

# Chandanadi ghrita tarpana in Computer vision syndrome—A Pilot Study

## Research Article

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### Abstract

Computer vision syndrome, a recent occupational hazard, is a collection of features like ‘eye strain’, ‘blurred vision’, ‘redness’, ‘dryness’, ‘headache’, ‘diplopia’ etc. About 50 to 90% of the regular computer users are affected with these symptoms. Although a number of researches have been carried out, no curative treatment has been achieved yet. Only palliative measures in the form of tear supplements are available which have to be used lifelong by the patients. Hence, aim of this pilot study is to understand the efficacy of ‘chandanadi ghrita tarpana’ in computer vision syndrome.

**Keywords :** Chandanadi ghrita, Tarpana

### Introduction

The invention of computer and advancement in information technology has revolutionized and immensely benefited the society but at the same time has caused symptoms related to its usage such as ocular sprain, irritation, redness, dryness, blurred vision and double vision.

This cluster of symptoms is known as “computer vision syndrome” which is characterized by the visual symptoms which result from interaction with computer display or its environment.(1)

Since computer use is such a visually demanding task, vision problems and symptoms have become very common in today’s work place. Most studies indicate that computer operators who view their video display terminals (VDT) report more eye related problems than non VDT office workers.

NIOSH Survey (National Institute of Occupational Safety and Health) has reported that visual symptoms occur in 75-90% of VDT workers as opposed to 22% of musculoskeletal disorders (carpel tunnel syndrome) in computer users.(2)

The American Optometric Association (AOA) defines computer vision syndrome as “Complex of eye and vision problems related to near work, which are experienced during or related to computer use, like dry eyes, eye strain, neck and / or back pain, light sensitivity and fatigue, red eyes, burning eyes, inability to focus near objects”. These symptoms can result from individual visual problems, poor work station configuration and improper work habits.(3)

### Objectives of the study

To know the efficacy of ‘chandanadi ghrita tarpana’<sup>4</sup> in the management of ‘Computer vision syndrome’.

### Materials and methods

#### Source of data:

The patients with signs and symptoms of ‘computer vision syndrome’ were selected from OPD and IPD of ‘Shalakyata Tantra’ of Sri Jayachamarajendra Institute of Indian Medicine, Bangalore.

### Methods of collection of data

The selection was done on the basis of clinical examination. A careful clinical history of all those patients complaining of ‘eye strain’, ‘blurred vision’, ‘redness’, ‘dryness’, ‘headache’, ‘diplopia’ – with 3 or more symptoms were considered. After thorough examination and establishment of the diagnosis, the patients were taken for the clinical study.

### Inclusion criteria and exclusion criteria

Patients between 16 to 70 years of age who regularly use computer for a minimum 4 hours a day and have used it for a minimum of 6 months continuously; who have the complaints of eye strain, dry eyes, headache, blurred vision, diplopia, redness and progressive refractive changes with 3 or more features are included for the study.

Patients suffering from infectious conditions of the eye like conjunctivitis, scleritis, uveitis, glaucoma, stye etc. Any fundus pathology like optic atrophy, diabetic retinopathy, hypertensive retinopathy, papilledema etc; and patients with neck and shoulder discomfort, back pain are excluded.

### Study design

Ten patients were randomly selected and treated by ‘tarpana’ with ‘chandanadi ghrita’<sup>(4)</sup> once a day in the morning for 7 days. Later ‘tarpana’ was resumed for

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another 7 days. Similarly, this procedure was repeated for 3<sup>rd</sup> and 4<sup>th</sup> sittings.

### Follow up period

Observations were done regarding the changes after the treatment once in 15 days for a period of 3 months.

### Assessment phase:

Effect of the therapies was compared before and after the treatment on the basis of self formulated scoring scale to signs and symptoms in subjective and objective parameters.

### Subjective Parameters

Eye strain, dry eyes, blurred vision, headache, redness and diplopia

### Objective Parameters

Refractory changes – Snellen’s chart assessment, Schirmer’s Test, Tear Break up Time (TBUT), Rose Bengal staining.

### Parameters Gradation Index:

#### 1. Eye strain:

- 0 – Absent
- 1 – Mild eye strain
- 2 – Moderate eye strain
- 3 – Severe eye strain.

#### 2. Dryness:

- 0 – No feeling of dryness.
- 1 –Mild dryness.
- 2 –Moderate dryness.
- 3 – Severe dryness.

