



Research Paper

A Clinical study on the Role of Akshi Tarpana with Saptamrita lauh and Amalaki rasayana churna sevana in Prathama Patalagata Timira (simple myopia).

Jasmine kaur¹, Dayashankar Singh², Arun kumar pandey³

1. PG Scholar, Department of Shalakya, Patanjali Bhartiya Ayurvedic Evum Anusandhan Sansthan, Haridwar.
2. Associate Professor, Department of Shalakya, Patanjali Bhartiya Ayurvedic Evum Anusandhan Sansthan, Haridwar.
3. Assistant Professor, Department of Shalakya, Patanjali Patanjali Bhartiya Ayurvedic Evum Anusandhan Sansthan, Haridwar.

Abstract

The eyes are said to be most important than all other Indriyas. They are considered as the reflectors of the mind. Eyes are the most precisely developed portions of the brain seen outside the skull. Ayurveda advises that all sincere efforts should be made to protect the eyes as long as one is alive. Ayurvedic classical texts have mentioned about eye and its diseases since Vedic and Samhita kala, thus showing the importance of eye and ways to protect it. That's why eye care is one of the priorities since the ages. Myopia is one of the most prevalent disorders of eye. It generally classified into two groups: non-pathologic and pathologic myopia. Non-pathologic myopia is also commonly referred as physiological, simple or school myopia, which is most common refractive error of the eye and it has become more prevalent in recent years. Myopia may be considered under the broad heading of Timira in Ayurveda. As per the available literature, simple myopia may be considered as prathama patalagata timira, which is curable one. The present topic mainly deals with the Ayurvedic management of simple myopia by both the means as oral (systemic) as well as topical (Tarpana). Tarpana is commonly practiced kriyakalpa. Also in the Ayurvedic classics we find the concept of Chakshushya drugs like Saptamrita lauh¹, Amalaki Rasayana² which are said to improve or enhance visual acuity as well as improve the health of the eye. Hence it is very essential to cure the netra rogas.

Keywords- Timira, Indriyas, Simple Myopia, prathama patalagata, Netra, Indriya, chakshushya, Saptamrita lauh, Amalaki Rasayana, Tarpana, kriyakalpa

Received 08 July, 2022; Revised 21 July, 2022; Accepted 23 July, 2022 © The author(s) 2022.

Published with open access at www.questjournals.org

I. Introduction

Shalakya Tantra is one of eight branches of Ayurveda which has evolved a long time ago. It deals with the etiology, diagnosis, prognosis, prevention and treatment of diseases that are located above the Urdhwa jatrugata i.e. eyes, nose, head and ears. In this branch the prime importance is given to netra, as it is considered as pradhana among all indriyas.

Today, in the 21st century, where we are living in a highly sophisticated environment use of mobile screen and computer is increased so much which have lead myopia to be a horrible refractive error. This error affects every age group persons around the world.

Eye is the most highly specialised sense organ serving the most vital function of providing sight to living creatures. Vision is unarguably the most important of the five senses. Hence all sincere efforts should be made of men to protect the eyes, throughout the period of life's for the man who is blind, this world is useless and the day and night are the same even though he may have wealth!

The population suffering from myopia in India in 2010 was just over 28% is expected to rise to 34% by 2020 and approximately 50% in 2050 which is a major concern. According to a study done by AIIMS, 17% children or 1 out of 6 children aged between 5-15 years are suffering from myopia. According to UN data, countries where myopia prevalence was estimated and measured as low in the past, such as India, will have major increases by 2050.

Eyes require critical visual simulation. The youth and children need a long-term but effective preventive option. Although medical science has made tremendous and remarkable progress and advancement, the importance of *Ayurvedic* treatment in the disease of eyes cannot be ignored.

In *Ayurveda*, the clinical features related to visual disturbances have been described under *Drishtigata Rogas*. a part of clinical feature of *Timira* (first *patalagata*) can be correlated with refractive error which is Myopia. In *Ayurvedic* classics, we find the concept of *chakshushya* and many drugs and therapeutic procedures, which are said to enhance visual acuity as well as improve the health of eye. *Tarpana Karma* is one among the *Kriyakalpa* procedure, and drugs like *Amalaki*, *Mahatriphaladi ghruta*⁴, *Saptamrita lauh*, are having properties of improving the eye problems and regenerating them.

AIMS AND OBJECTIVES:

- To study the etio-pathogenesis and treatment of *Timira* and its modern counterpart myopia in details to establish the correlation between *Pratham patalgata Timira and Myopia*.
- To explore the effect of *Mahatriphaladighrita Tarpana* along with *Amalaki Rasayana*, and *Saptamrita Lauh* orally in management of *Pratham patalgata Timira*.
- To explore the effect of *Go-ghrita Tarpana* along with *Amalaki Rasayana* and *Saptamrita Lauh* orally in management of *Pratham patalgata Timira*.
- To compare the effect of both groups in management of *Pratham patalgata Timira*.

II. MATERIALS AND METHODS:

Description were gathered from different *Ayurvedic Samhitas* and research papers, online from destinations like goggle scholar, Pub med, previous work done and compilation was done.

INTERVENTION:

Grouping: All the selected patients fulfilling the inclusion and exclusion criteria were randomly divided into two groups. In each group 20 patients were taken for trial.

Group A –

In group A patients were given *Tarpana* with *Mahatriphaladi ghruta* with oral intake of *saptamrita lauh* and *amalaki rasayana*.

Group B –

In group B patients were given *Tarpana* with *Go-ghrita* with oral intake of *saptamrita lauh* and *amalaki rasayana*.

INCLUSION CRITERIA:

- Patients with classical symptoms of *Pratham patalgata Timira* (Simple Myopia).
- Patients between the age group 5- 40 yrs of either sex.
- Patients who are fit for *Tarpana Karma*.
- Patients with low myopia ($\leq -3D$ Sph)

EXCLUSION CRITERIA:

- Patients less than 5 yrs of age and above 40 yrs. of age.
- Patients who are contraindicated for *Tarpana Karma*.
- Patients with other eye diseases like retinal degeneration, high myopia etc.

