

## CROSS SECTIONAL ETIOLOGICAL EVALUATION OF NETRAROGA NIDANA CAUSING LIFESTYLE RELATED EYE DISORDERS – A PILOT STUDY

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### ABSTRACT

Lifestyle related eye disorders include diabetic retinopathy, hypertensive retinopathy, primary open angle glaucoma, dry eye syndrome, age related macular degeneration, age related cataract, thyroid, eye disorder and refractive errors are mainly caused by improper dietary intake and improper lifestyle. In *Shalakyatantra*, Susruta gives detailed explanation of etiological factor for different eye diseases. These common and specific etiological factors mentioned in the ancient medical classics are to be clinically evaluated in the context of lifestyle related eye disorders using special scientific tools. 20 participants' responses were observed and analysed by using a questionnaire. 20 *Netraroganidanas* are categorized in to 6 groups such as external factors, factors related to vision, factors related with food intake, factors related with natural urges, factors related with habit and factors related mind and in to 4 grades such as Grade 0: No exposure, Grade 1: Mild exposure, Grade 2: Moderate exposure, Grade 3: Severe exposure. The study covered main lifestyle related eye disorders such as cataract, non-proliferative diabetic retinopathy, proliferative diabetic retinopathy, macular degeneration and primary open angle glaucoma. The graphical representation shows the definite exposure of each category of etiological factors in contributing lifestyle related eye disorders. Out of which the exposure to improper and irregular food imparting more chance to develop eye diseases. In future this study may be conducted in a big population to get a valid conclusion. This venture is to clinically evaluate the role of etiological factors mentioned in *netraroga nidana* of *Susrutha samhitha* contribute lifestyle related eye diseases.

**Keywords:** *Netraroganidana*, lifestyle related eye disorders

### INTRODUCTION

Ayurveda as the science of life was originated from *vedas*, the ancient record of mankind. The medical knowledge scattered in *vedic* literature collected as a treatise, Ayurveda, the very ancient and first medical system in India also known as *panchamaveda*. Ayurveda medical science essentially comprises eight branches in which *Shalakyatantra* dealt with preven-

tive, protective and curative measures of vital organs such as eye, ear, nose, throat, mouth, teeth and head as a whole<sup>[1]</sup>. As per Ayurvedic literature eye is the most important vital organ among five sense organs. References to eye, eye diseases and their treatment and visual perception that appear in popular Sanskrit literature express their presuppositions that were based on

natural as well as supernatural and non-corporeal phenomena. References in the philosophical literature suggest that the philosophers based their conjectures on their own observations and they tried to find causes only in the physical reality. Susrutha is the most celebrated physician and surgeon in India. Though he practiced during the 5th century B.C., many of his contributions to medicine and surgery preceded similar discoveries in the Western world. Susrutha devotes a complete volume of his experiences to ophthalmologic diseases. In the *Uttaratantra*, Susrutha enumerates a sophisticated classification of eye diseases complete with signs, symptoms, prognosis, and medical/surgical interventions. In particular, Susrutha describes what may have been the first extracapsular cataract surgery using a sharply pointed instrument with a handle fashioned into a trough. His ability to manage many common eye conditions of the time with limited diagnostic aids is a testament to his virtuosity [2]. Susrutha has been the pioneer of Indian surgery described Ayurvedic aspect of ophthalmic science includes surgical, parasurgical, conservative and rehabilitative medical management in elaborative manner. Whatever the age of Ayurveda, the *Shalakyatantra* portion remain as a uniqueness of the treatise because the ailments of eye were described based upon a strong logical and conclusive philosophy. Ancient physicians inferred that actual visual perceiver is not the eye but something else; eye is only a means to it. Dependence of visual perception on willingness to perceive probably suggested that the so-called 'non-corporeal' mind as the seat of perception. This came in the way of envisaging 'brain', a corporeal, physical entity within the body itself as the true seat of perception for quite some time. The philosophical ambience definitely influenced contemporary medical philosophy and vice versa. Modern science also considers eye is the forward extension of prosencephalon. Almost all diseases of eye in the present may have the counterpart in *Shalakyatantra* and the observations of ancient physicians were so complete that there are hardly any clinical findings of eye seen in present scenario has failed to mention in the branch of Ayurvedic science. In *Shalakyatantra*, the only branch of Ay-

