



A STUDY TO ASSESS THE NIDRAJANANA PROPERTY OF KSHEERAPANAM IN IMPROVEMENT OF QUALITY OF SLEEP

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ABSTRACT

Introduction: *Ayurveda* is based on 3 main pillars *Vata, Pitta, Kapha* and to keep these pillars in normal state Acharya have described *Tryopastambhas* of life are *Ahara, Nidra, Brahmacharya*. Various causative factors described by Acharya for *Nidranaasha* are mainly *Vata* proliferating factor *Rukshanna* like *Yava* is having *Vataprakopa* properties likewise fasting, hunger and thirst also increases *Vatadosha* and cause *Nidranaasha*. Various *Manasika Hetu* like Grief, Fear, Exertion etc. also cause active state of mind by increasing *Rajoguna* and hence cause difficulty in getting proper sleep or sleepiness. Milk is beneficial for healthy individuals; by drinking milk one does not get diseases; and according to Sushruta milk can be used for *Manda Nidra* condition.

Materials and Methods : People who fulfill the eligibility criteria will be selected who are voluntarily willing to participate in the study and assessed their quality of sleep by PQSI scale and advising *Ayurveda* prescribed *Goksheerapanam* for 1 month. The selected people are advised to maintain a sleep log to confirm sleeping/sleepless pattern.

Ethical clearance was obtained from Institutional Ethics Committee of Parul Institute of Ayurveda, Parul University.

Results : On quality of sleep is assessed by PQSI, improvement showed were in Subjective sleep quality (48.7%), Sleep latency(44.7%), Sleep duration(51.8%), Sleep efficiency(51%), Sleep disturbances(50%), Daytime dysfunction(57.6%), and Global score(44%).

Discussion: *Goksheeram* having the property of *Madhur, Snigdha, Shita. Madura Rasa* is predominance of *Prthvi* and *Jala Mahabhuta. Prthvi Mahabhuta* having properties of *Sthula, Sthira, Guru* and these will act against the property of *Vata Dosha* and increase of *Kapha Dosha* and by this *Tamo Guna* will increase respectively.

Conclusion : *Goksheerapanam* have beneficial effects in improvement of quality of sleep and the null hypothesis stands rejected.

KEYWORDS : *Nidra, Quality of sleep, Kapha Guna, Tamo Guna, Goksheerapanam,*

INTRODUCTION

Ayurveda is based on 3 main pillars *Vata, Pitta, Kapha*¹ and to keep these pillars in normal state Acharya have described *Tryopastambhas* of life are *Ahara, Nidra, Brahmacharya*². The proper obedience of these three is must for the maintenance of healthy and long life. Among these 3, *Ahara* is mainly related with physical factors, *Brahmacharya* with mental factors while *Nidra* deals with both psychic and somatic factors³.

Nidra is defined as the state of a person when its mind and all the *Indriya* (both *Karmendriya* and *Jnanendriya*) get exhausted and then dissociate themselves from their objects, then the individual is said to be slept⁴. According to *Ayurveda* causes for sleep is said to be the predominance of *Kapha* and *Tamadosha*⁵. Sleep which ensues by the very nature of night (*Rathriswabhavaprabhava*) is the normal sleep⁶. Various causative factors described by acharya for *Nidranaasha* are mainly *Vata* proliferating factor *Rukshanna* like *Yava* is having *Vataprakopa* properties likewise fasting, hunger and thirst also increases *Vatadosha* and cause *Nidranaasha*. Also the people who work at night and shift workers usually face conditions like insomnia, poor sleep quality and day time sleepiness. Various *Manasika Hetu* like *Chinta, Bhaya, Utkanda* etc. also cause active state of mind by increasing *Rajoguna* and hence cause difficulty in getting proper sleep or sleepiness⁷.

Sleep is a physiological and mental resting state of a person. The person become inactive and will not be aware of surrounding environment and their senses do not respond to external stimuli during their sleep. Sleep is universal need of all higher life forms including humans, absence of which has serious physiological consequences. Sleep is the foundation of our life. Sleep deprivation or poor quality of sleep impacts both short and long term health, with depression, obesity, loss of mental clarity and fatigue which are some of the frightening consequence. Sleep promotes proper growth⁸.

