



## A COMPARATIVE CLINICAL STUDY ON THE THERAPEUTIC EFFECT OF YASH-TIMADHU GHRITA TARPANA AND YASHTIMADHU GHRITA ASCHYOTHANA IN COMPUTER VISION SYNDROME

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## ABSTRACT

A group of ocular symptoms produced due to working with computer monitors are collectively known as computer vision syndrome. The ocular symptoms include Decreased vision, Burning, Red eyes, Stinging and photophobia. Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a Video Display Terminal (VDT) like Computer, Tablet, Smart phones etc. for protracted, uninterrupted periods of time. Symptoms of Computer Vision Syndrome include Headache, Blurred vision, burning sensation, Fatigue, Dry eyes, Irritated eyes, Double vision, and Difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions and air moving fast in the eyes. Dry eye is a major symptom that is targeted in the therapy of computer vision syndrome. Acharya susruta mentioned Tarpanam, Putapakam, Sekam, Acshyothanam, Anjana, the kriya kalpas for netra rogas.<sup>1</sup> Tarpana is indicated when the eyes are fatigue inactive, sushka (dry), ruksha (rough), injured, patients of vata and pitta vitiation, when there is squint, loss of lashes, clouded vision, difficulty in opening the eyes etc. conditions, Tarpana should be done to the patients.<sup>2</sup> In Ashtanga hridaya, “Sarvesham akshi rogaanaammadou Acshyothanam hitam...” for all eye diseases Acshyothanam is mentioned as treatment<sup>3</sup>.

Hence, the procedure of Tarpana and Aschyotana can be done in Computer vision syndrome. This research work was carried out at Shri Vijaya Mahantesh Ayurvedic Medical College, and R.P. Karadi Ayurvedic Hospital, Ilkal.

**Keywords:** Computer Vision Syndrome, Video Display Terminal, Tarpana, Aschyotana.

## INTRODUCTION

Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a Video Display Terminal (VDT) like Computer, Tablet, Smart phones etc. for protracted, uninterrupted periods of time. Symptoms of Computer Vision Syndrome include Headache, Blurred vision, burning sensation, Fatigue, Dry eyes, Irritated eyes, Double vision, and Difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions and air moving fast the eyes. Dry eye is a major symptom that is targeted in the therapy of computer vision syndrome.<sup>4</sup> According to the study of National Institute of Occupational Safety and Health, the computer vision syndrome (CVS) affects some 90% of the people who spent 3 hours or more at day on a Video Display Terminals (VDT).<sup>5</sup> In the opinion of American Optometric Association the treatment modalities followed for the management of Computer Vision Syndrome include Analgesics, Topical NSAIDs, Topical Steroids, Topical Cycloplegics, Topical Aesthetics, and Sedatives. The treatment adopted in modern medicine is for symptomatic relief and no definite cure is promised<sup>6</sup>. If left untreated computer vision syndrome may leads to many serious complications like corneal opacity and corneal ulceration resulting to blindness. Hence there is a need to find a safe and effective medication. Acharya susrutha mentioned Tarpanam, Putapakam, Sekam, Acshyothanam, Anjana, the kriya kalpas for netra rogas<sup>1</sup>. Tarpana is indicated when the eyes are fatigue inactive, sushka (dry), ruksha (rough), injured, patients of vata and pitta vitiation, when there is squint, loss of lashes, clouded vision, difficulty in opening the eyes etc conditions, Tarpana should be done to the patients.<sup>2</sup> In Ashtanga hridaya, "Sarvesham akshi rogaanaammadou Acshyothanam hita." for all eye diseases Acshyothanam is mentioned as treatment.<sup>3</sup> Hence both the procedure of Tarpana and Aschyotana

can be done in Computer vision syndrome. In Chikitsamanjari, Yashtimadhu Sharkara Siddha Ksheerapaka seka is mentioned as a yoga for Vatapaithiaka netra rogas<sup>7</sup>. In this clinical study this yoga has been modified and made in the form of Ghrita for the purpose of Tarpana and Aschyothana. Yashtimadhu is one among the Chakshushya dravya and Ghrita is having Snigdha guna, Madhura rasa and Sheeta veerya, Hence Tarpana and Aschyotana with Yashtimadhu ghrita can be beneficial in reducing the features of computer vision syndrome. By considering all these factors the study with above mentioned medicines were selected and entitled as "A COMPARATIVE CLINICAL STUDY ON THE THERAPEUTIC EFFECT OF YASHTIMADHU GHRI-TA TARPANA AND YASHTIMADHU GHRI-TA ASCHYOTHANA IN COMPUTER VISION SYNDROME". And done clinical trials and statistical analysis for the same.