#### 3. Blurred vision:

- 0 – No blurriness
- 1 – Mild blurriness
- 2 – Moderate blurriness
- 3 –Severe blurriness

#### 4. Headache:

- 0 – Absence of headache.
- 1 – Mild – Tolerable, negligible.
- 2 – Moderate – Constant, tolerable.
- 3 – Severe – Intolerable, Constant.

#### 5. Redness:

- 0 – Absent.
- 1 – Discrete, thin vessels vascular network limited to P.C. & fornix.
- 2 – Prominent vascular network involving peripheral part of B.C.
- 3 – Fiery red eye involving whole B.C. & circum corneal zone.

#### 6. Diplopia:

- 0 – Absent
- 1 – Mild – Transient diplopia
- 2 – Moderate – Diplopia in few direction of gazes
- 3 – Severe – Constant diplopia in all direction of gazes

#### 7. Progressive refractory changes:

- 0 – 6/6
- 1 –6/9
- 2 - 6/12

- 3 – 6/18
- 4 - 6/24
- 5 – 6/36
- 6 - 6/60

#### 8. Schirmer’s test:

- 0 – Level of wetting of tear strip above 15mm in 5 minute.
- 1 – Level of wetting of tear strip above 10mm - 15mm in 5 minute.
- 2 – Level of wetting of tear strip above 5mm - 10mm in 5 minute.
- 3 – Level of wetting of tear strip at 1mm - 5mm in 5 minute.

#### 9. Tear break up time:

- 0 – The appearance of dry spots after 15 sec.
- 1 – The appearance of dry spot between 10-15 sec.
- 2 – The appearance of dry spot between 5-10 sec.
- 3 – The appearance of dry spot within 5 sec.

#### 10. Rose Bengal staining:

- 0 – No staining
- 1 – Pattern C
- 2 – Pattern B
- 3 – Pattern A

### Assessment criteria:

- No improvement – 0 (0)
- 1 line improvement – 1 (15%)
- 2 lines improvement – 2 (30%)
- 3 lines improvement – 3 (45%)
- 4 lines improvement – 4 (60%)
- 5 lines improvement – 5 (75%)
- 6 lines improvement – 6 (90%)

### Results

The observations and the results are tabulated as in Table no 1.

### Discussion

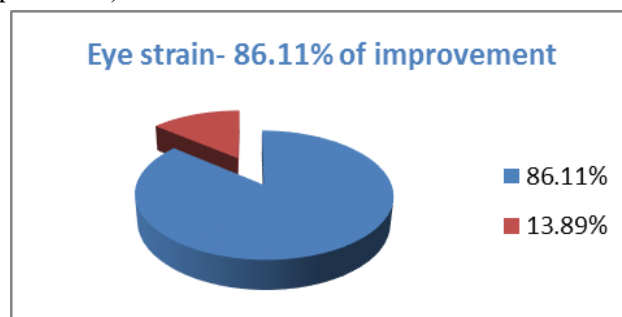
#### Discussion on Results

To evaluate the effect of treatment on individual parameters, paired t-test was applied. Significance is accessed at 5% level of significance. A null hypothesis has been stated that the results significance is at 0.05. The obtained results are as shown below.

#### Effect of therapy on individual parameter

##### 1. Eye strain

There was 85.106% of improvement in the subjective tiredness symptom of the eyes, with t value 19.493, the result was extremely statistically significant (p<0.0001).