Need for the study

Sleep is a most important universal human behaviour occupying roughly one third of the human life. Stress and strain of day to day life affects ones bodily organs through several psycho-physical mechanism⁹. It also has important role in healthy life. By getting good and sufficient sleep one can get ready for new work. A sound sleep in

the night regenerates the power of the mind and body to accept new challenges, maintain health proficiency and emotional wellbeing¹⁰. Sleep is particularly relevant to psychiatric illness and frequently part of diagnostic criteria for specific disorder. The nature itself has designed the sleep for required hours to fresh up our life. Researches show that improper sleep can increase the risk of developing obesity, diabetes, high blood pressure or heart diseases. A survey conducted by WHO in India reveals that about 35% of respondents have reported mild to extreme difficulty associated with sleep¹¹.

Ayurveda emphatically states that milk can be consumed by all healthy individuals; in fact, it goes one step further and says that everyone should take milk. Thus, a person who is unable to consume milk can be deemed to be unhealthy or diseased and needs to take treatment to flush out the problem so that he or she can again begin to consume milk. There is absolutely no doubt that human beings should drink milk on a regular basis. Milk is beneficial for healthy individuals; by drinking milk one does not get diseases; Hence there is no better life -prolonger than milk.

THE OJAS FACTOR

Cow's milk instantly nourishes the *Ojas* owing to its similarity for, it is the *Ojas* that is depleted in all these instances, and as is repeatedly emphasized, milk recreates *Ojas* instantly.

There is one more property of milk which needs to be highlighted here, namely the fact that it is the best among those which invigorate the body i.e. it is *Jivaniya*— which makes one really live, or bestows one with the energy to live. These two properties, by themselves, make the consumption of milk indispensable. Generally all milk is *Madhura* in *Rasa* and *Paka*; *Snigdha, Ojasya* and *Dhatuvardhana, Vatapittahara, Vrsnya* and *Shlesmala; Guru* and *Shitala*. Milk is primarily quelling the increased *Vata* and *Pitta* and at the same time increasing the *Kapha*; it is *Ojasya* it is *Vrsya* or works as an aphrodisiac. Cow's milk has got ten properties namely *Svadu, Shita, Mrdu, Snigdha, Bahala, Shlaksha, Pichchila, Guru, Manda* and *Prasanna*. Thus it increases the *Ojas* having the same properties due to its similarity. Hence milk has been said as the best one among *Jivaniya dravyas* and as *Rasayana*. Here it is further affirmed that cow's milk is the best one among the different types of milk. Though all milk increases *Ojas*, cow's milk is specifically recommended for this further it is said to be the best among the *Rasayanas*¹².

AIMS & OBJECTIVES:

- 1) To assess the improvement of quality of sleep.
- 2) To assess the *Nidrajanana* property of *Ksheerapaanam*.

MATERIALS AND METHODS

Patients who were filling the inclusion criteria were selected from parul university. Vadodara

METHODS OF COLLECTION OF DATA

Clinical study was conducted on 50 individuals of having less quality of sleep and assessing less quality of sleep by PQSI Scale.

Inclusion Criteria: People with age group of 18-25 years. (PQSI Score 6-14)

Exclusion Criteria:

People suffering from *Nidranaasha* due to conditions like *Madatyaya*, *Abhigata* and systemic diseases

Patients of insomnia, (above 14 score)

Patients of hypnotic medicine or other drugs known to cause drowsiness.

INTERVENTION :

Peoples fulfilling the criteria for assessment were included in the study and given *Goksheeram* 100 ml 1 hr before going to bed.

Drug – *Goksheeram*

Quantity- 100 ml

Duration – 1 month

Follow up- after 1 month

Instructions which was given for attaining good quality of sleep was mentioned below.

1. Stick to a sleep schedule
2. Pay attention to what you eat and drink
3. Create a restful environment
4. Limit daytime naps
5. Using of smart phones, social media should be avoided
6. Manage worries

1. Assessment Criteria:

PQSI is assessed before and after *Ksheerapanam*.

Pittsburgh Sleep Quality Index: The history questionnaire is self-administered by the patient. Responses are added to obtain the total score. To decrease the potential for bias, all scoring information has been eliminated from the patient version.