## OBJECTIVES

- To evaluate the efficacy of yashtimadhu ghrita Tarpana in computer vision syndrome.
- To evaluate the efficacy of yashtimadhu ghrita Aschyotana in computer vision syndrome.
- Statistical comparison of yashtimadhu ghrita Tarpana and Yashtimadhu Ghrita Aschyothana in computer vision syndrome.

## METHODOLOGY

### METHODS OF COLLECTION OF DATA: -

**A) STUDY DESIGN:** Randomized comparative clinical study.

### **B) SAMPLE SIZE AND GROUPING:**

A minimum of 30 patients suffering from *Computer Vision Syndrome* were selected and made into two groups, Group A and Group B.

**Group A-** 15 patients undergone Tarpana with Yashtimadhu ghrita.

**Group B-** 15 patients undergone Aschyothana with Yashtimadhu ghrita.

**C) INCLUSION CRITERIA:**

1. Patients having symptoms of computer vision syndrome will be taken for clinical trial irrespective of sex, caste, religion, socioeconomic status and chronicity.
2. Minimum 1 year exposure to any type of video display terminals.
3. Patients between 18 and 60 years of age.

**D) EXCLUSION CRITERIA:**

1. Patients below 18 and above 60 years of age.
2. Patients those are unfit for Tarpana karma.
3. Congenital Deformities in Eyes.
4. Associated with any inflammatory and infective ocular conditions.
5. Both mechanical and chemical injuries

**E) DIAGNOSTIC CRITERIA:** On the basis of detailed signs & symptoms mentioned in books.

- Dry eyes
- Blurred vision
- Burning sensation
- Excessive tears

**F) INTERVENTION:**

**Group A** – Tarpana with yashtimadhu ghrita for 15 patients was carried out for 7 days.

**Procedure**

Tarpana

**Duration:** 1000 matra kala (approximately 20 minutes), daily for 7 days.

**Follow up:** 14th, 21st day.

**Total duration:** 21 days

**Kala:** Morning

**Group B** – Aschyothana with Yashtimadhu ghrita for 15 patients was carried out for 7 days.

**Procedure**

Aschyothana

**Duration:** For 7 days.

**Follow up:** 14th, 21st day.

**Total duration:** 21 days.

**Kala:** Morning.

**Assessment criteria:** The subjective and objective parameters of base line data to pre and post medication will be compared with gradation for assessment of the results. All the result will be analyzed statistically.

**SUBJECTIVE PARAMETERS:**

- Dry eyes
- Blurred vision
- Burning sensation
- Excessive tears

**OBJECTIVE PARAMETERS:**

Schirmer’s strip Test.

TABLE NO 1: Grading of subjective and objective parameters.

SL.NO	Parameters	Grading
1	<b>Dry eyes</b>	0- Normal(>15 mm) 1- Mild(11 to15mm) 2- Moderate(6 to 10mm) 3- Severe(<5 mm)
2	<b>Blurred vision</b>	0- No Blurred vision 1- Blurred vision occurs after 1 hour of working and disappears after work. 2- Blurred vision occurs after 1 hour of working and continues for 2 hrs after withdrawal from work. 3- Blurred vision continues for the whole day and relieved after sleep
3	<b>Burning sensation</b>	0- Absent. 1- Occassionaly present. 2- Frequently present. 3- Continuously present throughout the day.

4	<b>Excessive tears</b>	0- No watering. 1- Only outdoor and watering in windy exposure. 2- Outer watering not at indoor. 3- Outdoor and indoor watering.
5	<b>Schirmers test</b>	0- > 15 mm 1- ≥10mm to ≤ 15mm 2- ≥ 5mm to < 10mm 3- < 5mm

### Assessment and Progress

The clinical study was analysed after the treatment for the effect on subjective parameters.

#### Assessment of effect on subjective parameters

The effect of trial on clinical features was assessed on the following basis.