INVESTIGATIONS:

ASSESSMENT CRITERIA:

SUBJECTIVE ASSESSMENT CRITERIA

Vihphala Darshana / Blurred vision

- 0 - No such problem
- 1 - Occasional blurring
- 2 - Intermittent blurring without disturbing routine work
- 3 - Regular blurring disturbing routine work

Netrayasa / Strain in eyes -

- 0 - After > 6 hours of VDT (visual display terminal) usages.
- 1 - After 4-6 hours of VDT usages.
- 2 - After 2-4 hours of VDT usages.
- 3 - Before 2 hours of VDT usages.

Shiroabhitapa / Headache-

- 0 - No headache

- 1 - Occasional headache
- 2 - Irregular attacks of headache
- 3 - Regular headache

Netrasrava / watering from eyes-

- 0- no watery discharge
- 1- Mild watery discharge
- 2-Moderate watery discharge
- 3-Severe watery discharge

B. OBJECTIVE ASSESSMENT CRITERIA:

- Visual acuity (ETDRS Chart/ Log MAR Chart)
- Auto-refraction/ Subjective refraction Examination for refractive errors
- Keratometry

DRUGS:

- **MAHATRIPHALADI GHRITA**
- **GO-GHRITA**
- **SAPTAMRITA LAUH**
- **AMALAKI RASAYANA**

MODE OF ACTION OF TRIAL DRUGS :

Mahatriphaladi-ghrita- In *Ayurveda* , *Ghrita* is considered with utmost importance in every aspect of treatment. It is an animal originated fat and said to be the best among *jangama sneha* (origin).It is a by-product of cow's milk. *Ghee* has a miracle power of penetrating. Hence, it clarifies the vision by expurgating the delicate channels. It also has two very special properties namely *Yogawahi guna* (ability to spread rapidly throughout the body) and *sanskara anuwarthana guna* (ability to acquire the properties of a mixed drug while retaining its own properties without a change).*Ghee* has a synergetic action which enhance the therapeutic effect of other herbal drugs by mix with them, without harm qualities of itself. The therapeutic action of *Mahatriphaladi ghrita* is affected in two ways in *Akshi Tarpana*. They are; more absorption of the drug by corneal surface and less convergence of light rays by adjusting the refractive index of the cornea giving the direct pressure from the drug.⁵

MAHATRIPHALADI GHRITA : *Tabular presentation of Pharmacodynamic property of *Mahatriphaladi Ghrita*:-

S. No.	Drug Name	Rasa						Guna					Virya		Vipaka			Dosha Karma		
		M	A	L	K	T	Ks	L	G	R	T	Sn	S	U	M	A	K	V	P	K
1.	<i>Bhringaraj</i>	-	-	-	+	+	-	+	-	+	-	-	-	+	-	-	+	+	-	+
2.	<i>Vasa</i>	-	-	-	-	+	+	+	-	+	-	-	-	+	-	-	+	-	+	+
3.	<i>Shatavari</i>	+	-	-	-	+	-	-	+	-	-	+	+	-	-	-	+	+	-	-
4.	<i>Aja Ksheer</i>	+	-	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	-	-
5.	<i>Guduchi</i>	-	-	-	-	+	+	-	+	-	-	+	-	+	+	-	-	+	+	+
6.	<i>Amalaki</i>	+	+	-	+	+	+	-	+	+	-	-	+	-	+	-	-	+	+	+
7.	<i>Pippali</i>	-	-	-	+	-	-	+	-	-	+	+	-	+	-	+	-	+	-	+
8.	<i>Sita</i>	+	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	+	+	+
9.	<i>Draksha</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	+	+	-
10.	<i>Haritaki</i>	+	+	-	+	+	+	+	-	+	-	-	-	+	+	-	-	+	+	+
11.	<i>Bibhitaki</i>	-	-	-	-	-	+	+	-	+	-	-	-	+	+	-	-	+	+	+
12.	<i>Utpala</i>	+	-	-	-	-	+	-	-	-	-	+	+	-	+	-	-	+	+	-
13.	<i>Yashtrimadhu</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	+	+	-
14.	<i>Kshirakakoli</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	+	+	-
15.	<i>Kantakari</i>	-	-	-	+	+	-	+	-	+	-	-	-	+	-	-	+	+	-	+
16.	<i>Go-ghrita</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	+	+	+

RASA: Madhura : 62.50% **Guna :** Laghu : 50.00%

Amla : 12.50%

Lavana : 00.00%

Katu : 31.25%

Tikta : 43.75%

Kshaya : 43.75%

Guru : 43.75%

Ruksha : 37.50%

Tiksha : 6.25%

Snigdha : 50.00%

Vipaka :

Madhura : 81.25%

Amla : 00.00%

Katu : 18.75%

Virya : Ushana : 31.25%

Sheeta : 62.50%

Dosha Karma :

Vata Shamaka : 87.50% Pitta

Shamaka : 75.00%

Kapha Shamaka : 56.25%

Considering the *Doshakarma*, the trial drug appears to be predominately *Vatashamaka* followed by *Pittashamaka* and *Kaphashamaka* (by virtue of its *Rasa*, *Guna*, *Veerya*, and *Vipaka*). Thus, the overall effect of the compound drug is *Vata Pradhana Tridosha Shamaka* and hence it disintegrates the pathology of *Timira*, which is also *Vata Pradhana Tridoshaja* in its manifestation. **SAPTAMRITA LAUH**-The reference quoted as per *Bhaishajya Ratnavali* suggest that *Saptamrita Lauha* not only cures various *Netra Rogas* but also act as *Rasayana*. All the constituents of *Saptamrita lauha*, i.e. *Haritaki*, *vibhitaki*, *Aamalaki*, *Yashtimadhu*, *Lauha Bhasma* have the *Tridoshagna* properties, especially helping in *Vata-Pitta Sharmana* by their *Gunas* like *Guru*, *Snigdha*, *Mridhu*, *Ushna*, *Sheeta*, *Ruksha*, *Laghu*. Five of these drugs have *sheeta veerya*, whereas the other two drugs have *Ushna Veerya* and all the drugs have *Madhma Vipaka*. Only *Madhuyasti* has *Katu Vipaka*. *Loha*⁶ is called as "*Rasayanavaram*" means the best *Rasayana* according to *Rasa Ratna Samucchaya*. As it cures all disease and if taken for longer duration it attains *Drudhadehasiddhi* which bestows *Rukjanma* and *Jara Nashna* property.

