioned in *Dinacharya*, an effective therapy for healing of eye disorders.

Keywords *Dinacharya*, *Gyanendriyas*, Lifestyle, *Padabhyanga*

INTRODUCTION

Ayurveda, is the most ancient remedial under human passion and serving us since Vedic periods. "Swasthasya swasthya rakshanam aturasya vikara prasamanm cha" (Charak Samhita Sutrashtana 30/26) explains the aim of Ayurveda, to preserve health of healthy person and to cure the diseased one. Here we can observe the prime importance of preservation of health of a healthy person. This can be achieved by preventing diseases and promoting health through healthy lifestyle. In the same way Prevention of Eye disorders and promotion of eye health is essential. Among all sense organs eyes are of prime importance as the vision is very crucial interpreter for social, spiritual and intellectual development of human beings. Vagbhatacharya rightly quoted the importance of eyes, "Once the vision is lost, the whole world will become only one kind that of darkness" (Ashtanga Hridaya Uttarasthana 13/98). Changing lifestyle, pollution, excessive use of computer, mobile phones, irregular sleeping habits, improper daily regimen and seasonal regimens have resulted in many eye problems and brought miseries in daily life. Diseases like Glaucoma, Cataract, Computer Vision Syndrome, Dry Eye Syndrome, Age related Macular Degeneration, Diabetic Retinopathy, Hypertensive Retinopathy etc. may occur due to defective lifestyle. Ayurveda gives a complete remedy to prevent the eye problems by simple daily procedures like, *Netraprakshalana* (washing of eye), *Anjana* (Collyrium), *Nasya* (Nasal instillation), *Snana* (Bath), *Nidra* (Sleep), *Padabhyanga* (Foot massage), proper dietary regimen etc. Various eye exercises and yogic practices are also helpful.

MATERIALS AND METHODS

A thorough screening of Ayurvedic and other ancient literature has been done to collect information regarding *Netra Rogas* (Various eye problems) and way of prevention of those *Netra Rogas*. Contemporary research articles were thoroughly screened from various e-database to collect the information regarding life style related eye problems and their prevention, thereafter possible interpretations were made.

ETIOLOGY OF EYE DISORDERS

I. Improper dietary habits

According to Acharya Sushrut, Excessive intake of *Amla* (Sour), *Shukta* (Vinegar), *Aranala* (Sour gruel), *Kulathi* (*Dolichos biflorus*), *Masha* (*Vigna mungo*) is the cause of eye disorders (Sushrut Samhita Uttaratantra 1/26-27). Various modern studies show, intake of high fatty diet may result in atherosclerosis of choroidal blood vessels and increase more risk (80%) of Age-related Macular degeneration (AMD) (Seddon JM *et al.*, 2001). High sugar diet or higher dietary carbohydrate may affect eye sight and increase risk of cataract (Lobefalo L *et al.*, 2011). Less dietary intake of Vitamin-A may lead to loss of vision (most common cause of blindness in world), night blindness, dryness of eye etc. It also increases risk of cataract (Wang A *et al.*, 2014). Decreased dietary intake of Vitamin- E and Zinc make vulnerable to destruction of cell membranes through oxidative change and may increase the risk of blindness (Rasmussen H *et al.*, 2013).

II. Improper daily habits

Acharya Sushrut has mentioned *Swapna Viparyaya* (Reversing the usual sleeping habit) viz disturbed sleep, decreased sleep, day sleep and night awakening give more strain to eyes (Sushrut Samhita Uttaratantra 1/26-27). Also, different studies claim

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sleep disturbance to be an influencing factor on DED (Dry eye diseases) (Kawashima M *et al.*, 2016). Ayurveda claims indulgence in *Dhumapana* (Smoking) results in eye problems (Sushrut Samhita Uttarantra 1/26-27). Modern studies also claimed that Smoking would be expected to result in a higher incidence of diabetic retinopathy as it leads to increased platelet aggregation and adhesiveness and tissue hypoxia, factors hypothesized to be involved in the pathogenesis of diabetic retinopathy. (Klein, B. E *et al.*, 2007). Observations in many studies have indicated a role for smoking in the incidence and progression of AMD (Thornton J *et al.*, 2005).