- Good Response- >75% reduction in severity score
- Moderate Response-51-75% reduction in severity score
- Mild Response- 25-50% reduction in severity score
- No Response- <25% reduction in severity score

## DISCUSSION

Discussion is considered to be the most important part of any research work where the researcher conveys the practical experience with special reference to textual explanations as said by *Acharya Sushruta* that theoretical knowledge of *Shastra* is alone not enough in practice, but also practical knowledge is very important.

Before establishment of truth as conclusion, discussion is done on the following sections.

- Discussion on disease.
- Discussion on drug.
- Discussion on observation.
- Discussion on Results.

### DISCUSSION ON DISEASE

Computer vision syndrome (CVS) is a condition resulting from focusing the eyes on a Video Display Terminal (VDT) like Computer, Tablet, Smart phones etc. for protracted, uninterrupted periods of time. Symptoms of Computer Vision Syndrome include Headache, Blurred vision, burning sensation, Fatigue, Dry eyes, Irritated eyes, Double vision, and Difficulty refocusing the eyes. These symptoms can be further aggravated by improper lighting conditions

and air moving fast in the eyes. Dry eye was a major symptom that is targeted in the therapy of computer vision syndrome. In the opinion of American Optometric Association, the treatment modalities followed for the management of Computer Vision Syndrome include Analgesics, Topical NSAIDs, Topical Steroids, Topical cycloplegics, Topical Anesthetics, and Sedatives. The treatment adopted in modern medicine is for symptomatic relief and no definite cure is promised. If left untreated computer vision syndrome may lead to many serious complications like corneal opacity and corneal ulceration resulting to blindness. Hence there is a need to find a safe and effective medication. So, I selected the disease computer vision syndrome for my work. The present clinical study was conducted at Srivijaya Mahantesh Ayurveda Medical College, and R.P Karadi Ayurveda Hospital, Ilkal, Karnataka.

### DISCUSSION ON DRUG

This study was carried out on 30 patients in two groups, **Group A** and **Group B**. **Group A** had 15 patients treated with the procedure Tarpana with yashtimadhu ghrita and **Group B** 15 patients treated with the procedure with Aschyothana with Yashtimadhu ghrita. Yashtimadhu Sharkara Siddha Ksheerapaka seka is mentioned as a yoga for Vata paithika netra rogas. In this clinical study this yoga modified and made in the form of Ghrita for the purpose of Tarpana and Aschyothana.

#### Mode of action of drug:

Yashtimadhu is one among the Chakshushya dravya, and Ghrita has Snigdha guna, Madhura rasa and Sheeta veerya, hence application of Yashtimadhu ghrita was beneficial in reducing the features of diseases of eye. So that it showed a better result in both Tarpana and Aschyothana procedures that I had conducted.

*Go Ghrita* and *Go Dugdha* helped to subside the vitiated *Vata Pitta Doshas*.

**Go Ghrita:** Ghee is sweet, soft and cold in potency. Due to its cold property ghee mitigates Pitta, due to oil-ness it mitigates *Vata* and due to processing with other medicinal herbs it mitigates *Kapha*. Vitamin A and E are antioxidants and are helpful in preventing oxidative injury to the body. Vitamin A keeps epithelial tissue of the body intact, keeps the outer lining of the eyeball moist and prevents blindness. Cornea is lipophilic and *Ghrita* as lipid helps in absorption of drug.

#### **PROBABLE MODE OF ACTION OF TARPANA**

**AND ASCHYOTHANA:** As per *Ashtanga Hrudaya*, sincere efforts should be made by every individual to preserve his or her vision till the last breath of life; because, for an individual who is blind, day and night are the same and this beautiful world is of no use to him even if he possesses a lot of wealth. Tremendous advancement made in ophthalmic medicine in recent years has begun a new era in the history of ophthalmology. Modern ophthalmologists and scientists have been able to convince the new generation about the significance of eye care and the right procedure to follow in order to ensure healthy vision. At the same time, there are various challenging problems, arising before modern ophthalmologists compelling them to find therapeutic procedures hidden in ancient medical manuscripts. Clinical *Shalaky-Tantra* manages eye ailments via topical and systemic measures. The clinical trial drug yashtimadhu ghrita has predominance of madhura rasa, snigdha guna, sheeta veerya and rasayana. Considering the Dosha haratva and karmukata, the trial drug is Vata-Pitta shamaka by virtue of its Rasa, Guna, Virya and prabhava. Thus, the overall effect of the compound drug is vata pitta shamaka and hence it disses integrates the pathology of the disease computer vision syndrome, which is vata paittika in its manifestation. Among the Tarpana and Aschyotana, topical applications play pivotal role. May be due to the limitations of systemic formulations to reach the target organ due to same blood-aqueous, blood-vitreous and the blood-retinal

barrier, topical applications are inevitable in ophthalmology.

