

A comparative study of *Goksheera* and *Mahisha-ksheera* w.s.r. to Quality of sleep - An observational study

Research Article

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Abstract

Ahara (Diet), *Nidra* (Sleep) and *Brahmacharya* (Celibacy) are three sub-pillars, which support the main pillar, the body itself. Health is the supreme foundation for the achievement of happy life. Aim & Objective of Study: To compare the effect of *Go-Ksheera* (Cow Milk) and *Mahisha-Ksheera* (Buffalo Milk) w.s.r. to improve the Quality of Sleep. Methodology: People who fulfill the eligibility criteria was selected and assessed their quality of sleep by Using PQSI scale and advising *Go-Ksheera* (Cow Milk) and *Mahisha-Ksheera* (Buffalo Milk) in Luke warm condition. The data was collected before treatment and after treatment follow up, the intervention was compared and analyzed. Ethical clearance was obtained from Institutional Ethics Committee of Parul Institute of *Ayurveda* (Science of life), Parul University. Observations and Results: On Quality of Sleep is assessed by PQSI Scale, improvement showed were in Sleep Quality (58.12%), Sleep latency (60.35%), Sleep duration (65.72%), Sleep efficiency (60.40%), Sleep disturbances (56.99%), Daytime dysfunction (63.58%), and Global score PSQI (71.77%). Conclusion: Both *Go-Ksheera* (Cow Milk) and *Mahisha-Ksheera* (Buffalo Milk) have shown the beneficial effect, in the improvement of Quality of Sleep. But in between two groups, *Mahisha-Ksheera* (Buffalo Milk) was shown more significant result, to improve the Quality of Sleep.

Keywords: *Nidra* (Sleep), Quality of sleep, *Mahisha-Ksheera* (Buffalo milk), *Goksheera* (Cow milk), PSQI Scale.

Introduction

Ayurveda (Science of life) is basically the study of life. Body (*Sharira*) with sense organs, mind (*Mana*) and soul (*Atma*) firmly meet up for reconciliation into an association for life to show up. For whatever length of time that this association suffers or keeps going, life suffers or endures and with its breaking down life ends in death (1). *Nidra* (Sleep) assumes definitive job being developed, sustenance, multiplication and end of life. The majority of the diseases are for the most part because of ill-advised *Nidra* (Sleep). None of the current arrangement of medication is the finished response for all the medical issues as all these focus on symptomatic help as opposed to a complete fix (2).

Nidra (Sleep) is most significant factor for both the ordinary and wiped-out people. Great sleep implies which is watched appropriately at legitimate time that empowers us to develop well and appreciate great wellbeing. It is well certainty from real practices that the correct sleep is the main methods for endurance (3). In this way *Nidra* (Sleep) practically comprises very existence of living creatures. The connection of *Nidra*

(Sleep) with life can be very much surmised from the genuine encounter throughout everyday life.

Aims and objectives

Aim

To compare the effect of *Goksheera* and *Mahisha-Ksheera* w.s.r. to Improve the Quality of Sleep.

Objectives

1. To Assess the Effect of *Goksheera* to improve the Quality of Sleep.
2. To Assess the Effect of *Mahisha-Ksheera* to improve the Quality of Sleep.
3. To Compare the Efficacy of *Goksheera* and *Mahisha-Ksheera* to improve the Quality of Sleep.

Materials and methods (4)

The methodology used for the study- A study to assess the effect of *Ksheera* (*Go-Ksheera* (Cow Milk) and *Mahisha-Ksheera* (Buffalo Milk) to enhance sleep quality. The clinical study was planned to determine the enhancement in sleep quality.

Null Hypothesis (H0)

(H0A): *Goksheerapana* don't have beneficial effects on improvement of quality of Sleep with special reference to *Nidra*.

(H0B): *Mahisha-Ksheerapana* don't have beneficial effects on improvement of quality of sleep with special reference to *Nidra*.