III. Environmental factors

According to Acharya Sushrut excessive exposure to dust, smoke, dirty water, sudden change in temperature etc. may cause irritation in eyes (Sushrut Samhita Uttarantra 1/26-27). Light exposure, especially in the UV-B light range, has been examined and found to be a risk factor for cataract in some studies (Asbell PA *et al.*, 2005 & Taylor HR, 1988)

IV. Psychological factors

Ayurveda clearly mentioned that excessive *rodana* (weeping), *krodha* (anger), *shoka* (grief) etc. are the causes of eye disorders (Sushrut Samhita Uttarantra 1/26-27). It is also seen that chronic stress increases level of Adrenaline and in other hand this adrenaline increases risk of Glaucoma by increasing intra ocular pressure (Shily BG *et al.*, 1987).

V. Repeated eye strain

Acharya Sushrut mentioned looking continuous at distance objects and minute objects are the causes of various eye diseases (Sushrut Samhita Uttarantra 1/26-27).

VI. Vega dharana (suppression of natural urges)

According to Ayurveda suppression of *Vega* (natural urges) are the root cause of all diseases, through aggravation of *Vata* predominant *Tridosha*. Suppression of urges specially of *Nidra* (sleep), *Ashru* (tears), *Chhardi* (vomiting) causes various eye diseases (Sushrut Samhita Uttarantra 1/26-27).

REVIEW AND DISCUSSION

Prevalence of eye disorders is increasing in present high-tech era. Ayurveda gives a wide verity of choices to choose healthy lifestyle in a simpler way to avoid eye disorders. Healthy lifestyle in terms of proper daily regimen and diet discussed above will definitely help to prevent these problems. Contemporary science also explains the importance of prevention of eye problems through counseling, dietary modification and avoidance of excessive exposure to causative factors.

Healthy Lifestyle for promotion of Eye Health

Improper management of various eye disorders may lead to blindness therefore the primary step should be the 'Healthy Lifestyle' to withdraw contributing factors, as under

I. Counseling

Counseling contributes a main role towards the prevention. It involves encouraging the adaptation of eye health promoting behaviors and discouragement of behaviors that damage the eye health. Health education to the individual, family and to the community should be done by school health programs, advertisements and other outreach programs.

II. Ahara (Dietary factors)

Diets that negatively affect eyes are called *AChakshushya* ahara and diets for better eye health are called as *Chakshushya* ahara. Ayurveda mentioned a wide verity of *Pathya Ahara* (wholesome Diet) and *Apathya Ahara* (Unwholesome diet) for better eye health (Table 1) (Lucas DSK, 2006; Shastri R, 2012). Light and easily digestible food are beneficial for eye health and heavy and excessive food intake, over intake of *Amla* (Sour), *Lavana* (Salty), *Katu* (Pungent) and *Kshara* (Alkali) rasa (tastes) may cause different eye problems. In various trials it is found that supplementation with vitamins E, β -carotene, zinc, and copper viz green leafy vegetables, carrots, legumes, nuts etc. reduce the risk of developing advanced AMD (Rasmussen H *et al.*, 2013).

III. Vihara (Daily habits)

Nidra (sleep): *Nidra* revitalizes the mind and body, responsible for all types of *Sukha* (wellness), *Pushti* (nourishment), *Val* (strength) etc. (Charak Samhita Sutrasthana 21/36). Proper sleep is necessary for the eyes. During sleep, the eyes are at complete rest and recollect functional capacity. Ayurveda clearly mentions that irregular sleep and suppression of urge of sleep are the causes of eye disorders. Therefore, to maintain eye health the proper sleep is mandatory.

Netra prakshalana (Washing of eyes): It should be done with cold water, decoction of *Lodhra* (*Symplocos racemosa*) or *Amalaki* (*Emblica officinalis*) (Sushrut Samhita Chikitsasthana 24/15-16). It helps in cleansing eyes by removing dirt and foreign bodies to help in better vision.

Ushajalapana or Nasajalapana (Intake of water through mouth or nose): Daily intake of water through mouth and/or nose in morning ensures good vision (Bhava Prakash Purvakhand 5/317).

Anjana (collyrium): Daily use of *Souviranjana* (*collyrium* made up of Antimony sulphide) is beneficial for eyes and use of *Rasanjana* (extract of *Berberis aristata*) at an interval of 5th or 7th day helps in removal of *Kapha Dosha* from eyes in the form of tears to provide cleanliness to eyes (Charak Samhita Sutrasthana 5/15).

Action of *Anjana* can be attributed by dissolving the accumulated vitiated *Kapha* and draining it out. It dilates the blood vessels, increases the blood flow and maintains the integrity of *Netrasrotas*.