**ROUTES OF DRUG ADMINISTRATION-** In *Kriyakalpa* mucosal and cutaneous routes are commonly used. Mucous membrane is good absorbing surface.

#### **DISCUSSION ON OBSERVATION**

**Gender:** Among 30 patients, 15 patients (50%) were Males, and 15 patients (50%) were females. In females at the time of transitional and post-menopausal period, lack of oestrogen receptors presents in the conjunctiva and meibomian glands lead to its dysfunction resulting in dry eyes. But here in my study the gender is came in equal ratio.

**Age:** Among 30 patients, 7 patients (23.3%) belong to 21-25 age group, 7 patients (23.3%) belonged to 26-30 age group, 04 patients (13.3%) were belonging to 31-35 age group, 05 patients (16.6%) were belonging to 36-40 age group, 02 patients (6.6%) belonged to 41-45 age group, 01 patient (3.3%) were belongs to 51-55 age group, 02 patients (6.6%) belonged to 56-60 age group. In this study 14 patients almost 50% of patients are under the age group of 21to 30 years. These age group peoples were more exposure to computer screen, any type of VDT etc, can also act as nidana for computer vision syndrome.

**Religion:** In the present study maximum number of patients, 27 patients (90%) were Hindus. This presentation may be because of a greater number of Hindu populations. The relation could not be established in the present clinical study. There is no reference available that establishes the relation between religion and its associated cultural practices with the incidence of computer vision syndrome.

**Occupation:** Among 30 patients, 01 patient (3.3%) were Bank clerk, 02 patient (6.6%) were doing Business, 04 patients (13.3%) were Clerk, 02 patient (6.6%) were computer operator, 04 patients (13.3%) were house wives, 02 patients (6.6%) were office attender, 01 patient (3.3%) were office clerk, 01 patient (3.3%) were office staff, 02 patients (6.6%) were staff nurse, 08 patients (26.6%) were students, 01 patient (3.3%) were accountant, 01 patient (3.3%) were assistant manager post, and 01 patient (3.3%)

were government employee. In this as a part of occupation majority of patients were more exposure to computer screen, any type of VDT etc, can also act as nidana for computer vision syndrome. Students are more in the category,

**Socio economic Status:** Among 30 patients, 21 patients (70%) belonged to Middle Class. Though a direct relationship between socio economic status and present condition can be established. The impact of living conditions, excessive use of VDT like mobiles, tablets, and computers and surrounding environment, exposure to smoke, dust plays an important role in the manifestation of features of computer vision syndrome.

**Education:** In both groups maximum patients are degree holders, followed by Puc then sslc and then diploma. Among 30 patients, 16 patients (53.3%) completed their degree, 01 patients (3.3%) completed diploma, 10 patients (33.3%) completed PUC, and 03 patients (10%) belong to SSLC completed category. Direct relationship between education and present condition can be established, in the impact of living condition, excessive use of VDT like mobiles, tablets, and computers plays an important role in the manifestation of features of computer vision syndrome.

**Diet:** Among 30 patients, 10 patients (33.3%) were belonged to Vegetarian and 20 patients (66.6%) were belonged to mixed diet. In both groups maximum patients are with mixed diet and less than 50% are vegetarian.

**Agni:** Among 30 patients, 21 (70%) belonged to *madhyama agni*. followed by *avara* and then *pravara agni*.

**Nidra:** Among 30 patients, 15 patients (50%) were Sound sleep, and 15 patients (50%) were Disturbed sleep. so, no difference is seen.

**Aggravating Factor:** Both groups show VDT, dust, cold, sunlight with VDT are the most aggravating factors. It shows that those who are using VDT for more time and exposure to other external features like dust, cold, sunlight shows more prone to computer vision syndrome.

**Relieving Factor:** Among 30 patients, 25 patients (83.3%) were got relief from rest only.

In both groups Rest is the most common relieving factor.