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Alternate Hypothesis (H1)

(H1A): *Goksheerapana* have beneficial effects on improvement of quality of sleep with special reference to *Nidra*.

(H1B): *Mahisha-Ksheerapana* have beneficial effects on improvement of quality of Sleep with special reference to *Nidra*

Plan of Study

The present Study was divided into two parts -

1) **Conceptual study:** It consists of a comprehensive review of related literature available in *Ayurveda* (Science of life), previous scholarly works and numerous current scientific textbooks and articles.

2) **Clinical study:** Clinical study was designed in the following pattern.

Study design: Interventional Study

Healthy Volunteers: who fulfilled the eligibility requirements were taken and were able to engage in the research on a willing voluntary basis.

Assessment criteria: The evaluation was done on the basis of PQSI scale

Eligibility

Inclusion criteria

1) Age 18 -30 years with irrespective to gender, cast, religion had been selected.

PSQI ranges from - **Scoring 0-21**

(0-5 good quality of sleep)

(6-14 poor quality of sleep)

(Above 14 sleep depressors)

Exclusion Criteria

1. RTA (Road Traffic Accident) and Systemic diseases.
2. Person who are habituated to milk at night.
3. Person who are allergic to milk and milk Products.
4. Patients of Insomnia (< 05 and >14 score PSQI Scale or Primary & Secondary Insomnia)
5. Patients on Sedative and hypnotic medicine or other drugs known to cause drowsiness.
6. Alcoholic Patients.

Laboratory Investigations: NIL

The assessment results were compiled utilizing the PQSI Scoring Scale, Sleep Dairy and Healthy Volunteer Evaluation Questionnaire. The selected people were advised to maintain a Sleep Dairy to confirm sleeping/sleepless pattern.

Ethical clearance

Ethical approval was received from the Institutional Ethics Committee of the Parul Institute of *Ayurveda*, University of Parul, Limda, Vadodara, Gujarat, India, 391760. [IEC No: PU/PIA/IECHR/2019/6], CTRI Registration: [CTRI/2019/03/018198].

Criteria for Assessment

PQSI was assessed before and after *Ksheera* (*Go-Ksheera* (Cow Milk) and *Mahisha-Ksheera* (*Buffalo Milk*))

Outcome measures

PSQI SCALE

A scale for assessing sleep quality is the Pittsburgh Sleep Quality Index (PSQI). Seven component scores make up the PSQI, and each one ranges from 0 (no difficulty) to 3 (severe difficulty). The global score, which varies from 0 to 21, is then calculated by adding the component scores. Poorer sleep quality is indicated by higher scores. A major sleep disruption is defined as a global score higher than 5.

Changes in Quality of sleep (PQSI) Time points

The outcomes were measured after 4 weeks.

Observations and Results

Initial screening was carried out in the campus of Parul University Campus focused on the presence of sleep quality problems. A total of 107 Healthy Volunteers Randomized Registered were assessed for eligibility. Divided into Group A and Group B, Group A 53 Healthy Volunteers and Group B 54 Healthy Volunteers. Intervention for 1 month, follow up BT and AT, Group A Lost follow up (n=2). Intervention for 1 month, follow up BT and AT, Group B Lost follow up (n=2). Then Group A Final Analysis (n =51) and Group A final Analysis (n =52). Total 103 allocated for intervention, 103 complete the follow up and the data was analyzed statistically. And 4 dropouts screened.

Demographic observations

Observations on Age

Out of 103 number of subjects, 86 Subjects (83.50 percent) belonged to the 18-22 age group, followed by the 22-26 age group 13 (12.62 percent), and the age group 26-30 age groups 4 (3.88 percent).

Observations on Gender

Subjects recruited for the study were 91 (88.34 percent) male and 12 (11.65 percent) female

Observations on Desha

Subject who was recruited for the study were from *Sadharana Desha*- 103 (100%)

Observations on Religion

Subjects recruited for the study were Hindu – 101 (98.06 per cent) and Muslim – 02 (1.94 per cent)

Observations on Educational status

All subjects were educated, 103 (100%), in which graduate volunteers are – 89 (86.41%), and post graduate volunteers are 14 (13.59%).