Dhumapana (Medicated smoking): It cures pain in eyes and strengthens sense organs and helps in better vision (Charak Samhita Sutrasthana 5/32).

Nasya (Nasal instillation): Nose is considered as gateway to head (*Shira*). *Nasya* nourishes all sense organs including *Netra* by stimulating *Sringataka Marma* (seat of all the centers of vision, smell, hearing & taste) (Charak Samhita Sutrasthana 5/62).

Shiroabhyanga (Oleation over scalp): Oleation over scalp alleviates *vata dosha*, nourishes all sense organs and acts as *Dristiprasadakara* (clear and bright vision) (Charak Samhita Sutrasthana 5/83).

Padabhyanga (Foot massage): Application of oil over feet enhances better sleep and visual acuity (Charak Samhita Sutrasthana 5/91; Sushrut Samhita Chikitsasthana 24/70).

Snana (Bathing): Head bath with cold water refreshes all sense

organs and improves eyesight however head bath with hot water negatively affects eyes (Sushrut Samhita Chikitsasthana 24/59).

Padaprakshalana (Foot washing): Washing and cleanliness of foot is considered as *Chakshushya* (beneficial for eyes) according to Acharya Charaka (Sushrut Samhita Chikitsasthana

24/69).

Padatra dharana (Use of foot wear): Use of footwear helps to maintain visual acuity (Charak Samhita Sutrasthana 5/100; Sushrut Samhita Chikitsasthana 24/72).

Table.1 Showing *Pathya-Apathya* (Wholesome & Unwholesome) Ahara for Eye Health

Ahara -Varga (Food)	Do's/Pathya/Wholesome	Don't/Apathya /Unwholesome
Shukadhanya (Cereals)	Lohita Sali (<i>Oryza sativa</i> Linn), Yava (<i>Hordeum vulgare</i>)	Virudha dhanya (Germinated cereals)
Shimbidhanya (Pulses)	Mudga (<i>Vigna radiata</i>)	Masha (<i>Vigna mungo</i>), Kulattha (<i>Dolichos biflorus</i>)
Shaka (Green leafy vegetables)	Jeevanti (<i>Leptadenia reticulata</i>), Punarnava (<i>Boerhavia procumbens</i>), Vastuka (<i>Chenopodium album</i>), Karavella (<i>Momordica charantia</i>), Patola (<i>Trichosanthes dioica</i>), Kakamachi (<i>Solanum nigrum</i>), Ghritha kumari (<i>Aloe vera</i>)	Kalingaka patra shaka (<i>Holarrhena antidysentrica</i>), Sarshapa (<i>Brassica campestris</i>)
Kanda (Roots)	Adrak (<i>Zingiber officinal</i>)	
Phala (Fruits)	Draksha (<i>Vitis vinifera</i>), Amalaki (<i>Embelica officinalis</i>), Vibhitaka (<i>Terminalia bellerica</i>), Haritaki (<i>Terminalia chebula</i>), Dadima (<i>Punica granatum</i>)	
Dugdha (Milk) & milk product	Go dugdha (Cow milk), Naari dugdha (human milk), Takra (butter milk)	Go dadhi (curd prepared from cow milk)
Ghritha (Ghee)	Ajaa Ghritha (ghee prepared from Goat milk), Go Ghritha (ghee prepared from Cow milk)	Avi Ghritha (ghee prepared from Sheep milk)
Taila (Oils)	Tila Taila (oil of <i>Sesamum indicum</i>)	Katu Tail (oil of <i>Brassica campestris</i>)
Mansa (Meats)	Kurma mansa (Turtle flesh), Jangala (Dry desert like land) bird flesh	Matsya (fish), flesh of birds other than jangala
Lavana (Salts)	Rock salts	
Ahara upayogi (Processed food)	Peya (Liquid diet with some solid portion of rice), Vilepi (Thick liquid diet made up of rice), Yusha (Juices made up of pulses)	Shukta (Vinegar), Aranala (Sour gruel)

IV. Rasayana (Rejuvenation therapy)

Maharshi Vagbhat described that daily use of *Triphala* (*Amalaki-Embelica officinalis*, *Haritaki-Terminalia chebula* & *Vibhitaka-Terminalia bellirica*) along with honey and *ghrita* at night helps in stay free from diseases of eye (Astanga Sangraha Sutrasthana 12/47). Acharya Sushruta has also mentioned some *rasayana* yoga (Rejuvenative formulations) for better eye health like *Suvarna* yoga (Sushrut Samhita Sutrasthana 46/325), *Bijakasara*di yoga (Sushrut Samhita Chikitsasthana 27/12), *Vidanga tandula* yoga (Sushrut Samhita Chikitsasthana 27/8) etc. Daily use of *Rasayana* prevents eye diseases and helps in better vision.