urveda, developed a new tradition to explain the disease affecting individual organ. As per Susrutha, 76 eye diseases were distributed in *varthma* (eyelid), *sandhi* (canthus), *sitha* (white of eye), *asitha* (black of eye), *drushti* (refractive media and visual pathway) and *sarvakshi* (whole eye) [3]. The etiological aspect of eye diseases was elaborately explained as *samana nidana* (common etiology) and *visesa nidana* (specific etiology) [4]. When compare with modern medical system, Ayurveda medical system written in Sanskrit language is not easily understandable to the common society. This discrepancy between the systems shall be equalized by the translating the traditional Ayurvedic medical knowledge to contemporary medical terms using modern scientific tools.

Lifestyle related eye disorders include diabetic retinopathy, hypertensive retinopathy, primary open angle glaucoma, dry eye syndrome, age related macular degeneration, age related cataract, thyroid eye disorder and refractive errors are caused by improper dietary intake and improper lifestyle [5]. In *Shalakyatantra*, Susrutha gives detailed explanation of etiological factors for different eye diseases. These common and specific etiological factors mentioned in the ancient medical system are to be clinically evaluated in the context of lifestyle related eye disorders using special scientific tools. This venture is to clinically evaluate the role of etiological factors mentioned in *netraroga nidana* of *Susrutha samhitha* in contributing lifestyle related eye diseases.

**Objective:** To evaluate the role of etiological factors mentioned in *netraroganidana* of *Susrutha samhitha* contribute lifestyle related eye disorders.

**Study Setting:** *Shalakyatantra* Out Patient Department of Regional Ayurveda Research Institute for Lifestyle related Disorders, Trivandrum, Kerala

**Study design:** Cross-sectional study

**Study subjects:** Patients approached *Shalakyatantra* Out Patient Department of Regional Ayurveda Research Institute for Lifestyle related Disorders and diagnosed as having lifestyle related eye disorders.

**Inclusion:** Patients reporting in *Shalakyatantra* Out Patient Department of Regional Ayurveda Research

Institute for Lifestyle related Disorders, Trivandrum and diagnosed as having lifestyle related eye disorders

### Exclusion

1. Those patients not giving consent, 2. Mentally ill

**Study period:** 3 months

**Data collection method:** Direct interview method using questionnaire. Extreme care was provided to minimise the measurement error.

**Data collection tools:** Questionnaire (Open questions with closed end answers)

**Study procedure:** Patients reported in *Shalakyatanta* Out Patient Department of Regional Ayurveda Research Institute for Lifestyle related Disorders diagnosed having lifestyle related eye disorders were directed to data collection area. After getting consent from the patient, data collected using Questionnaire.

**Sampling:** Convenient Samples were selected accordingly so as to reduce non-response error.

**Sample size:** 20 participants were surveyed

**Data collection method:** Interview method, Questionnaire (Open questions with closed end answers)

### Questionnaire format

#### Diagnosis (Ayurveda):

#### Diagnosis (modern):

##### A. External factors

1. Immersing in cold water immediately after getting exposed to heat or sun

- a) Not doing (Grade-0),
- b) Twice or more in week (Grade-1)
- c) Once in a day(Grade-2)
- d) Multiple times in a day(Grade-3)

2. Excessive exposure to smoke or other pollutants

- a) Nil(Grade-0)
- b) Weekly once(Grade-1)
- c) More than twice in week(Grade-2)
- d) Regularly(Grade-3)

3. Injuries to eye or related structures

- a) Nil(Grade-0)
- b) Injury to neighbouring structures(Grade-1)
- c) Injury to eye(Grade-2)
- d) Injury to eye and neighbouring structures(Grade-3)

4. Excessive sudation of eye (by hot fumes)

- a) Nil(Grade-0)

b) Weekly once(Grade-1)

c) More than twice in week(Grade-2)

d) Regularly(Grade-3)

##### B. Factors related to vision

1. Looking at very distant objects for long duration

- a) Nil(Grade-0)
- b) Weekly for more than 2 hours (Grade-1)
- c) Less than 2 hours in a day(Grade-2)
- d) More than 2 hours in a day(Grade-3)

2. Watching minute objects for long time (more than 2 hours)

- a) Nil(Grade-0)
- b) More than 2 hours in week (Grade-1)
- c) More than twice in week(Grade-2)
- d) Regularly(Grade-3)