List of drugs with its properties. Tabular presentation of Pharmacodynamic properties of *Saptamrita Lauha*.

S. No.	Drug Name	Rasa						Guna					Virya		Vipaka			Dosha Karma			
		M	A	L	K	T	KS	L	G	R	T	S	S	U	M	A	K	V	P	K	
1.	<i>Yashtimadhu</i>	+	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	+	+	-
2.	<i>Haritaki</i>	+	+	-	+	+	+	+	-	+	-	-	-	-	+	+	-	-	+	+	+
3.	<i>Vibhitaka</i>	-	-	-	-	-	+	+	-	+	-	-	-	-	+	+	-	-	+	+	+
4.	<i>Amlaki</i>	+	+	-	+	+	+	-	+	+	-	-	+	-	+	-	-	-	+	+	+
5.	<i>Lauha Bhasma</i>	+	-	-	-	+	+	-	+	+	-	-	+	-	+	-	-	-	+	+	+
6.	<i>Grita</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	-	+	+	+
7.	<i>Honey</i>	+	-	-	-	-	+	-	+	+	-	-	+	-	-	-	-	+	-	+	+

	<i>Madhura</i>	-	85.71 %
RASA: <i>Amla</i>	-	28.57%	
	<i>Lavana</i>	-	00.00%
	<i>Katu</i>	-	28.57%
	<i>Tikta</i>	-	42.86%
	<i>Kashya</i>	-	71.43%
GUNA : <i>Laghu</i>	-	28.57%	
	<i>Guru</i>	-	71.43%
	<i>Ruksha</i>	-	71.43%
	<i>Tiksha</i>	-	00.00%
	<i>Snigdha</i>	-	28.57%
VIRYA :			
	<i>Ushna</i>	-	28.57%
	<i>Sheeta</i>	-	71.43%
VIPAKA :			
	<i>Madhura</i>	-	85.71%
	<i>Amla</i>	-	00.00%
	<i>Katu</i>	-	14.29%

Dosha Karma :

Vata Shamaka - 85.71%

Pitta Shamaka - 100.00%

Kapha Shamaka - 85.71%

The above table shows that the compound drug possesses predominance of *Madhura* and *Kashya* *Rasas*, *Guru* and *Ruksha gunas*, *Sheeta virya*, *Madhura Vipaka*, thereby having *Tridosha Shamana* property.

AMALAKI RASAYANA

Amalaki rasayan is a very potent *rasayan* having rejuvenating power may help to reshape the changes occur in the eye due to excessive strain of muscles, it is also having *Chakshusya* property. The main ingredient is *Amla* (*Embelica officinalis*) which has Vitamin C. Provides antioxidant effect and helps in cell damage management. These activities can be said to be useful in relieving the asthenopic symptoms in simple myopia and providing the essential support for reducing the oxidation stress too.

TABULAR PRESENTATION OF PHARMACODYNAMIC : Properties of compound Aamlaki Rasayana :

S. No	Drug Name	Rasa						Guna					Virya		Vipaka			Dosha Karma		
		M	A	L	K	T	Ks	L	G	R	T	Sn	S	U	M	A	K	V	P	K
1.	<i>Amalaki</i>	+	+	-	+	+	+	-	+	+	-	-	+	-	+	-	-	+	+	+
2.	<i>Pippali</i>	-	-	-	+	-	-	+	-	-	+	+	-	-	+	-	-	+	-	+
3.	<i>Madhu</i>	+	-	-	-	-	+	-	+	+	-	-	+	-	-	-	+	-	+	+
4.	<i>Ghrita</i>	+	-	-	-	-	-	-	+	-	-	+	+	-	+	-	-	+	+	+
5.	<i>Sita</i>	+	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	+	+	-

Rasa :

Madhura - 80.00%
Amla - 20.00%
Lavana - 00.00%
Katu - 40.00%
Tikta - 20.00%
Kshaya - 40.00%

Virya :

Ushna - 00.00%
Sheeta - 80.00%
Anushnasheeta - 20%

Vipaka :

Madhura - 80.00%
Amla - 00.00%
Katu - 20.00%

Guna :

Laghu - 40.00%
Guru - 60.00%
Ruksha - 40.00%
Tikshna - 20.00%
Snigdha - 40.00%

Dosha Karma :

Vata Shamaka - 80.00%
Pitta Shamaka - 80.00%
Kapha Shamaka - 80.00%

The above drug shows that the compound drug possesses predominance of *Madhura* and *Kshaya Rasa*, *Guru gunas*, *Sheeta Virya*, *Madhura Vipaka* thereby having *Tridosha Shamana* property.

DOSAGE:

A. For oral Medicine:

1. *Amalaki Rasayana*

Dose – 5-16yrs = 2.5 gms, >16yrs = 5gms a day

Time- morning (empty stomach)

Route Of Administration - orally

2. *Saptamrit Lauh*

Dose - 5-16 yrs = 500 mg, >16yrs = 1gm a day

Time- morning (empty stomach)

Route Of Administration - orally

SEHPANA- *Madhu*-8 gms, *Mahatriphaladi ghrita* – 4gms (>16yrs)

Madhu-4gms, *Mahatriphaladi ghrita*-2gms (5-16yrs)

B. FOR TOPICAL MEDICINE:

Tarpana with Mahatriphaladi ghrita and Go-ghrita :

Amount - Approx. 30 ml till the eyelashes dip in *ghrita*.