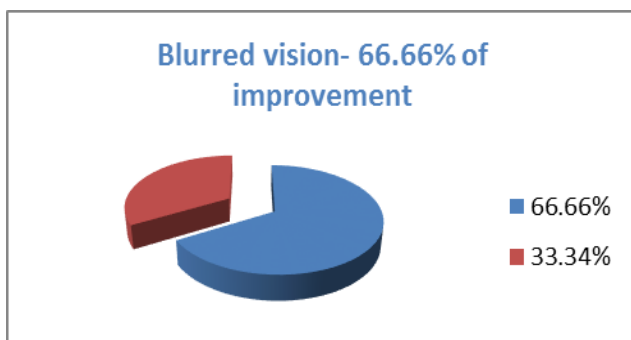


**Table-1: Showing Individual study of the parameters**

Parameters	Average Difference		Difference	% difference	SD	SE	T value df=19	P value	Remarks	
	BT	AT	(d)	% d						
Eye strain	2.35	0.35	2	85.106	0.458831	0.102598	19.49359	<0.0001	H.S	
Blurred vision	1.5	0.5	1	66.66	0.324443	0.072548	13.78405	<0.0001	H.S	
Dryness	1.5	0.25	1.25	83.333	0.7163	0.16018	7.8036	<0.0001	H.S	
Redness	0.95	0.15	0.8	89.4737	0.48936	0.109424	7.767925	<0.0001	H.S	
Headache	1.45	0.55	0.9	62.06	0.648886	0.145095	6.892024	<0.0001	H.S	
Diplopia	0.15	0	0.15	100	0.366348	0.081918	1.831104	>0.05	N.S	
Refractory changes	RE LE	2.1	0.9	1.2	57.142	1.23969	0.277204	4.328941	<0.05	S
		2.15	0.8	1.35	62.7907	1.386969	0.310136	4.352932	<0.0001	H.S
Schirmer's	RE LE	1.05	0.25	0.8	76.1904	0.523148	0.11698	6.838803	<0.0001	H.S
		0.95	0.35	0.6	63.1578	0.502625	0.11239	5.338539	<0.0001	H.S
TBUT	RE LE	0.7	0.2	0.5	71.4285	0.606977	0.135724	3.683942	<0.05	S
		0.65	0.2	0.45	69.23	0.604805	0.135239	3.327453	<0.05	S
RBS	RE LE	0.45	0.25	0.2	44.4444	0.410391	0.091766	2.179449	<0.05	S
		0.45	0.2	0.25	55.5555	0.444262	0.0993	2.516611	<0.05	S

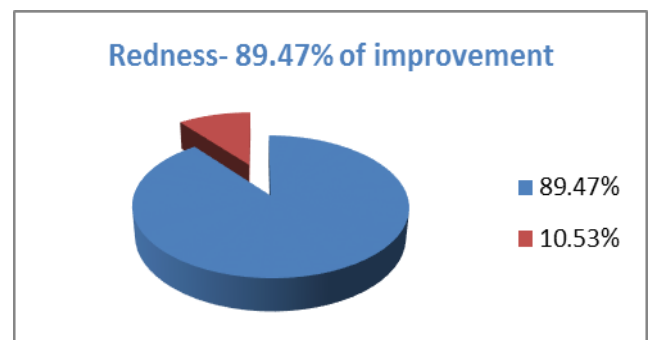
**2. Blurred vision**

There was a 66.66% improvement in the symptom, with t value 13.38, the result was extremely statistically significant (p<0.0001).



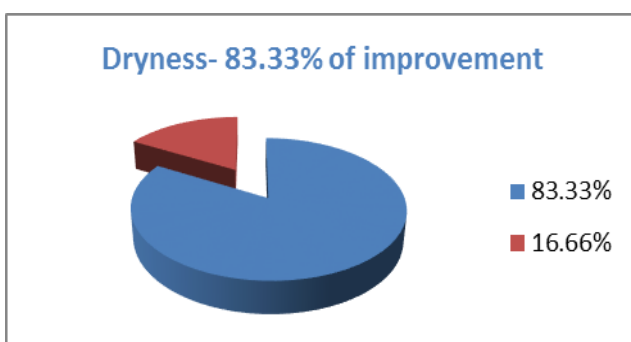
**4. Redness**

There was 89.47% improvement in the symptom, with t value 7.767, the result was extremely statistically significant at (p<0.0001)



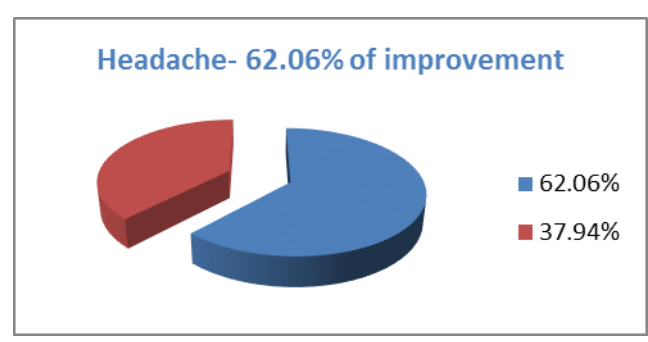
**3. Dryness**

There was an 83.33% improvement in the symptom, with t value 7.8036, the result was highly statistically significant (p<0.0001).



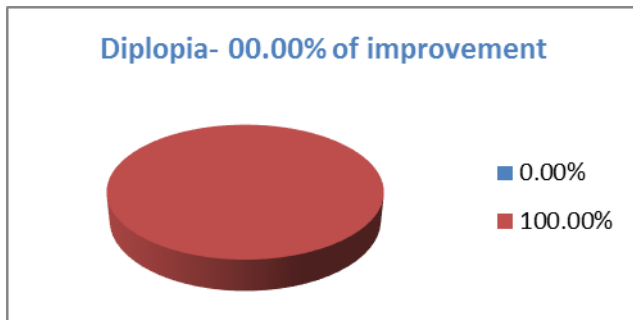
**5. Headache**

There was a 62.06% of improvement in the sign, with t value 6.892, the result was statistically extremely significant (p<0.0001).



