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A Randomised Comparative Clinical Trial to Assess the Effectiveness of Sirovasti in Two Different Matra (Time Period) With Ksheerabala Taila in Non-Organic Insomnia

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KEYWORDS

Nidra, Nidranasa, Non-Organic insomnia, Sirovasti, Matra, Kṣheeraba La taila.

ABSTRACT:

Introduction: Sleep is essential for maintaining health and well-being, and its deprivation can lead to neuro-psycho-physiological imbalances. Non-Organic Insomnia (NOI) is characterized by difficulty in sleep initiation and maintenance for at least three nights per week over a month, impacting social and occupational functioning without any identifiable organic cause. Ayurveda describes such conditions under Nidranasha, a Vataja Nanatmaja Vikara, for which Murdhni Taila procedures like Sirovasti are recommended.

Objectives. This study aimed to evaluate the efficacy of Sirovasti with Kṣheerabala Taila in NOI, comparing two durations: 53 minutes and 80 minutes. A total of 36 eligible participants were randomly allocated into two groups—Group A (80 minutes/day) and Group B (53 minutes/day), treated for a maximum of 7 days or until Samyak Lakṣaṇa was observed.

Methods:Assessments included the Insomnia Severity Index, Visual Analogue Scale, Pittsburgh Sleep Quality Index, daily observation of Samyak Lakṣaṇa, Indriyaprasada, and Nidravegadharaṇa lakṣaṇas. Both groups showed statistically significant improvement ($p<0.001$). Though inter-group comparison was statistically insignificant, greater symptomatic relief was observed in the Trial group. Nidravegadharaṇa symptoms and Indriyaprasada showed significantly better outcomes in the 80-minute group.

Results & Conclusions: Sirovasti with Kṣheerabala Taila is effective in managing NOI. Both 53-minute and 80-minute durations yielded significant results, with the 80-minute duration showing slightly better subjective improvement. This suggests that the Matrakala described by Susruta is adequate for achieving therapeutic benefits, supporting the efficacy of traditional treatment durations in Vyadhi Samana.

1. Introduction

Sleep is defined as a temporary state of unconsciousness (more accurately, withdrawal of consciousness from the physical world) from which the subject can be aroused with appropriate sensory stimuli1.Sleep is regulated by several basic mechanisms and when these systems go awry, various types of sleep disorders occur. Prolonged sleep deprivation leads to severe physical and cognitive impairment and eventually leading to death. The word Insomnia has been originated from the Latin equivalent ‘insomn’ meaning sleepless.2 It is not a rare condition. 20-30% of the population have insomnia of one type or other3. After pain, insomnia is probably the most common symptom reported by patients4. It is both a symptom and a disorder.

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Among the non organic sleep disorders, non organic insomnia is the most common disorder This category includes only those sleep disorders in which emotional causes are considered to be the primary factor and which are not due to identifiable physical disorders classified elsewhere5. Non organic insomnia is defined as a condition of unsatisfactory quantity or quality of sleep, which persists for a considerable period of time, including difficulty falling asleep, difficulty staying asleep or early final wakening6.

Ayurveda has very good approach towards the treatment of insomnia by both internal and external treatment modalities. Ayurveda has advocated murdhni taila practises (application of oil over head) which tackles both bodily and emotional factors at the same time. Acharyas gave more importance to vata dosa in the management of anidra in which murdhni taila is mentioned as one of its treatments. Murdhni taila includes Shiro abhyanga, Shiro dhara, Shiro pichu and Shiro basti in which successive procedures are considered as the best. Among these four treatment modalities, Sirovasti is directly indicated in conditions like Prasupti(numbness), ardita (facial palsy) and jagara (awakefullness)

Sirovasti entails holding a specific volume of oil on the head for a specific amount of time. It is a unique process in which a leather bag was used to hold therapeutic oil over the head in ancient times. In sirovasti large quantities of oil is used to get potent and long-standing penetration effects. Here the effect of procedure depends upon the duration of retention. The effect of the procedure is directly proportional to the duration of retention. It has the property to impart its effect to subtle structures of siras. Because of the potency of deep penetration, it is indicated in most of the daruna sirorogas (chronic diseases related to head). Hence the specially formulated sirovasti procedure becomes a highly accountable intervention against vatika diseases.