Time - Once every day in afternoon for 7 days.

Duration - Approx. 25 mins.

PRESENTATION OF DATA:

STATISTICAL ANALYSIS

(P Value Summary = *)

N_s P > 0.05 - Not significant

* P < 0.05 - significant

** P < 0.001 - more significant

*** P < 0.0001 - Highly significant

OVERALL ASSESSMENT OF TOTAL EFFECT :

The total effect of therapy was assessed as :

Assessment	Score
Cured	- 100% relief in subjective and objective symptoms
Market Improvement	- > 75% - 99% relief in subjective and objective symptoms
Moderate Improvement	- > 50% - 75% relief in subjective and objective symptoms

- Mild Improvement - > 25% - 50% relief in subjective and objective symptoms
- Unchanged - < 25% relief in subjective and objective symptoms

Total Patients registered

Clinical Data	No. of Patients		Total
	Group A	Group B	
Registered	21	21	42
Completed	20	20	40
Discontinued	1	1	2

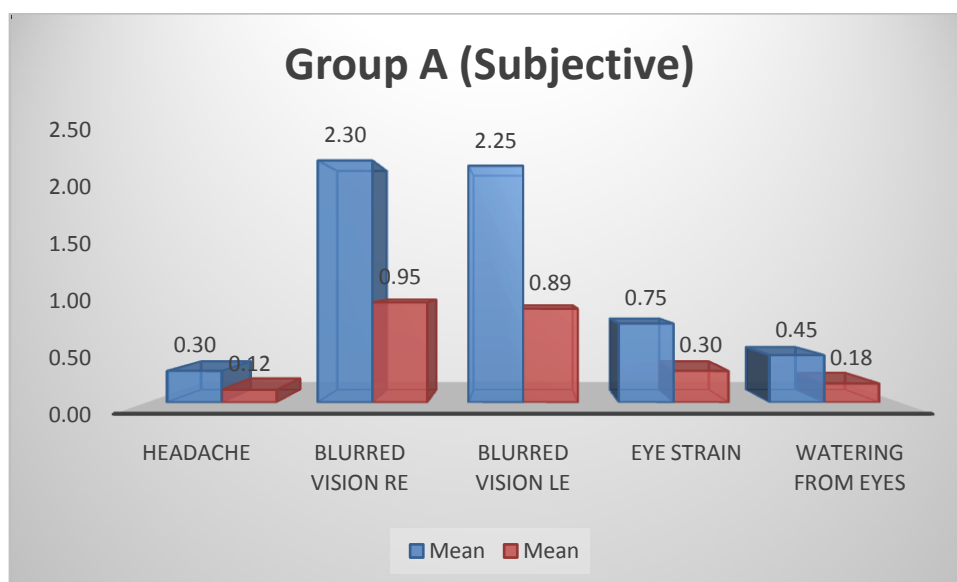
OBSERVATION:

1. RELIEF PERCENTAGE OF INDIVIDUAL SYMPTOMS:

Table: relief percentage of subjective criteria in Group A

Group A	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
Headache	0.30	0.12	0.18	0.41	0.09	-2.000 ^b	0.045500	60.00	Sig
Blurred Vision RE	2.30	0.95	1.35	0.51	0.11	-4.041 ^b	0.000053	58.70	Sig
Blurred Vision LE	2.25	0.89	1.36	0.51	0.11	-4.041 ^b	0.000053	60.44	Sig
Eye Strain	0.75	0.30	0.45	0.69	0.15	-2.640 ^b	0.008299	60.00	Sig
Watering From Eyes	0.45	0.18	0.27	0.47	0.11	-2.449 ^b	0.014306	60.00	Sig

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A. From above table, we can observe that, P-Value for all parameters is less than 0.05. Hence, we can conclude that, effect observed in Group A is significant.



2. EFFECT OF THERAPY ON SYMPTOMS:

GROUP A

Effect of Therapy on Headache in Group A

Headache	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.30	0.12	0.18	0.41	0.09	-2.000 ^b	0.045500	60.00	Sig
1st Follow Up	0.30	0.11	0.19	0.40	0.08	-2.009 ^b	0.046100	63.33	Sig

2nd Follow Up	0.30	0.11	0.19	0.40	0.08	-2.009 ^b	0.046100	63.33	Sig
---------------	------	------	------	------	------	---------------------	----------	-------	-----

Effect of Therapy on Blurred Vision in Group A

Blurred Vision RE	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	2.30	0.95	1.35	0.51	0.11	-4.041 ^b	0.000053	58.70	Sig
1st Follow Up	2.30	0.96	1.34	0.52	0.12	-4.051 ^b	0.000059	58.26	Sig
2nd Follow Up	2.30	0.96	1.34	0.52	0.12	-4.051 ^b	0.000059	58.26	Sig

Effect of Therapy on Blurred Vision in Group A

Blurred Vision LE	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	2.25	0.89	1.36	0.51	0.11	-4.041 ^b	0.000053	60.44	Sig
1st Follow Up	2.25	0.90	1.35	0.53	0.13	-4.045 ^b	0.000059	60.00	Sig
2nd Follow Up	2.25	0.91	1.34	0.54	0.14	-4.049 ^b	0.000058	59.56	Sig

Effect of Therapy on Eye Strain in Group A

Eye Strain	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.75	0.30	0.45	0.69	0.15	-2.640 ^b	0.008299	60.00	Sig
1st Follow Up	0.75	0.31	0.44	0.71	0.18	-2.648 ^b	0.008721	58.67	Sig
2nd Follow Up	0.75	0.32	0.43	0.72	0.19	-2.651 ^b	0.008882	57.33	Sig