## DISCUSSION ON RESULTS

### 1. EFFECT OF TREATMENT ON DRYNESS OF EYE:

Dryness was observed in almost all patients. The mean BT score in Group A was 3.93, reduced to 2.43 on 7th day, 1.97 on 14th day and 1.67 on 21st day respectively. The results were as p value < 0.05, there is significant difference in dryness of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment. In Group B, the mean BT score of Dryness of eye was 3.63 reduced to 2.57 on 7th day, 2.07 on 14th day and 1.73 on 21st day respectively. The results were as p value < 0.05, there is significant difference in dryness of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment. The study shows that both Tarpana and Aschyothana with Yashtimadhu ghrita were highly effective in relieving dryness of eye after application and there was an even better gradual outcome with respect to the symptom in the 7days. In the follow-ups also there was no recurrence of dryness as the result sustained. 24 out of the 30 patients had good relief, 0 patients got mild relief and 6 patients got moderate relief from Dryness of eye, in which the result includes the follow-up also. After all the comparison of both the groups was done, it was explored that the variation of the Mean rank of Dryness of eye is less in group A than group B. But as p value > 0.05, there is no statistically significant difference between both groups by “Mann Whitney U” test. The ocular surface and tear secreting glands function as an integrated unit. Disease or dysfunction of this functional unit results in an unstable and poorly maintained tear film that causes ocular irritation symptoms like dryness of eyes and possible damage to the ocular surface epithelium. Hyper osmolarity results due to decreased tear production (due to aging or certain medical conditions) or excessive tear evaporation (due to decreased blinking rate) of the ocular surface resulting in the Dryness of the eyes. Excessive smoke, dust and

air-conditioned environment also play an important role in developing dryness. Increase in *Ruksha* and *Khara Guna* of *Vata* along with the *Teekshna Guna* of *Pitta* results in *Rukshatha of Netra*. The *Snigdha Guna* and *Vata Pitta samana Karma* of *Go Dugda* help to reduce the *Rukshata* of *Netra*.

**According to Ashtanga Hrudaya,**

गुरुशीतसरस्निग्धमन्दसूक्ष्ममृदुद्रवम् | औषधंस्नेहनंप्रायो, विपरीतविरूक्षणम् ||१||  
(A.H.Su.16/1)

*Sneha dravyas* possessing the qualities such as *Guru*, *Sheeta*, *Sara*, *Snigdha*, *Manda*, *Mrudu* and *Drava Guna* will reduce the *Rukshata* produced by *Vata Dosh*.

सर्पिर्मज्जावसातैलंस्नेहेषुप्रवरंमतम् | तत्रापिचोत्तमंसर्पिःसंस्कारस्यानुवर्तनात् ||२||  
(A.H.Su.16)

*Sarpi*, *Majja*, *Vasa* and *Taila* are considered the best among oiling substances; among these *Sarpi* is the best. *Snigdha*, *Mrudu Guna* and *Vata Pitta shamana Karma* of *Ghrita* helps to reduce the *Ruksha Guna* thereby reducing the dryness. *Snehana Aschyotana* stimulates lipid secreting glands that form part of the tear film and prevents early evaporation. *Go Ghrita* contains 36.4% proteins and rich in Vitamin A, Proteins which possesses Muco-adhesive properties and thus resembles tear mucus glycoprotein and lipid content in the *Ghrita* maintains the lubrication of ocular surface. Vitamin A keeps epithelial tissue of the body intact, keeps the outer lining of the eyeball moist. The antioxidant action of vitamin E protects the corneal and conjunctival epithelium.<sup>8</sup>

## 2. EFFECT OF TREATMENT ON BLURRED VISION:

Blurred vision was observed in almost all patients. The mean BT score in Group A was 3.93, reduced to 2.40 on 7th day, 1.87 on 14th day and 1.80 on 21st day respectively. The results were as p value < 0.05, there is significant difference in blurred vision during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment. In Group B, the mean BT score of blurred vision was 3.60 reduced to 2.47 on 7th day, 1.97 on 14th day and 1.97 on 21st day respectively. The results were as p value < 0.05, there is significant difference in blurred vision during each

follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment. The study shows that both Tarpana and Aschyothana with Yashtimadhu ghrita were highly effective in Blurred vision after application and there was even better gradual outcome with respect to the symptom in the 7days. In the follow-ups also there was no recurrence of Blurred vision as the result sustained. 23 out of the 30 patients had good relief, 0 patients got mild relief and 7 patients got moderate relief from Blurred vision, in which the result includes the follow-up also. After all the comparison of both the groups was done, it was explored that the variation of the Mean rank of Blurred vision is less in group A than group B. But as p value > 0.05, there is no statistically significant difference between both groups by “Mann Whitney U” test.