##### C. Factors related with food intake

1. intake of junk food

- a) Nil
- a) Occasionally (once in a week)
- b) More than twice in a week
- c) Regularly

2. Intake of beverages

- a) Nil
- b) Occasionally (once in a week)
- b) More than twice in week
- c) Regularly

3. Intake of horse gram

- a) Nil
- b) Occasionally (once in a week)
- c) More than twice in week
- d) Regularly

4. Intake of black gram

- a) Nil
- c) Occasionally (once in a week)
- b) More than twice in week
- c) Regularly

5. Intake of more *amalarasa* (sour taste) food/ interested to take more *amalarasa* food.

- a) Nil
- d) Occasionally (once in a week)
- b) More than twice in a week
- c) Daily

##### D. Factors related with natural urges

1. Suppression of natural urges

- a) Nil
- e) Occasionally (once in a week)
- b) More than twice in week
- c) Regularly
- 2. Suppression of tears during grief
- a) Nil
- f) Occasionally (once in a week)
- b) More than twice in week
- c) Regularly
- 3. Suppressing of urge to vomit
- a) Nil
- g) Occasionally (once in a week)
- b) More than twice in week
- c) Regularly
- E. Factors related with habit**
- 1. Abnormal sleeping habits (sleeping in day time, not sleeping in night)
- h) Nil
- i) Occasionally (once in a week)
- j) More than twice in week
- k) Regularly
- 2. Sex/masturbation
- a) occasionally
- b) more than twice in a week (irrespective of season)
- c) Daily (irrespective of season)
- d) Two or more times daily
- 3. Smoking
- a) Nil
- b) Occasionally (once in a week)
- c) More than twice in a week

- d) Regularly
- F. Factors related mind**
- 1. Continuous weeping
- a) Nil
- b) Occasionally (once in a week)
- c) More than twice in week
- d) Daily
- 2. Exhibiting short tempered(anger) nature
- a) Nil
- b) Occasionally (once in a week)
- c) More than twice in week
- d) Regularly
- 3. Exhibiting grief (mental agony)
- a) Nil
- b) Occasionally (once in a week)
- c) More than twice in week
- d) Regularly

The investigator informed me the study is purely observational and the data collected will be used for research and publication. I am giving my consent to use the data for research work.

Name of the person collected the data.....  
signature..... date... time.....

**Observation and Discussion**

The data obtained was critically evaluated analysed and plotted in tables and bar diagram. The data categorized into demographic data and data related to disease.

**Table 1:** (Patient data categorized as per age and sex)

Age	Male (No of patients)	Female (No of patients)
40-60	4	1
61-80	7	8

**Table 2:** (Patient data categorized as per diagnosis)

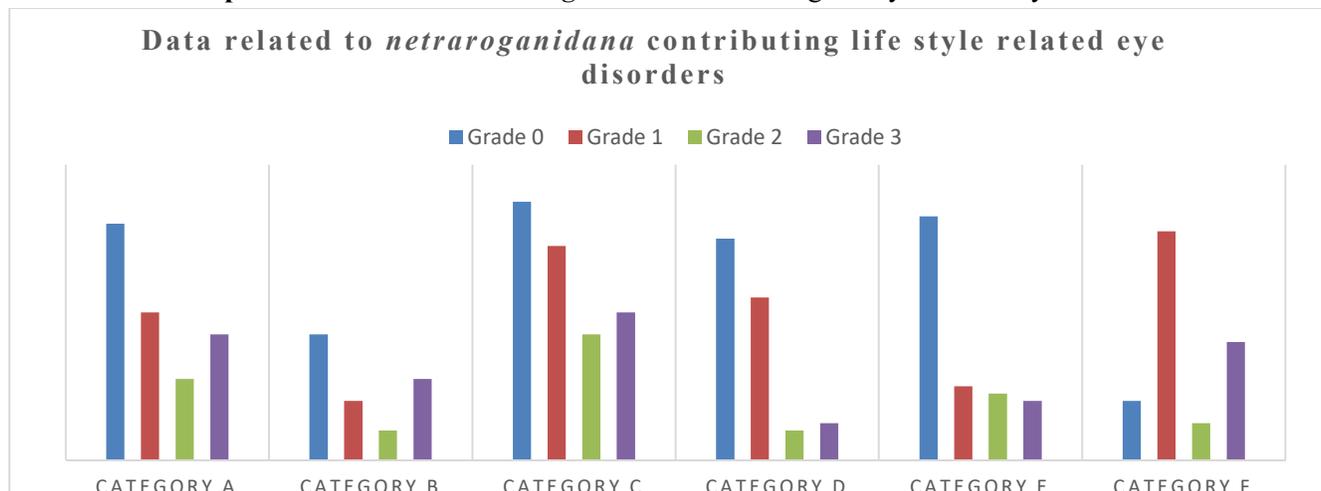
Diagnosis (Ayurveda)	No of patients
Sannipathika Thimira (Moderate Non Proliferative Diabetic Retinopathy)	4
Kaphaja Thimira (Age related Cataract)	3
Kaphaja Linganasa (Mature Cataract)	3
Vatika Thimira (Central Serous Retinopathy)	1
Pakshmparodha (Chronic Blepharitis)	1
Kaphaja Adhimandha (POAG)	3
Pittika Thimira (NPDR with pre-retinal haemorrhage )	1