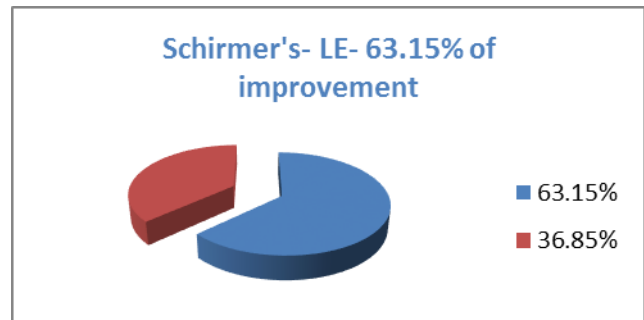
### 6. Diplopia

There was a 0% improvement in the symptom, with t value 1.83, the result was not statistically significant ( $p < 0.0001$ ).



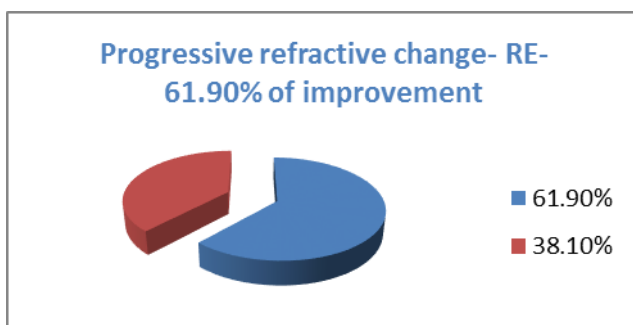
### 10. Schirmer's LE

There was a 63.15% improvement in the feature, with t value 5.338, the result was extremely statistically significant ( $p < 0.0001$ ).



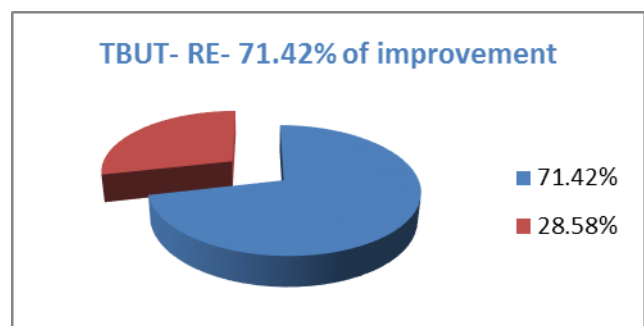
### 7. Progressive refractory changes RE

There was a 61.9% improvement in the feature, with t value 4.6113, the result was extremely statistically significant ( $p < 0.0001$ ).



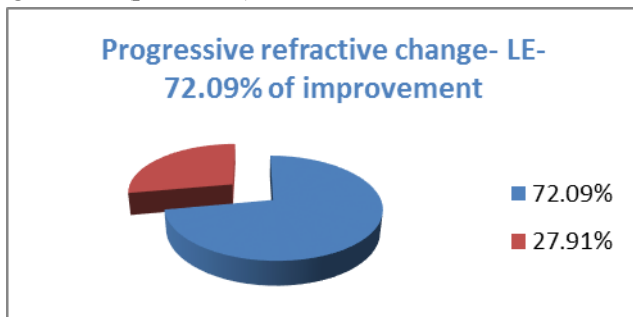
### 11. TBUT- RE

There was a 71.42% improvement in the feature, with t value 3.683, the result was



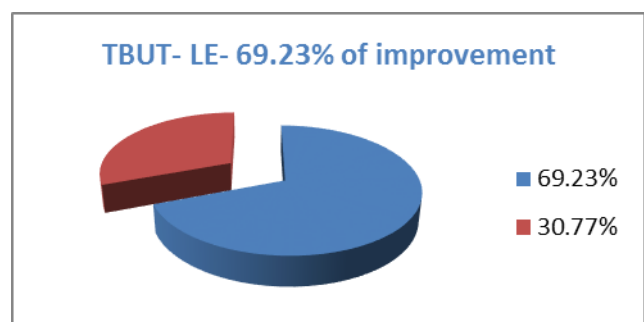
### 8. Progressive refractory changes LE

There was a 72.09% improvement in the feature, with t value 5.263, the result was extremely statistically significant ( $p < 0.0001$ ).