## 3. EFFECT OF TREATMENT ON BURNING SENSATION

Burning sensation was observed in almost all patients. The mean BT score in Group A was 3.90, reduced to 2.43 on 7th day, 2.03 on 14th day and 1.63 on 21st day respectively. The results were as p value < 0.05, there is significant difference in Burning sensation of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

In Group B, the mean BT score of burning sensation was 3.60 reduced to 2.50 on 7th day, 2.00 on 14th day and 1.90 on 21st day respectively. The results were as p value < 0.05, there is significant difference in burning sensation of eye during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that both Tarpana and Aschyothana with Yashtimadhu ghrita were highly effective in relieving Burning sensation of eye after application and there was an even better gradual outcome with respect to the symptom in the 7days. In the follow-ups also there was no recurrence of burning sensation as the result sustained. 21 out of the 30 patients had good relief, 0 patients got mild relief and 9 patients got moderate relief from burning sensation, in which the result includes the follow-up also.

After all the comparison of both the groups was done, it was explored that the variation of the Mean rank of Burning sensation of eye is less in group A than group B. But as p value  $> 0.05$ , there is no statistically significant difference between both groups by “Mann Whitney U” test.

Reduced tear production leads to inflammatory reaction and causes burning sensation due to inflamed meibomian glands, conjunctival goblet cells and glands of manz.<sup>9</sup> Instability of the lipid layer causes the evaporation of the aqueous layer that will leads to the dryness of the eyes and burning sensation. Abrasions to the corneal and conjunctival epithelium also cause burning sensation.

Due to increased *Tikshna* and *Ushna Guna* of *Pitta* along with *Ruksha Guna* of *Vata* in *Netra, Daha* will manifest as a symptom.

#### Acc.to *Ashtanga Hrudaya*

नवनीतनवंबृष्यंशीतवर्णबलामिकृतु॥३५॥

सङ्ग्राहिवातपित्तासृक्क्षयाशोर्दितकासजित्

क्षीरोद्भवंतुसङ्ग्राहिरक्तपित्ताक्षिरोगजित्॥(A.H.Su.5/35)

*Ksheerothitha Sarpi* is used for this present study. Due to its *Vata-Pitta hara Karma, Chakshushya, Snigdha Guna* and *Sheeta veerya* properties it reduced the burning sensation.

#### 4. EFFECT OF TREATMENT ON EXCESSIVE TEARS :

The mean BT score of Excessive tears in Group A was 3.87, reduced to 2.23 on 7th day, 2.00 on 14th day and 1.90 on 21st day respectively. The results were as p value  $< 0.05$ , there is significant difference in Excessive tears during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

In Group B, the mean BT score of Excessive tears was 3.53 reduced to 2.33 on 7th day, 2.07 on 14th day and 2.07 on 21st day respectively. The results were as p value  $< 0.05$ , there is significant difference in excessive tears during each follow up. It decreased significantly. And it remains decreased in two follow ups even after completing the treatment.

The study shows that both Tarpana and Aschyothana with Yashtimadhu ghrita were highly effective in Excessive tears after application and there was even better gradual outcome with respect to the symptom in the 7 days. In the follow-ups also there was no recurrence of Excessive tears as the result sustained. 22 out of the 30 patients had good relief, 0 patients got mild relief and 8 patients got moderate relief from Excessive tears, in which the result includes the follow-up also.

After all the comparison of both the groups was done, it was explored that the variation of the Mean rank of Excessive tears is less in group A than group B. But as p value  $> 0.05$ , there is no statistically significant difference between both groups by “Mann Whitney U” test.

#### 5. EFFECT OF TREATMENT ON SCHIRMERS TEST:

The effect of treatment on Schirmers test within both groups, BT to AT the p value ( $< 0.001$ ) was statistically highly significant in both the groups.