Observations on Personal history

Observations on Ahara

Majority of the included subjects were having Mixed 59 (57.28%) and 44 (42.72%) were used to vegetarian diet.

Observations on dominance of rasi

Most of the included subjects consuming *Katu Rasa* (Pungent Taste), 45 (43.68 per cent), followed by *Madhura Rasa* (Sweet Taste), 33 (33.03 per cent), *Tikta*

Rasa (Bitter taste), 20 (19.41 per cent), *Amla Rasa* (Acidic Taste), 2 (1.94 per cent), *Lavana Rasa* (Salty Taste), 1 (0.97 per cent), *Kashaya (Astringent Taste)*, 2 (1.94 per cent) respectively.

Observations on Vyayama

Maximum subjects 60 (58.25%) were not doing *Vyayama* (exercise) regularly, 2 (1.94%) were doing *Vyayama* (exercise) routinely and 41 (39.80%) not done anything.

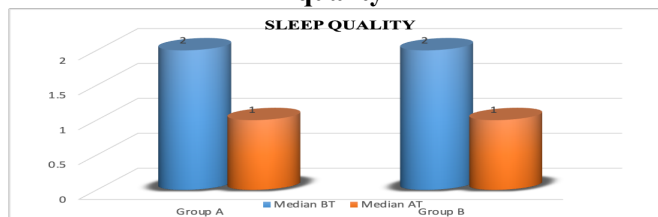
Observations on Nidra (SLEEP)

Maximum no of subjects of *Asamayak* (unequal) + *Alpa Nidra* (not having sound sleep), 101 (98.05%) and followed by *Khandit Nidra* (disturbed sleep), 02 (1.94%) respectively.

Results

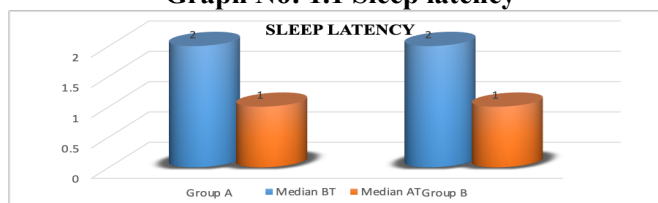
The present study entitled- A comparative study of (*Go-Ksheera (Cow Milk)* and *Mahisha-Ksheera (Buffalo Milk)*) w.s.r. to improvement of quality of sleep was trial consisting of giving (*Go-Ksheera (Cow Milk)* and *Mahisha-Ksheera (Buffalo Milk)*) 100 ml for 1 month, 1 hour before going to bed. The before and after intervention observations of the study were subjected to statistical analysis to derive a conclusion regarding the effects of *Ksheera (milk)* (Group A -*Mahisha-Ksheera (Buffalo milk)* and Group B - *Go-Ksheera (Cow milk)*). The statistical outcomes are reported here. Effect of *Ksheera (milk)* in improvement of quality of sleep-PSQI.

Graph No: 1.0 Component 1. Subjective sleep quality



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

Component 2. Subjective Sleep Latency
Graph No: 1.1 Sleep latency



Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table we can observe that P-Values for Group A and Group B are less than 0.05. Hence, we conclude that effects observed in both groups are significant.

Table No 1.1: Component 1. Subjective sleep quality

Sleep Quality	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	2	1	-6.299a	0.000	65.96	Significant
Group B	2	1	-5.919a	0.000	52.94	Significant

Table No 1.2: Mean Ranks of Quality of Sleep

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
1. Sleep Quality	Group A	51	58.12	2964.00	1014.000	0.012
	Group B	52	46.00	2392.00		
	Total	103				

Table No: 1.3 Sleep Latency

Sleep Latency	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	2	1	-5.980a	0.000	68.52	Significant
Group B	2	1	-4.999a	0.000	50.00	Significant