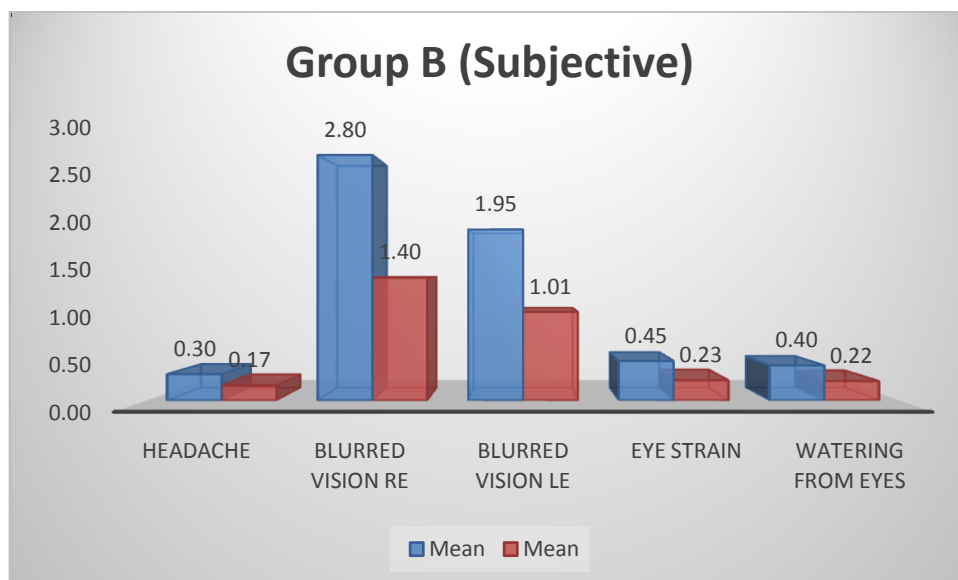
Effect of Therapy on Watering From eyes in Group A

Watering From Eyes	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.45	0.18	0.27	0.47	0.11	-2.449 ^b	0.014306	60.00	Sig
1st Follow Up	0.45	0.19	0.26	0.49	0.14	-2.419 ^b	0.013016	57.78	Sig
2nd Follow Up	0.45	0.19	0.26	0.48	0.13	-2.489 ^b	0.013302	57.78	Sig

Table: Relief percentage of subjective criteria in Group B

Group B	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
Headache	0.30	0.17	0.13	0.37	0.08	-1.732 ^b	0.048326	43.33	Sig
Blurred Vision RE	2.80	1.40	1.40	0.51	0.11	-4.041 ^b	0.000053	50.00	Sig
Blurred Vision LE	1.95	1.01	0.94	0.94	0.21	-3.250 ^b	0.001154	48.21	Sig
Eye Strain	0.45	0.23	0.22	0.44	0.10	-2.236 ^b	0.025347	48.89	Sig
Watering From Eyes	0.40	0.22	0.18	0.41	0.09	-2.000 ^b	0.045500	45.00	Sig

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A. From above table, we can observe that, P-Value for all parameters is less than 0.05. Hence, we can conclude that, effect observed in Group A is significant.



GROUP B

Effect of Therapy on Headache in Group B

Headache	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.30	0.17	0.13	0.37	0.08	-1.732 ^b	0.048326	43.33	Sig
1st Follow Up	0.30	0.18	0.12	0.39	0.09	-1.822 ^b	0.05328	40.00	Sig
2nd Follow Up	0.30	0.19	0.12	0.40	0.10	-1.822 ^b	0.05328	38.33	Sig

Effect of Therapy on Blurred Vision in Group B

Blurred Vision RE	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	2.80	1.40	1.40	0.51	0.11	-4.041 ^b	0.000053	50.00	Sig
1st Follow Up	2.80	1.41	1.39	0.54	0.12	-4.042 ^b	0.000063	49.64	Sig
2nd Follow Up	2.80	1.42	1.39	0.55	0.15	-4.043 ^b	0.000063	49.46	Sig

Effect of Therapy on Blurred Vision in Group B

Blurred Vision LE	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	1.95	1.01	0.94	0.94	0.21	-3.250 ^b	0.001154	48.21	Sig
1st Follow Up	1.95	1.05	0.90	0.98	0.24	-3.264 ^b	0.001214	46.15	Sig
2nd Follow Up	1.95	1.10	0.85	0.997	0.23	-3.268 ^b	0.001316	43.59	Sig

Effect of Therapy on Eye Strain in Group B

Eye Strain	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.45	0.23	0.22	0.44	0.10	-2.236 ^b	0.025347	48.89	Sig
1st Follow Up	0.45	0.24	0.22	0.45	0.14	-2.246 ^b	0.02714	47.78	Sig
2nd Follow Up	0.45	0.25	0.21	0.48	0.16	-2.249 ^b	0.02834	45.56	Sig

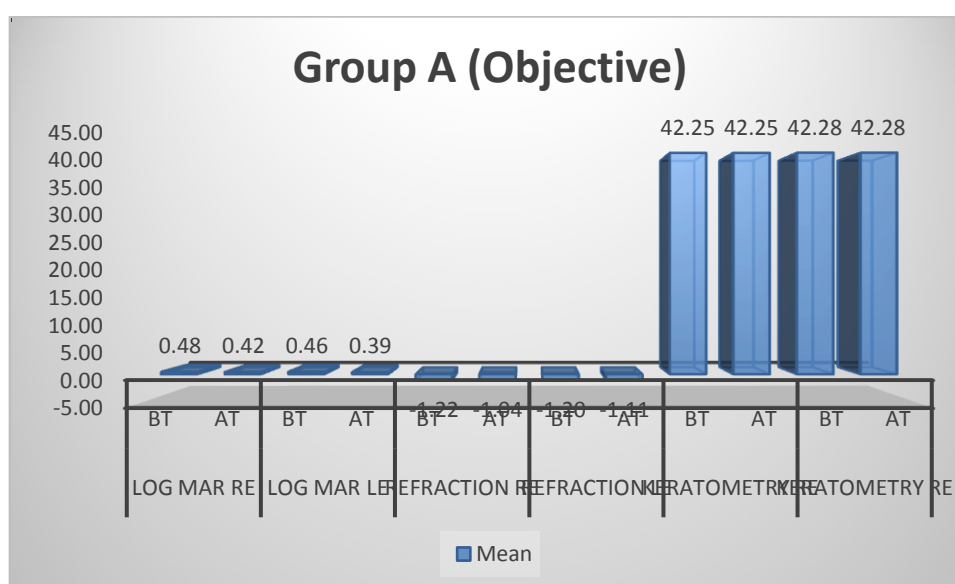
Effect of Therapy on Watering from eyes in Group B