CRITERIA FOR ASSESSMENT OF OVERALL EFFECT :

Overall effect of therapy was assessed in terms of grading of objective criteria. It was observed by adopting the following criteria.

COMPONENTS	QUESTIONS	BT	AT
1. Subjective Sleep quality	9		
2. Sleep latency	2 & 5a		
3. Sleep duration	4		
4. Sleep efficiency	1,3,4		
5. Sleep disturbance	5b-5j		
6. Use of sleep medication	6		
7. Daytime dysfunction	7&8		
Global Score			

OBSERVATION AND RESULT :**Effect of therapy between the groups – after intervention**

Comp-	Mean rank BT	AT	df	% df	SD	SE	t value	P value
Comp-1	1.56	0.8	0.76	48.7%	0.606	0.086	9.333	0.001
Comp-2	1.70	0.94	0.76	44.7%	0.470	0.66	14.145	0.001
Comp-3	1.08	0.52	0.56	51.8%	0.505	0.071	7.286	0.001
Comp-4	1.56	0.76	0.8	51%	0.505	0.071	9.092	0.001
Comp-5	1.24	0.62	0.62	50%	0.602	0.085	7.278	0.001
Comp-7	0.52	0.22	0.3	57.6%	0.465	0.66	3.348	0.002
Global score	1.98	1.10	0.88	44%	0.303	0.043	25.667	0.001

DISCUSSION

Nidra is essential as *Ahara*, from *Trayopastamba* that is *Ahara*, *Nidra*, *Brahmacharya* the body is endowed with strength, complexion and growth. (cha.su.11/35)

Nowadays people are not getting sufficient hours of sleep because of busy life schedules and overload, as a result of which, work hours have taken the time of sleep. If a healthy person does not get adequate amount of proper sleep, there can be chances that sooner he/she can become unhealthy. One may think that it is not a serious problem in the beginning. But in later stage it leads to number of health problems and ailments. Acharya Charaka mentioned the person having *Samyak Nidra* (proper sleep) will have *Sukha* (happiness), *Pushti* (good physique), *Bala* (strength), *Vrushata* (sexual act), *Gyana* (knowledge), *Jivitha* (long life).

निद्रायत्तं सुखं दुखं पुष्टिः कार्श्यं बलाऽबलम् ।

वृषता क्लीबता ज्ञानमज्ञानं जीवितं न च ॥ (Cha.su.21/35)

The person having *Asamyak Nidra* (improper sleep) will suffer from *Dukha* (unhappiness), *Karshya* (emaciation), *Abala* (weakness), *Klibata* (impotence), and *Agyana* (illiteracy), *Ajivita* (death).

This study mainly concentrating on improving the quality of sleep by giving *Goksheeram* as the *Ayurveda* emphatically states that milk can be consumed by all healthy individuals. Maharshi Sushruta says that milk is best of all nutritive substances. Its use may be unanimously recommended to all and is not forbidden in diseases due to the deranges action of *Vayu* or *Pitta* or ailments affecting the mind or vascular system of man.

Milk is improving the quality of sleep as it is indicated in *Manda Nidra* by Sushruta.

शीलयेन्मन्दनिद्रस्तु क्षीमदयरसान् दधि ।

अभ्यङ्गोद्वर्तनस्नान्मूर्धकर्णाक्षितर्पणम् ॥ (Su.sha.5/37)

To attain this goal the methodology adapted in this study was described as per consolidated standard of reporting trials (CONSORT) statement 2010. The salient features of the study were the eligibility criteria, consent written form and the PQSI scale to assess the improvement of quality of sleep and the intervention used in the study was lukewarm *Goksheeram* (100ml) at night, because milk is used night alleviates vitiated *Doshas*. The selection criteria were used to select *Goksheeram*, that was easily available and easily digestible and that was indicated for less sleep (*Alpa Nidra*) and the taste was preferable for all individual. 100 ml of *Goksheeram* was given for 1 month for improving the quality of sleep.