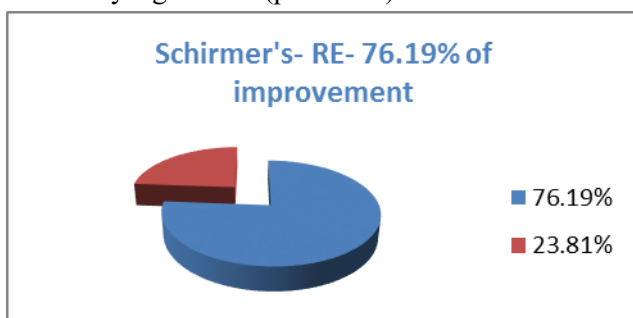
### 12. TBUT- LE

There was a 69.23% improvement in the feature, with t value 3.3274, the result was statistically very significant ( $p < 0.0035$ ).



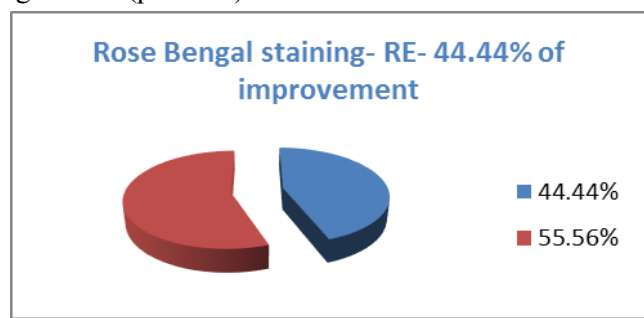
### 9. Schirmer's RE

There was a 76.19% improvement in the feature, with t value 6.8388, the result was extremely statistically significant ( $p < 0.0001$ ).



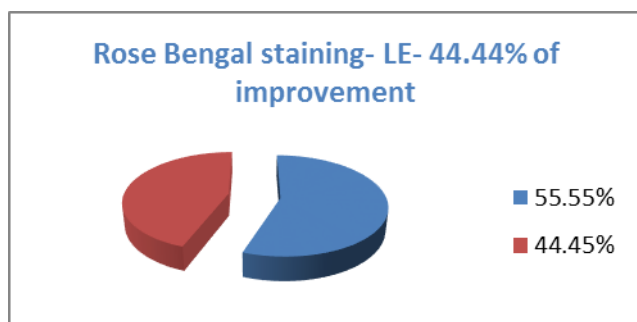
### 13. Rose Bengal staining - RE

There was a 44.44% improvement in the feature, with t value 2.1794, the result was statistically significant ( $p = 0.042$ ).



#### 14. Rose Bengal staining - LE

There was a 55.55% improvement in the feature, with t value 2.5166, the result was statistically significant ( $p=0.0210$ )



#### Discussion

During the post treatment period, only three out of 10 of treated patients had recurrence of the complaints. Therefore treatment of 'computer vision syndrome' can be managed with 'chandanadi ghrita tarpana' alone.

So, this pilot study reflects the true efficaciousness of 'chandanadi ghrita tarpana' when used judiciously in selected cases of 'computer vision syndrome'.

The 'chakshushya' action of the ingredients of 'chandanadi ghrita' and the soothing influence of this medicated ghee delivers the desired results in 'computer vision syndrome'.

Tarpana done here with 'chandanadi ghrita' forms an occlusive film over the surface of the eyeball and improves the composition of tear film by enhancing the mucin and aqueous layers.

It prevents frictional damage to the ocular surfaces secondary to lid movement or extra ocular movements. It acts by retaining fluid and maintaining hydration of the ocular surface.

It is effective in reducing evaporation rate in patients with computer vision syndrome. Prevents desiccation from corneal tear film, reduces burning sensation in patients with dryness.

It also reduces reflex tearing and reduces the need for artificial tears and warm compressors. The nourishing property and 'chakshushya guna' of 'ghrita', 'yashtimadhu', and 'daruharidra' helps in relieving 'vata prakopaka' symptoms like eye strain, headache, diplopia, dryness and inability to focus near objects.

#### Conclusion

CVS is a new occupational hazard seen in computer users, hence cannot be expected to be in Ayurvedic period, which is going to be a key health threat in near future.

This pilot study of 'chandanadi ghrita tarpana' shows encouraging results in the improvement of different symptoms of 'computer vision syndrome'.

As the results are encouraging, this study can be taken up for further large-scale clinical study to re-establish the efficacy of 'chandanadi ghrita tarpana' in 'computer vision syndrome'.

#### References

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