Watering From Eyes	Mean		Diff	SD	SE	Wilcoxon W	P-Value	% Effect	Result
	BT	AT							
7th Day	0.40	0.22	0.18	0.41	0.09	-2.000 ^b	0.045500	45.00	Sig
1st Follow Up	0.40	0.23	0.18	0.45	0.10	-2.016 ^b	0.048500	43.75	Sig
2nd Follow Up	0.40	0.24	0.17	0.46	0.102	-2.020 ^b	0.049000	41.25	Sig

**EFFECT OF THERAPY ON OBJECTIVE CRITERIA :
GROUP A**

Group A		Mean	N	SD	SE	t-Value	P-Value	% change	Result
LOG MAR RE	BT	0.48	20	0.31	0.07	4.067	0.001	11.58	Sig
	AT	0.42	20	0.36	0.08				
LOG MAR LE	BT	0.46	20	0.36	0.08	4.765	0.000	15.38	Sig
	AT	0.39	20	0.41	0.09				
Refraction RE	BT	-1.23	20	0.86	0.19	-2.669	0.015	15.31	Sig
	AT	-1.04	20	0.99	0.22				
Refraction LE	BT	-1.20	20	0.95	0.21	-2.666	0.015	7.29	Sig
	AT	-1.11	20	1.00	0.22				
Keratometry RE	BT	42.25	20	1.25	0.28	0.000	1.000	0.00	NS
	AT	42.25	20	1.25	0.28				
Keratometry LE	BT	42.28	20	0.93	0.21	0.000	1.000	0.00	NS
	AT	42.28	20	0.93	0.21				

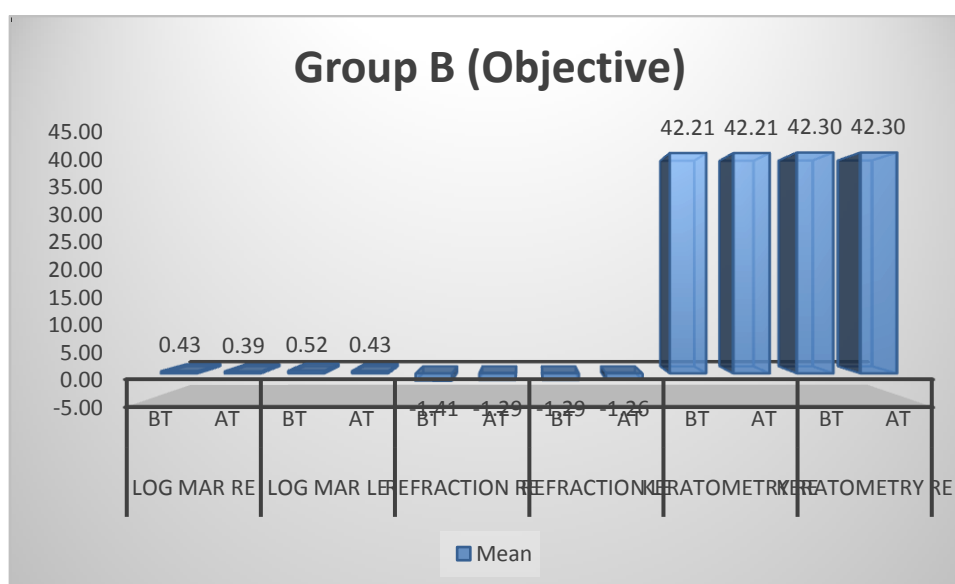
Since observations are quantitative we have used Paired t- Test to test efficacy in Group A. From above table, we can observe that, P-Value for LOG MAR and Refraction is less than 0.05. Hence, we can conclude that, effect observed in Group A is significant for the parameters except keratometric values.



GROUP B

Group B		Mean	N	SD	SE	t-Value	P-Value	% change	Result
LOG MAR RE	BT	0.43	20	0.35	0.08	3.559	0.002	9.41	Sig
	AT	0.39	20	0.38	0.09				
LOG MAR LE	BT	0.52	20	0.37	0.08	2.042	0.055	17.48	Sig
	AT	0.43	20	0.41	0.09				
Refraction RE	BT	-1.41	20	1.15	0.26	-3.249	0.004	8.85	Sig
	AT	-1.29	20	1.23	0.27				
Refraction LE	BT	-1.29	20	1.09	0.24	-2.637	0.016	1.94	Sig
	AT	-1.26	20	1.12	0.25				
Keratometry RE	BT	42.21	20	1.01	0.23	0.000	1.000	0.00	NS
	AT	42.21	20	1.01	0.23				
Keratometry LE	BT	42.30	20	0.93	0.21	0.000	1.000	0.00	NS
	AT	42.30	20	0.93	0.21				

Since observations are quantitative we have used Paired t- Test to test efficacy in Group A. From above table, we can observe that, P-Value for LOG MAR and Refraction is less than 0.05. Hence, we can conclude that, effect observed in Group B is significant for these parameters with no significant result in keratometric values.