On Comparing between the groups, before treatment to after treatment the P value ( $> 0.05$ ) was statistically non-significant.

The Mean rank of Group A was higher when compared to the Mean rank of Group B and thus, concluding that the effect of treatment, on Schirmers test in Group A was better than Group B. But as p value  $> 0.05$ , there is no significant difference between both groups.

The Schirmers test is an objective measure of the lacrimal secretory capacity. When tear production lowers to a certain point, the eyes can become dry and easily irritated and inflamed which can be objectively assessed with Schirmer's strip.<sup>89</sup>

*Tarpana* and *Aschyotana* procedures helped in breaking the pathogenesis as explained for subjective parameters will gradually help in improving the readings on Schirmer's strip.70% patients got improvement in Schirmers test.



## OVERALL CONCLUSION

**Overall Conclusion:** Symptom wise result in both groups separately is as follows:

**TABLE NO 2: Symptom wise result in both groups separately**

Symptom	Relief in %	
	Group A	Group B
Dryness of eye	87%	73%
Blurred vision	87%	67%
Burning Sensation	80%	60%
Excessive tears	87%	60%
Schimer's Test (Right Eye)	100%	87%
Schimer's Test (Left Eye)	100%	80%

From the above table it is clear that, Group A shows better result than group B in each symptom.

**In comparison of group A and Group B**, the mean rank of every symptom is less in Group A than group B. It means each symptom in group A is effectively reduced than group B. So, the procedure of Tarpana with Yashtimadhu ghrita is more effective than Aschyothana with Yashtimadhu Ghrita in Computer Vision Syndrome. So, the Alternate hypothesis  $H_1$  is accepted that is *“There is significant effect of yashtimadhu ghrita Tarpana than yashtimadhu ghrita Aschyotana in computer vision syndrome”* and rest of all are rejected.

## DISCUSSION

On the basis of clinical study, conceptual analysis and observations made in this study the following conclusions can be drawn.

- CVS is one of the most common diseases in the present era.
- Duration of computer work and exposure to any other Video Display Terminal (VDT) is directly proportional to the severity of symptoms in CVS.
- The Ayurveda sidhantas are formulated, time tested and applied for centuries to understand diseases, and to plan their management. This present study has the following points as a befitting conclusion proving that Ayurveda sidhantas are eternal and can be applied in understanding newer diseases like Computer Vision Syndrome.
- Asatmendriyartha samyoga, atiyoga of chakshurendriya like watching highly luminous, fast-moving flashing colours for a prolonged time

have been mentioned in classics and has been validated in understanding the aetiological factors of CVS.

- Chakshushya yoga selected in this study has proved that they are beneficial in diseases, where nidana parivarjana is not completely possible in day today life. Because many are using VDT as a part of their work, some people used it for entertainment purposes, some used VDT for study purposes.
- The Siddhanta Nidana parivarjanameva chikitsa is validated in the present study.
- If the diseases are treated in poorva roopaavastha itself, they don't become severe. This Siddhanta is validated in CVS also, like all other diseases.
- Yashtimadhu Ghrita is found to be beneficial in reducing signs and symptoms of CVS, and beneficial for eyes during treatment.
- The Aim of the study is to evaluate the effect of Yashtimadhu Ghrita Tarpana and Yashtimadhu ghrita Aschyothana in Group A and Group B respectively and results was assed based on the subjective and Objective parameters and found out which one is more effective in CVS.
- The causative factors and signs and symptoms of CVS explained by different Authors were majorly observed with the patients during clinical study.
- After statistical analysis conclusions have been done by analysing the data of pre and post medication on subjective and objective parameters. In this study compared to Group B (Aschyothana with Yashtimadhu ghrita), Group A (Tarpana

with Yashtimadhu Ghrita) shows significant results in subjective and objective parameters.

- There is a more significant effect of **yashtimadhu ghrita Tarpana** than **yashtimadhu ghrita Aschyotana** in **computer vision syndrome**.
- No complications were noticed during various steps of treatment.

## CONCLUSION

The above study can conclude that *guda* plays a vital part in the excretory process of the human body. It helps in the excretion of *mala* and *apan vayu* or excretory products of our body. Along with these functions, it has significant surgical importance in the human body. Its structural relevance should be kept in mind while performing any surgical or para-surgical procedures. Otherwise, it can be a life-threatening condition.

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