The three intimations indicating the end point of sirovasti; (vasti-dharana-sanketatrayam)

Table 1-

According to samyak lakshana	According to Ashtanga Hridaya taila is retained till the secretions start to ooze from mouth and nostrils.[7]
According to vyadhi mardavatvam	The Sneha should be retained on the head till the disorder is relieved.[8] This opinion is somewhat true for acute illness where as in case of chronic illness (especially neurological deficits) the result will be gradual.
According to matra [9]	According to Acharya vagbhata the oil is kept in position undisturbed in sirovasti for certain period according to the morbidity of doṣa. In case of vata doṣa oil is kept in position for a period of 10000 matra. In case of pitta doṣa (and rakta according to ashtanga samgraha) oil is kept for 8000 matra Morbidity of kapha doṣa is treated by retaining the oil for a period of 6000 matra When sirovasti is carried out in swastha the oil is kept in position for 1000 matra.[10]

In ayurveda, the term Matra has different meanings like instrument, order, dosage of medicine, quantity, time duration etc. Here matra in terms of time duration is considered. In all the procedures of murdhni taila, the unctuous substances or any appropriate substance is either stationed or drizzled over the destined area for a stipulated period. This specification in the duration of therapy is to facilitate the dissemination of the medicinal potency. Though Vagbhata has given definition for matra as the time equivalent to time taken by a healthy man to pass the tip of his right hand around his right knee or as

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the time equivalent to time taken to shut and open the eye, it may vary according to the person who does it.

Thus in the current study, the definitions of matra given in Sustruta Samhita and Sahasrayoga is considered. In Sushruta Samhita Sutra sthana, it is mentioned as 1 mātra equals to around 0.3 secs11. In Sahasrayoga Dharakalpa, it is mentioned that adjacent placement of the numbers represented by Ikshu, Sindu, Disa, and Graha, i.e, 5-7-8-9 matra accounts to one muhurta.

Ikshu – the 5 arrows correspond to the number 5. Sindu -the seven rivers -to the number 7

Disa – the direction -correspond to number 8. Graha – grahas are 9

Thus 1 matra accounts to 0.5 secs.

So here we have 2 different time durations for the term matra.There might arise a dilemma here as to which reference should be considered. This study focuses on finding a conceptual clarity regarding matra by focussing on the procedure Sirovasti.

2. Objectives

This study aimed to evaluate the efficacy of Sirovasti with Kṣheerabala Taila in NOI, comparing two durations: 53 minutes and 80 minutes. A total of 36 eligible participants were randomly allocated into two groups—Group A (80 minutes/day) and Group B (53 minutes/day), treated for a maximum of 7 days or until Samyak Lakṣaṇa was observed.

3. Methods

- Study design: A Randomised Comparative Clinical Trial.
- Study population: Participants who are diagnosed with Non-Organic insomnia between the age group of 21 to 60 years.
- Sample size- Sample size was calculated as 36 participants satisfying the inclusion criteria.

Table 2- Inclusion & Exclusion criteria

Inclusion criteria	**Exclusion criteria**
Participants fulfilling the diagnostic criteria.	Active infections on scalp
Between the age group of 21 to 60 years	Chronic dermatologic conditions (Psoriasis, Eczema).
Chronicity of minimum 2 months	Allergic rhinitis and fever
Participants willing to give informed consent.	Non-Organic insomnia due to substance abuse
Those who are fit for the application of Kṣheerabala taila on scalp (Prior application of Kṣheerabala taila over scalp for 3 days to rule out any adverse results.)	Taking any medication that could cause sedation and those on psychiatric medication and anti-epileptic medication.
No discrimination of gender, religion, economic status.	Known case of cardiovascular disease, intracranial tumour and those having uncontrolled Diabetes mellitus and Hypertension

Diagnostic criteria

ICD 10 diagnostic criteria for Non organic insomnia.