3.COMPARATIVE ASSESSMENT BETWEEN TWO GROUPS:

Table - COMPARATIVE ASSESSMENT OF SUBJECTIVE CRITERIA BETWEEN TWO GROUPS: Comparison between Group A and Group B (Subjective)

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
Headache	Group A	20	21.00	420.00	190.000	0.00681
	Group B	20	20.00	400.00		
	Total	40				
Blurred Vision RE	Group A	20	21.50	390.00	180.000	0.00532
	Group B	20	19.50	430.00		
	Total	40				

Blurred Vision LE	Group A	20	23.20	464.00	146.000	0.00116
	Group B	20	17.80	356.00		
	Total	40				
Eye Strain	Group A	20	22.25	445.00	165.000	0.00248
	Group B	20	18.75	375.00		
	Total	40				
Watering From Eyes	Group A	20	21.50	430.00	180.000	0.00471
	Group B	20	19.50	390.00		
	Total	40				

Mann Whitney U-Test is carried out for comparison between Group A and Group B. From above table, we can observe that, P-Value for almost parameters is less than 0.05. Hence, we can conclude that, there is significant difference between Group A and Group B.

Further, we can observe that, mean rank for Group A is greater than Group B, hence we can conclude that, effect observed in Group A is better than Group B.

Table - COMPARATIVE ASSESSMENT OF OBJECTIVE CRITERIA BETWEEN TWO GROUPS:

Variable	Group	N	Mean Diff	SD	SE	t-Value	P-Value
LOG MAR RE	Group A	20	0.06	0.05	0.01	-0.853	0.399
	Group B	20	0.04	0.06	0.01		
LOG MAR LE	Group A	20	0.07	0.20	0.04	0.431	0.669
	Group B	20	0.09	0.07	0.01		
Refraction RE	Group A	20	0.19	0.17	0.04	-0.476	0.637
	Group B	20	0.13	0.56	0.13		
Refraction LE	Group A	20	0.09	0.08	0.02	-1.687	0.100
	Group B	20	0.03	0.15	0.03		
Keratometry RE	Group A	20	0.00	0.00	0.00	0.000	1.000
	Group B	20	0.00	0.00	0.00		
Keratometry LE	Group A	20	0.00	0.00	0.00	0.000	1.000
	Group B	20	0.00	0.00	0.00		

Unpaired t-test is carried out for comparison between Group A and Group B. From above table, we can observe that, P-Value for almost parameters is greater than 0.05. Hence, we can conclude that, there is no significant difference between Group A and Group B.

4.ASSESSMENT OF OVERALL EFFECT OF THERAPY ON PRATHAMA PATALGATA TIMIRA: SUBJECTIVE CRITERIA

Parameter	% Effect	
	Group B	Group A
Headache	60.00	43.33
Blurred Vision RE	58.70	50.00
Blurred Vision LE	60.44	48.21
Eye Strain	60.00	48.89
Watering From Eyes	60.00	45.00
Average % Effect	59.83	47.09

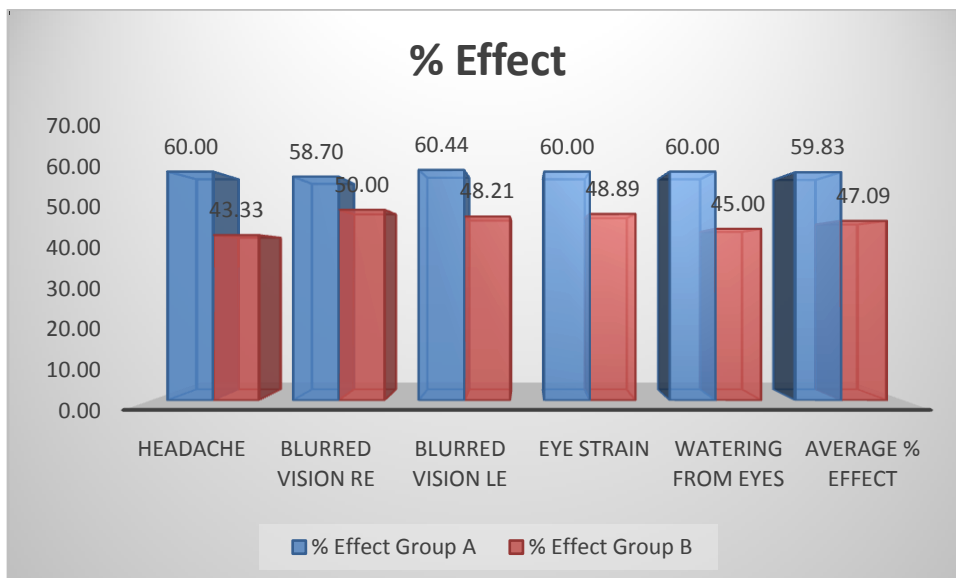
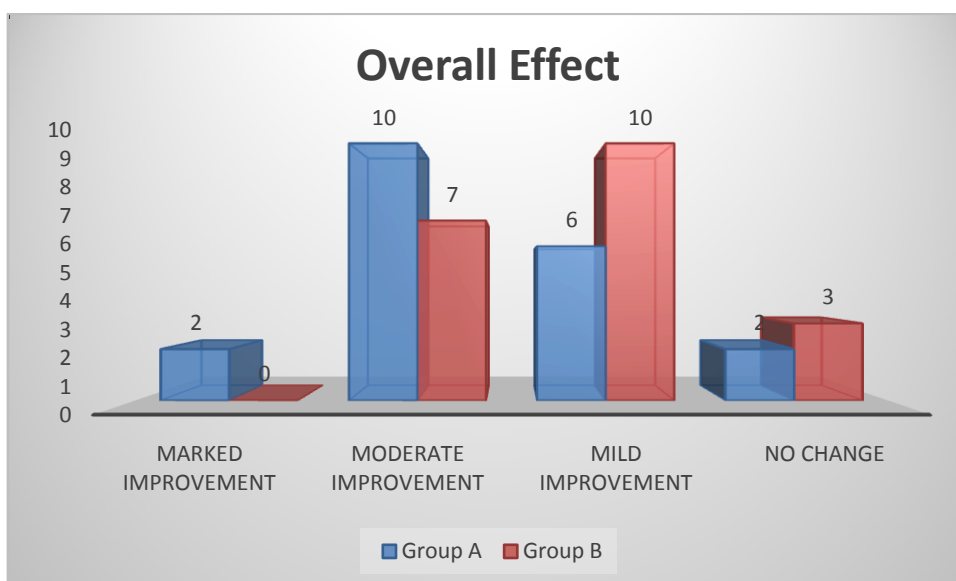


TABLE: OVERALL ASSESSMENT

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	2	10.00%	0	0.00%
Moderate Improvement	10	50.00%	7	35.00%
Mild Improvement	6	30.00%	10	50.00%
No Change	2	10.00%	3	15.00%
TOTAL	20	100.00%	20	100.00%

Group-A provided marked improvement in 10% patients, moderate improvement in 50% of patients, mild improvement in 30% patients and unchanged effect in 10% patients.