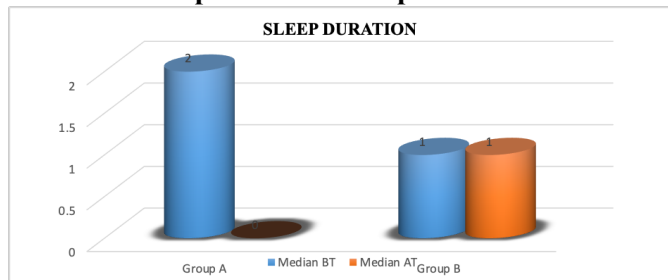
Table no 1.4: Mean Rank of Sleep Latency

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
2. Sleep Latency	Group A	51	60.35	3078.00	900.000	0.002
	Group B	52	43.81	2278.00		
	Total	103				

Table No: 1.5 Sleep Duration

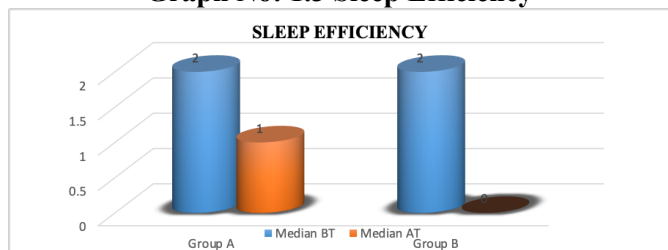
Sleep Duration	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	2	0	-5.477a	0.000	74.31	Significant
Group B	1	1	-2.632a	0.008	33.96	Significant

Component 3. Subjective Sleep Duration
Graph No: 1.2 Sleep Duration



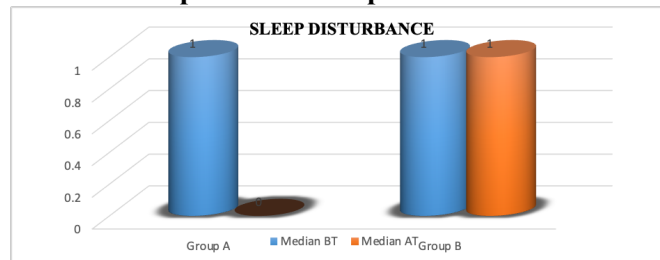
Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table we can observe that P-Values for Group A and Group B are less than 0.05. Hence, we conclude that effects observed in both groups are significant.

Component 4. Subjective Sleep Efficiency
Graph No: 1.3 Sleep Efficiency



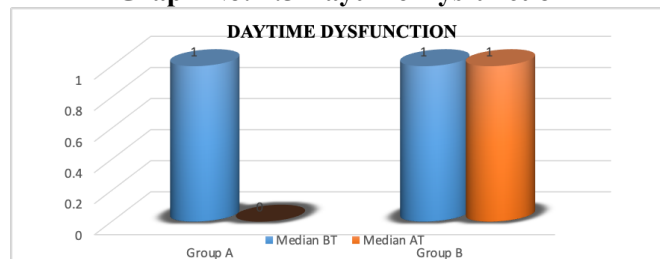
Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table we can observe that P-Values for Group A and Group B are less than 0.05. Hence, we conclude that effect observed in both groups are significant.

Component 5. Subjective Sleep Disturbance
Graph No: 1.4 Sleep Disturbances



Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table we can observe that P-Values for Group A and Group B are less than 0.05. Hence, we conclude that effects observed in both groups are significant.

Component 6. Subjective Daytime Dysfunction
Graph No: 1.5 Daytime Dysfunction



Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table we can observe that P-Values for Group A and Group B are less than 0.05. Hence, we conclude that effects observed in both groups are significant.