A total 50 individuals selected who were interested and having less quality of sleep assessed through PQSI scale. According to age wise distribution the maximum number of individuals belonged to 24-25 category (30%) and on gender wise distribution the maximum number of individuals belonged to male category 28 (56%) and maximum on unmarried category 47 (94%) and on educational status observations all subjects were educated only, on dietary habits observations maximum individuals taking mixed diet 31 (62%) and on *Vyayama* observations maximum number of subjects not doing *Vyayama* regularly 26(52%) and on *Abhyanga* observations maximum number of individuals were not doing regular *Abhyanga* 46 (92%), they were unaware of benefits of *Abhyanga* related to sleep quality.

According to Ashtanga Sangraha person who get insufficient sleep should use milk, sugarcane juice, meat soup etc. Based on this concept the intervention made to this study was *Goksheerapanam* for 1 month for the improvement of sleep. *Goksheeram* having *Madura Rasa* and *Pruthvi*, *Jala Mahabhuta* predominance, it will decrease the vitiated *Vata Dosha* and increasing the *Kapha* and *Tamo Guna* in body which are the basic physiological factors for the occurrence of sleep and thus the quality of sleep improved.

To test the hypothesis**H0 (Null hypothesis)**

Goksheerapanam does not have *Nidrajanana* property and *Ksheerapanam* does not have beneficial effects on improvement of quality of sleep.

Ha (Alternate hypothesis)

Goksheerapanam has *Nidrajanana* property and *Ksheerapanam* has beneficial effects on improvement of quality of sleep.

After applying Friedman test and Kendall's test the p value of components showing 0.000 since p value <0.05, H0 is rejected and Ha is accepted that means the *Ksheerapanam* has beneficial effects on

Nidrajanana property and has beneficial effects on improvement of quality of sleep.

Gunas of Goksheeram

Madura rasa is predominance of *Prthivi* and *Jala Mahabhoota*.....” *Hemanthe prthivyutakayor madureti...*¹⁴. *Prthivi Mahabhoota* having the properties of *Sthoola*, *Sthira*, *Guru*¹⁵ etc. in this *Sthira Guna* acts in opposite to *Chala Guna* property of *Vata* by this it will reduce the *Vata Dosh*.

Jala Mahabhoota substance having *Sara*, *Manda*, *Snigdha*, *Mrdhu*, *Picchila*¹⁶ properties it will increase the *Kapha Dosh* and also *Tamo Guna* respectively.

Guru Guna having the predominance of *Prthivi* and *Ap Mahabhuta* and it reduce the *Laghu Guna* of *Vata* and will increase *Kapha Dosh*.

Manda Guna having the predominance Of *Prthivi* and *Ap Mahabhuta* and reduce the *Tikshna Guna* of *Pitta* and increase the *Kapha Dosh*.

Snigdha Guna having the predominance of *Jala Mahabhuta* and it reduce the *Ruksha Guna* of *Vata* and increase the *Kapha Dosh*.

Slakshana having the quality of reducing *Vata* and it increase the *Kapha Dosh*.

Picchila having the predominance of *Jala Mahabhuta* and it reduce *Vata* and increase the *Kapha Dosh*.

According to *Sushruta*, *Goksheeram* is most wholesome among all milks and it can be used for “*Vata Pitta Shonita Manseshvapi...*” reducing *Vata*, *Pitta*, *Shonita* And elements affecting the *Mind* and it does *Ojas Vardhanam*¹⁷.

Component 1.SUBJECTIVE SLEEP QUALITY

P value 0.000 showing asymptomatic significant and hence the result *Goksheeram* having *Nidrajanana* effect when compared to the past month. *Sharirika*, *Manasika Vihara* causing vitiation of *Vata Pitta* vitiation and decrease of *Kapha Dosh*. When the *Vata* vitiation causing the decrease of *Bala* (strength) ,*Nidra* (sleep) etc.

वृद्धस्तु कुरुते ऽनिलः

बलनिद्रेन्द्रियभ्रंशप्रलापभ्रमदीनता: (Ash.su.11/7)

Goksheeram having the property of *Madura*, *Snigdha*, *Shita*. *Madura rasa* is predominance of *prthivi* and *jala mahabhuta*. *Prthivi mahabhuta* having properties of *sthula*, *sthira*, *guru* and these will act against the property of *vata dosha* and increase of *kapha dosha* and *tamo guna* respectively.