Group-B provided moderate improvement in 35% of patients, mild improvement in 50% patients and unchanged effect in 15% patients.



III. DISCUSSION:

As we all know, the corona virus 2019 (COVID-19) pandemic started in China at the end of 2019. To curb the spread of the pandemic, many countries, including India, implemented measures such as crowd limitation and social distancing. The COVID-19 outbreak coincided with the school winter vacation, and the start of the spring term was delayed nationwide until the end of May 2020. Approximately 278 million primary and secondary school students countrywide were confined to their homes and received online tuition. During home confinement, the time spent playing games, chatting online, and browsing the internet increased substantially may have an impact on the eye health of children and adolescents. Myopia is becoming a serious health concern among children and adolescents in India.⁷

The symptom of 1st patalagata timira i.e avayakta rupa darshana (blurring vision) is the cardinal feature of low degree myopia.

GENERAL OBSERVATIONS:

A maximum number of patients were from the school going and collegiate with a habit of playing games in mobile or computer, watching T.V. working on computers for a long time, disturbed sleep, bad eating habits, urbanisation which are the etiology of eye disease i.e. *sukshma nirikshn, dureshanaat, swapnavipryaach, ritu n ch viparayata* as described in *Ayurveda*. In the present study, it is significant that simple myopia begins in childhood and maximum number have positive family history.

MODE OF ACTION OF DRUGS:

Considering the *Doshakarma*, *Timira* is vitiated by *Tridoshas*, So the selection of formulation should possess *tridosha shamaka* properties to counter act the vitiated *doshas*, integrating the pathology of the disease. Thus, the overall effect of the compound drug is *Vata Pradhana Tridosha Shamaka* i.e. the pharmacodynamics of the drug, which includes *rasa, guna, verya, vipaka*.

In *saptamrita lauh* the combine effect of *triphalala* and *mulethi* is *tridosha shamak* which rectify the *doshik* imbalance. All the four ingredients are having *chakshushya* property. Iron is also having the property to maintain the power of eye.

Amalaki rasayana is very potent *rasayana* having rejuvenating power may help to reshape the changes occur in the eye due to excessive strain of muscles, it is also having *Chakshushya* property. *Go-ghrita* is proved as a effective nutrient for eye .

Mahatriphaladi ghrita majority of ingredients have *madhura rasa* followed by *tikta* and *kashaya rasa, katu* and *amla rasa* .All these *rasas* alleviate *tridoshas*. It has *guna* like *snigdha, pichilla, sara* and *mridu* which will mitigate *vata dosha ruksha, laghu* and *tikshna guna* will mitigate *kapha dosha* and *pitta dosha* will be decreased due to *guru* and *snigdha gunas*. Maximum of drugs in *ghrita* have *ushna virya* and *madhura vipaka* which will decrease *vata* and *kapha doshas*.

Thus from the above description of drugs, the overall effect seems to be *Tridoshamak* and are having *Chakshushya* property.

IV. Conclusion:

- The appropriate use of *Chakshushya* and *Rasayana Dravyas* will help to maintain the health of the *Netra*.
- *Netra Tarpana* is most often recommended practice in *Ayurveda Netra Roga Chikitsa*. It may help to nourish eyes, increase blood circulation to the affected area, gets rid of *Dosha* imbalances, strengthens the muscles in the area, and helps on improving eye sight.
- The above study shows that *Tarpana* with *Mahatriphaladi ghrita* and oral intake of *Saptamrita lauh* and *Amalaki rasayana* shows better results in low myopic patients than *Tarpana* with *Go-ghrita* and oral medicine.
- From the above review about *Timira* and the effect of the drugs both topical and systemic is very good alternative to treat various refractive errors.

References:

- [1]. *Bhaisajya Ratnavali* of Kaviraj govind das sen Edited with “*Siddhiprada*”Hindi commentary by Prof.siddhi Nandan Mishra.printed by Chaukhamba surbharati prakashan Varanasi edition 2016 Chapter 73 *Rasayana adhikara shloka* 25 pg 1110.
- [2]. *Bhaisajya Ratnavali* of Kaviraj govind das sen Edited with “*Siddhiprada*”Hindi Commentary by Prof.Siddhi Nandan Mishra.printed by Chaukhamba Surbharati Prakashan Varanasi edition 2016 Chapter 64 *Netra rog adhikara shloka* 225-229 pg 1006.
- [3]. Myopia hitting india's youth – Biospectrum India Retrived from <https://www.biospectrumindia.com/views/70/13698/myopia-hitting-indias-youth.html>
- [4]. *Bhaisajya Ratnavali* of Shri Govinda Das ji vol-3,edited by-Bhisagratna Shri Brahmashankar Misra,Chaukhamba Sansthana.Chapter64-*Netraroga shloka*249-256 pg 303-304.
- [5]. Significance-of-Ghee-In-Tarpana https://www.researchgate.net/profile/Nadeesha-Abegunasekara/publication/344476775_Significance_of_Ghee_In_Tarpana/links/5fb3c780a6fdcc9ae05b68f4.

- [6]. A.P. Pande, S.B. Deshpande, RA Gokarna Rasayana Loha kalpas Rasa Ratna Samucchaya. Retrieved from: (PEF) researchgate.net.
[7]. Trends in myopia development among primary and secondary school during Covid 19 Pandemic retrieved from <http://www.frontiersin.org/full>