Table No: 1.6 - Mean Ranks of Sleep Duration

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
3. Sleep Duration	Group A	51	65.72	3351.50	626.500	0.000
	Group B	52	38.55	2004.50		
	Total	103				

Table No: 1.7 Sleep Efficiency

Sleep Efficiency	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	2	1	-5.424a	0.000	66.35	Significant
Group B	2	0	-4.113a	0.000	55.07	Significant

Table No: 1.8 Mean Rank of Sleep Efficiency

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney	P-Value
4. Sleep Efficiency	Group A	51	60.40	3080.50	897.500	0.003
	Group B	52	43.76	2275.50		
	Total	103				

Table No: 1.9 Mean Rank of Sleep Disturbance

	Group	N	Mean Rank	Sum of	Mann-Whitney	P-Value
5. Sleep Disturbance	Group A	51	56.99	2906.50	1071.500	0.007
	Group B	52	47.11	2449.50		
	Total	103				

Table No: 2.0 Sleep Disturbances

Sleep Disturbance	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	1	0	-4.501a	0.000	59.68	Significant
Group B	1	1	-2.924a	0.003	35.71	Significant

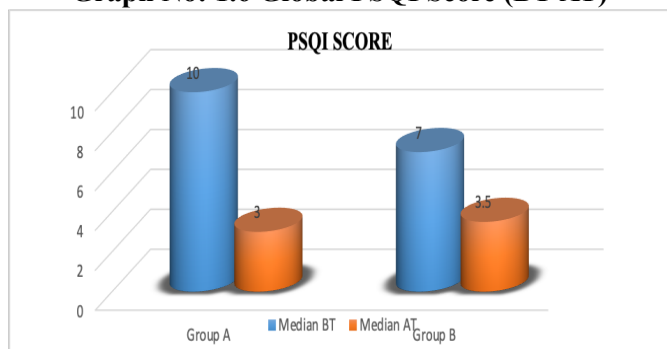
Table No: 2.1 Daytime Dysfunction

Daytime Dysfunction	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	1	0	-3.012a	0.003	68.00	Significant
Group B	1	1	-2.696a	0.007	57.40	Significant

Table No 2.2: Mean Rank of Daytime Dysfunction

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
7. Daytime Dysfunction	Group A	51	63.58	3242.50	1245.500	0.005
	Group B	52	50.45	2623.50		
	Total	103				

Component 7. Subjective PSQI Score (BT -AT)
Graph No: 1.6 Global PSQI Score (BT-AT)



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

Discussion on results

Discussion is the most critical aspect of any analysis study. The logical reasoning of observations is called discussion. The study was- “A Comparative study of (*Go-Ksheera (Cow Milk)* and *Mahisha-Ksheera (Buffalo Milk)* w.s.r. to Quality of Sleep – An Observational Study”.

Table No: 2.3 Global score – PSQI SCORE

PSQI Score	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
Group A	10	3	-6.169a	0.000	67.77	Significant
Group B	7	3.5	-6.262a	0.000	48.68	Significant

Table No 2.4 Mean Rank of PSQI [BT –AT SCORE]

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney	P-Value
PSQI Score	Group A	51	71.77	3660.50	317.500	0.000
	Group B	52	32.61	1695.50		
	Total	103				

Table No: 2.5 - P value

COMPONENT	P VALUE	RELATION
Quality of sleep	0.012	Significant
Sleep Latency	0.002	Significant
Sleep Duration	0.000	Significant
Sleep Efficiency	0.003	Significant
Sleep Disturbance	0.007	Significant
Daytime Dysfunction	0.005	Significant

Component 1. Subjective - Sleep quality

In this study, it found that P-values was (0.012) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). therefore, the results found in both groups (A and B) are significant. So, mean rank value of Group A-(58.12) was more significant than Group B-(46.00). Hence the *Mahisha-Ksheera (Buffalo milk)* showing beneficial effects on Quality of sleep. Hence the result of *Mahisha-Ksheera (Buffalo milk)* having more Quality of Sleep effect compared to *Go-Ksheera (Cow milk)*. Sleep quality refers to how well you sleep. For adults, good quality sleep means that you typically fall asleep in 30 minutes or less (5).