स्वादु शीतं मृदु स्निग्धं बहलश्लक्ष्णपिच्छलम् ।

गुरु मन्दं प्रसन्नं च गव्यं दशगुणं स्मृतम् । (Cha.su.27/227)

Component 2- SLEEPLATENCY

P value 0.000 showing asymptomatic relation and result that *goksheeram* having beneficial effect on sleep latency.

Goksheeram having the property of *snigdha*, *guru guna* and it will reduce the *vata pitta dosha* and these will increase *kapha tamo guna*.

अल्पाभिष्यन्दि गोक्षीरं स्निग्धं गुरु रसायनम् ।

...जीवनीयं तथा वातपित्तघ्नं परं स्मृतम् ॥ (su.su.45/50)

Component 3. SLEEP DURATION

P value-0.000 .The test was used in this study Friedman test and Kendall's test and the value showing the *Goksheerapanam* has beneficial effects on sleep duration. Due to *Manasika* and *Sharirika Vihara* like external stimuli as light and sound and thinking seriously will ward off the sleep and the duration will be less. In that condition *Goksheeram* having the predominance of *Jala Mahabhuta* and the *Mahabhuta* having the properties of *Drava*, *Snigdha*, *Shita*, *Manda*, *Mrudu*, *Picchila* and these decreasing the *Vata Pitta Dosh* and increasing the *Kapha Tamo Guna* in body. *Goksheeram* also having the property of *Indriya Tarpanam* (nourishment to sense organs) and *Manaskaram* (preferable to mind). By these qualities *Nidra* was improved.

प्रायशो मधुरं स्निग्धं शीतं स्तन्यं पयो मतम् ।

प्रिणनं बृहणं वृष्यं मेध्यं बल्यं मनस्करम् ॥ (ch.su.1.107-112)

Component 4- SLEEPEFFICIENCY

P value 0.000. The test was used in this study Friedman test and Kendall's test and these value showing the *Goksheerapanam* is beneficial effect on sleep efficiency . When sleep efficiency is close to 100 percent it may indicate the person is not getting enough hours of sleep due to inadequate time in bed to meet their sleep needs. Sleep efficiency is the ratio of the total time spent asleep (total sleep time) in a night compared to the total amount of time spent in bed. *Gokheeram* having the property of *Snigdha Guna* and it will increase the *Kapha Dosh* and *Tamo Guna* .By these qualities the sleep was improved.

Component 5- SLEEPDISTURBANCE

P value 0.00 . The test was used in this study Friedman test and Kendall's test and these value showing *Goksheeram* beneficial for sleep disturbance. Sleep disturbance occurs due to *Kshaya* of *Kapha dosha* and *Vata Prakopa* conditions and also *Manasika Vihara*. The functions of mind also are blocked by the increase of *Tama Guna*, when the disturbances occur it will not detached from the faculties (sense organs) and its action is engaging the faculties will continue. When drinking of *Goksheeram*, *Manda*, *Guru*, *Snigdha* properties will increase the *Kapha Dosh* and *Tamo Guna* and *Avaranam* of *Hrudaya* occurs. By these properties *Nidra* was improved.

Component 7- DAYTIME DYSFUNCTION

P value 0.00 . The test was used in this study Friedman test and Kendall's test and the P value showing the *Goksheeram* having beneficial effects on this component.

जीवनीयं श्रमहरं पयः सर्वत्र युज्यते ।(cha.su.1.107-112)

Goksheeram will improve the health of individual and it is *Sramaharam* and *Balya* by these qualities it will improve the daytime dysfunction.

In this study p value 0.000 showing the alternate hypothesis is accepted and thus the *Goksheerapanam* beneficial effect on improvement of quality of sleep.

SUMMARY

A clinical study on the improvement of quality of sleep with *Kshirapaanam* focusing the importance of *Nidra* which is giving health to the body and mind as they are mentioned one of the *Trayopastambas* mentioned by the *acharya*.

Sleep is a non suppressible urge (*Adhareeneeya Vega*) urge of sleep should not be avoided and one should sleep at proper time. Deprivation producing ill effects on health. The effects are seen in the person who neglects sleeping urge and stay awake are *Jrumbha* (Yawning), *Angamarda* (ache) and *Tandra* (drowsiness), *Shirogourava* (heaviness in head).