Arma (Pterygium)	1
Sannipathika Linganasam (Proliferative Diabetic Retinopathy)	1
Sannipathika Kacha (Severe Non Proliferative Diabetic Retinopathy)	2

All main lifestyle related eye disorders such as diabetic retinopathy, primary open angle glaucoma, central serous retinopathy, cataract, chronic inflammatory

changes of eyelids, and allergic changes in the eye were covered in the survey.

**Graph.1:** Data related to *netraroganidana* contributing lifestyle related eye disorders



Grade 0: No exposure, Grade 1: Mild exposure, Grade 2: Moderate exposure, Grade 3: Severe exposure

**Observation and Analysis**

**1. Category A: Lifestyle related Eye Disorders due to external factors:**

Four grades representing the involvement of exposure of external etiological factors such as Immersing in cold water immediately after getting exposed to heat or sun, injuries, excessive exposure to heat, Excessive exposure to smoke or other pollutants in causing lifestyle related eye disorders.

**2. Category B: Lifestyle related Eye Disorders due to factors related to vision**

Four grades representing the involvement of exposure of factors related to vision such as looking at very distant and minute objects for long duration in causing lifestyle related eye disorders.

**3. Category C: Lifestyle related Eye Disorders due to factors related with food intake**

Four grades representing the involvement of exposure of factors related to food intake such as sour food, junk food, black gram and horse gram in causing lifestyle related eye disorders.

**4. Category D: Lifestyle related Eye Disorders due to factors related with natural urges**

Four grades representing the involvement of exposure of factors related to natural urges such as suppression of natural urges especially vomiting and lacrimal function in causing lifestyle related eye disorders.

**5. Category E: Lifestyle related Eye Disorders due to factors related with habit**

Four grades representing the involvement of exposure of factors related to habit such as abnormal sleep, excessive masturbation and smoking in causing lifestyle related eye disorders.

**6. Category F: Lifestyle related Eye Disorders due to factors related mind**

Four grades representing the involvement of exposure of factors related to mind such as weeping, anger and mental agony in causing lifestyle related eye disorders.

## DISCUSSION

From the observation, all categories of aetiologies were involved in the pathodynamics of lifestyle related eye disorders. External factors, vision related factors, dietary factors, natural urges, habit and mind related factors showed their identity as an aetiological factor in the formation of eye diseases. The pilot study underlined the role of these aetiological factors for eye diseases in the present scenario. The study covered main lifestyle related eye disorders and age group from 40 years to 80 years. Blue bar in the bar diagram indicates the non-exposure and other three colours representing the exposure toward the aetiological factors. Small sample size and short duration were the limitations of the study, hence further case control study using sufficient sample size is suggested

## CONCLUSION

From the pilot study it was observed that the etiological factors mentioned in ancient classic, *Sushruta Samhitha*, show its relevance even in present scenario. In this study we have tried to re-establish the role of etiological factors mentioned in Ayurvedic classics in causing lifestyle related eye disorders by using appropriate scientific tool. Small sample size and short duration were the limitations of the study; hence further study using sufficient sample size is suggested. In the study we could not estimate the strength of association but can show as supportive evidence. A case control study using the questionnaire in a single lifestyle eye disorder may be done to prove the strength of association.

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