Component 2 - Sleep latency

In this study, it found that P-values was (0.002) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it observed in both Groups (A & B) on sleep latency is significant. So, mean rank value of Group A – (60.35) was more significant than Group B – (43.81). That’s why *Mahisha-Ksheera (Buffalo Milk)* was more significant impact on sleep latency. Sleep onset delay or SOL-That’s the period of time that takes to fall asleep once the lights have been switched off. Ideally, it will take a little period to fall asleep after the lights have been switched off, just not too long (6).

Component 3 - Sleep duration

In this study, it found that P-values was (0.000) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it concluded that in both Groups (A & B) are significant on sleep duration. So, the mean rank value of Group A – (65.72) was more significant than Group B – (38.55). Hence the *Mahisha-Ksheera (Buffalo milk)* showing beneficial effects on sleep duration. Sleep requirements vary slightly from person to person, most healthy adults need between 7 to 9 hours of sleep per night to function at their best (7).

Component 4 - Sleep efficiency

In this study, it found that P-values was (0.003) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it concluded that in both groups (A & B) are significant for sleep efficiency. So, mean rank value of Group A – (60.40) was more significant than Group B – (43.76). That's why *Mahisha-Ksheera (Buffalo milk)* has more beneficial effect on sleep efficiency. Sleep output is the percentage of the overall period spent asleep (absolute sleep time) in the night relative to the average sum of time spent in bed. When sleep quality is close to 100 per cent, it may mean that the individual is not getting enough hours of sleep due to a lack of sleep time(8).

Component 5 - Sleep disturbance

In this study, it found that P-values was (0.007) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it concluded that in both Groups (A & B) is significant on sleep disturbance. So, mean rank value of Group A – (56.99) was more significant than Group B – (47.11). That is why *Mahisha-Ksheera (Buffalo milk)* has significant results on sleep disturbance. Sleep disturbance is triggered by the circumstances of *Kshaya* (depletion) of *Kapha Dosha* and *Vata Prakopa* (increment) and even *Manasika Vihara* (mental disorders)(9).

Component 6 - Daytime Dysfunction

In this study, it found that P-values was (0.005) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it concluded that in both Groups (A & B) is significant on daytime sleep dysfunction. The Mean Rank Value of Group A – (63.50) was more significant than Group B – (50.45). That is why *Mahisha-Ksheera (Buffalo milk)* has more significant on daytime sleep dysfunction. Daytime sleep dysfunction can influence the consistency and quantity of sleep, or can trigger difficulties in sustaining regular wakefulness — both of which may contribute to diminished daytime functioning and a variety of medical psychology and psychosocial issues.

Global score - PSQI SCORE [BT –AT Score]

In this study, it found that P-values was (0.000) for Group A (*Mahisha-Ksheera (Buffalo milk)*) and Group B (*Go-Ksheera (Cow milk)*) are less than (<0.05). Hence, it concluded that in both groups (A & B) are significant for Global - PSQI Scale. and mean rank value of Group A – (71.77) was more significant than Group B – (32.61) in Global - PSQI Scale. Also, Percentage-wise the effect of Group A is (67.77) was more significant than Group B – (48.68) in Global - PSQI Scale. Hence the *Mahisha-Ksheera (Buffalo milk)* showing beneficial effects on the Global Score –PSQI Score.

Conclusion

In this study the effect of *Mahisha-Ksheera (Buffalo Milk)* and *Go-Ksheera (Cow Milk)* was improved quality of sleep. It was observed that all components P-Values of Group A and Group B is less than (<0.05). Hence, it concluded that the effect observed in both groups *Mahisha-Ksheera (Buffalo Milk)* and *Go-Ksheera (Cow milk)* are Significant. The Mean Rank Value of Group A – (71.77) is more significant than Group B – (32.61) in Global - PSQI Scale. Hence, proved that *Mahisha-Ksheera (Buffalo Milk)* has more beneficial than *Goksheera in Nidra-Kara Property (Sleepy)*.

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