Role of Padabhyanga in Prevention of Eye Diseases

Various Ayurvedic texts enumerate that *Padabhyanga* acts on *Sthanik Doshas* (local factors) and on *Sarvadehik Doshas* (General factors) also. Regular oil massage in feet enhances clear vision. Acharya Charak and Maharshi Vagbhat has described it as *Dristiprasadakara* (for clear and bright vision) (Charak Samhita Sutrasthana 5/91). Acharya Sushruta has also described it as *Chakshushya* (Sushrut Samhita Chikitsasthana

24/70).

Probable modes of action of Padabhyanga

Ayurveda explains that development of *Pada* (foot) and *Netra* (eyes) both have same origin from *Vaikarik Ahankara* (modified source of creation) and *Rajas Ahankara* (passionate source of creation), and both develop at same month in intrauterine life (Sushrut Samhita Sharirasthana 1/6). Thus, because of their same origin any therapy on *Pada* can positively affect *Netra*.

Acharya Vagbhat identified 4 major *Nadis* (Channels or nerves) in feet which connect to eyes, help to maintain good eyesight and relieve eyestrain when subjected to soothing therapies like *Padabhyanga* (Astanga Hridaya Uttarasthana 17/66). *Padabhyanga* pacifies the *Doshas* (The three basic elements of body *Vata*, *Pitta* and *Kapha*) through the *Nadis* reaching the *Netra* thereby nourishing and soothing them.

Two *Nadis* (Channels or nerves), *Gandhari* (which connects left great toe to left eye) and *Pusha* (which connects right great toe to right eye) described in *Yoga Shastra* (Yogic science). Oil gets absorbed percutaneously through skin and nourishes eye through these *Nadis* (Acharya RJ, 1997).

According to Bhela Samhita, *Alochaka Pitta* present in the eyes, and as per other references *Alochaka Pitta* is present in the *Pada*. *Padabhyanga* stimulates the *Alochaka Pitta* and enhance the visual acuity.

Sparshanendriya (skin) is known as *vyapak indriya* (covers all other sense organs) as it is spread over all other *indriyas* (sense organs) and *Vata* (one of important elements of 'Tridosha' or the three basic elements) is found predominantly in *Sparshanendriya* (skin). *Padabhyanga* through its *Vata* ameliorating action is responsible for better functioning of all *indriyas* including *chakshuindriya* (Charak Samhita sutrasthana). This absorbed *Taila* (oil) through these *Strotas* or *Nadis* (Channels or nerves), acting by its *Snigdha* (unctuous) and *Ushna* (hot in potency) properties pacifies *Vata Dosha* in the eyes aggravated by *Atiyoga* (over use) or *Mithyayoga* (improper use) of *Netra* (i.e. Eye Strain).

Related researches revealed that by *Padabhyanga* the somatic sensory area in the cortex may get stimulated and as areas of feet and eyes are same i.e. Area II of cortex, its stimulant effect may improve the function of eyes by reducing the eye strain (Rashmi K *et al.*, 2015). The interpretative (association) areas of feet and eyes meet at Wernicke's area and *Padabhyanga* by nourishing or stimulating effect of *Padabhyanga* improves the function of eyes (Joshi N. *et al.*, 2016). *Padabhyanga*, normalizes the two important neurotransmitters Serotonin and Norepinephrine, which regulates a wide variety of Neuropsychological processes along with sleep Thus it induces relaxation and natural sleep and impacts a positive effect on eyes (Joshi N *et al.*, 2016).

CONCLUSION

Adoption of modern lifestyle affected ocular health and brought miseries to human society. Ayurveda, the ancient medical science gives a ray of hope to overcome these problems. A healthy lifestyle with proper maintenance of daily regimen, dietary habit and avoidance of exposure to causative factors would be helpful towards better eye health. *Padabhyanga* a simple daily procedure can bring a magical remedy for prevention of various eye disorders. The "Vision 2020: Right to Sight" can be fulfilled by proper counseling and encouragement of general public to observe the above simple preventive and promotive eye care measures.

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CONFLICT OF INTEREST

Authors have no conflict of interest to declare.

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