Above 20 works on *Nidra* and related topics was carried out across the nation. No clinical topics related to *Goksheeram* in improving *Nidra* or equivalent for the condition. Looking in to the above discussed lacuna in the current understanding, the present study was planned the following aims and objects. To assess the improvement of quality of sleep. & to assess the *Nidrajanana* property of *Ksheerapaanam* in improvement of quality of sleep.

Due to the imbalance of *Vata* , *Pitta* and mental stress are the causes of insomnia. By this lack of *Avarana* of *Hrudayam* by the *Kapha* and *Tamo Dosh* which leads to *Nidranaasha*. Circadian rhythm is the one which controls normal night sleep and daytime wakefulness. Light and dark environment can act as external stimulus for circadian rhythm. Melatonin which is secreted naturally occurring compound in animals, plants & microbes. It is responsible for the regulation of circadian rhythm for several biological functions. The basic function of this hormone include antioxidant property, in correction of sleep disorders. Warm milk is a good source of tryptophan. Tryptophan is a vital compound that is responsible for conversion of serotonin to melatonin.

Clinical study

The study was initiated with alternate hypothesis that *Ksheerapaanam* having the effect of *Nidrajanana* property and improving the quality of sleep. Clinical observation was tested for the testing of hypothesis at Parul university of Vadodara who fulfilling the eligibility criteria incorporated . after obtaining written informed consent as per WHO ERC guideline.

A total 50 subjects were selected. The selected individual are advised to take *Ksheerapanam* 100ml at night. Ethical clearance was obtained prior to the enrolment of first subject and this study was registered in clinical trial registry of Indian vide.

The outcome measures were changes in Pittsburgh Sleep Quality Index (PQSI). The data was recorded in a specially designed proforma at baseline and follow up was done after 1 month.

Observations

Among 52 registered 2 subjects discontinue from the study without citing any specific reason. However for demographic, data of all subjects were utilized. For observations on improvement of quality of sleep parameters, data of 50 subjects who have completed the plan were utilized. Maximum number of subjects 15 (30%) belonged to 24-25 years of age group, Maximum number of subjects were male 28, Maximum number of subjects were Hindu -37 (74%), All subjects were educated 50 (100%).

Majority of the included subjects were having Mixed (62%), Majority of the included subjects were consuming Madura 21 (42%), Majority of the included subjects were following irregular dietary habits 30 (60%).

Nidranasha is caused by *Vataprakopa* which will decrease the *Kapha* and *Tamo Guna* in body cause lack of *Avaranam* in *Hrudaya* that is the *Chetana Stanam* of body. *Goksheeram* having the predominance of *Ap Mahabhuta* and the properties of *Guru, Manda, Hima, Snigdha* causing the increase of *Kapha* and *Tamo Avaranam* in the body inducing the sleep.

Ksheerapanam focusing the importance of *Nidra* which is beneficial to the body and mind. Component 1 (subjective sleep quality) showing 48.7% of improvement. Component 2 (sleep latency) showing 44.7% of improvement. Component 3 (sleep duration) showing 51.8% of improvement. Component 4 (sleep efficiency) showing 51% of improvement. Component 5 (sleep disturbance) showing 50% of improvement. Component 6 (sleep medication) is the exclusion criteria for this study. Component 7 (daytime dysfunction) 57.6 % of improvement. Global score showing 51% of improvement.

CONCLUSION

A study to assess the *Nidrajanana* property of *Ksheerapanam* in improvement of quality of sleep is an effort to test the hypothesis as described earlier. The data obtained in this clinical study fulfills the objectives laid down as per synopsis and following conclusions were drawn based on the hypothesis.

- The quality of sleep assessed by using PQSI scale and by the use of *Goksheerapanam* 44% of improve the quality of sleep.
- The alternate hypothesis- Prescribed *Goksheerapanam* has beneficial effects on *Nidrajanana* property in improvement of quality of sleep is accepted and the null hypothesis is rejected.

Limitations

- The limited size of sample & study period was not sufficient to conclude the efficacy of the intervention.
- Lack of willingness of volunteers to undergo intervention

Scope for the further study

- Comparative study can be done on the basis of *Nidrajanana* property of *Ksheerapanam* in different *Prakruthi* for improvement of quality of sleep.
- Old aged person for improvement of quality of sleep.

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