Plan of study (Table 3)

Particulars	**Trial group**	**Control group**
Sample size	18	18
Drug	ksheerabala taila	kṣheerabala taila
Dose	1.5 L of taila	1.5 L of taila
Duration	53 minutes per day	80 minutes per day
Time of procedure	Between 3 to 5 pm	Between 3 to 5 pm
No: of days of treatment	Till attaining samyak lakshana or for maximum 7 days.	Till attaining samyak lakshana or for maximum 7 days.

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On the previous day of the procedure, 25 gm Avipatti choorna was given for a mild sodhana. During the time of intervention participants were given Gandharvahastadi Kashaya – 90 ml bd in order to ensure anulomana. The procedure was done as per the Standard Operative Procedure No any other internal medications were given during follow up period. After completing 7 days of treatment, participants were advised to do pratimarsa nasya with ksheerabala taila (2 drops) each nostril in the evening till 1 month for the elimination of utkliṣta doshas.

Outcome measurements

Effectiveness of Sirovasti in Non-Organic insomnia was assessed based on:

- Insomnia Severity Index, Visual Analogue Scale and Pittsburgh Sleep Quality Index scales - Assessments were done on 0th day, 8th day ,16th day and follow up on 31st day.
- Sleep diary (by the participants).
- Samyak lakshanas of sirovasti.
- Nidravegadharaṇa janya rogas (disorders caused due to the suppression of the natural urge for sleep)
- Event evaluation scale

Data analysis:

The data obtained during 0th ,7th,15th, and 30th day were statistically analysed to test the efficacy of the interventions by using parametric tests such as Repeated Measures ANOVA and Paired t test. The effect of treatment within the group was tested using Repeated Measures ANOVA and comparison between the groups was done using Independent sample t test. For those failed to follow normal distribution, Wilcoxon signed rank test and Mann- Whitney U Test was used. Data was collected using Microsoft Excel and statistical tests were done using SPSS.

4. Results

1.Effect of Sirovasti on Insomnia Severity Index (Table 4)

Time point	N	Trial group Mean±SD	Control group Mean±SD
ISI BT	18	22.27±4.14	23.18±3.90
ISI AT	18	16.11±5.41	16.37±5.07
ISI 15	18	12.28±5.82	14.56±6.53
ISI 30	18	11.83±6.80	13.50±6.67

In the Trial group, the mean ISI score decreased from 22.27 ± 4.14 at baseline to 16.11 ± 5.41 on day 7, 12.28 ± 5.82 on day 15, and 11.83 ± 6.80 on day 30. In the Control group, the mean ISI score declined from 23.18 ± 3.90 at baseline to 16.37 ± 5.07 on day 7, 14.56 ± 6.53 on day 15, and 13.50 ± 6.67 on day 30.

This change in mean score was statistically analysed with RM ANOVA and the within subject effects and between subject effect of various assessments on ISI on trial group and control group were tested and was found to be statistically significant at $p<0.001$

2.Effect of Sirovasti on Visual Analogue Scale (Table 5)

Time point	N	Trial group Mean±SD	Control group Mean±SD
ISI BT	18	6.61 ±2.00	7.50 ±1.71
ISI AT	18	3.72 ± 2.58	4.31 ±2.38
ISI 15	18	3.00± 3.00	3.56±2.09

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ISI 30	18	2.77± 2.46	3.37±2.06

In this scale scoring was done based on the **number of hours of sleep** for the patient. In both trial and control groups, it was observed that there was a highly significant reduction in the mean scores after the second and the third assessments but further slight reduction in the mean score was noted after the follow up period.

The difference in mean scores between assessments were tested using repeated measures ANOVA in the trial group and control group which was found to be statistically significant at $p<0.001$

(Table 6)

PAIRWISE COMPARISON	Trial group	Control group
BT with D7, D15,D30	p<0.001	p<0.001
DAY 7 with D15, D30	P<0.05	P>0.05
DAY 15 with DAY 30	P>0.05	P>0.05

On pairwise comparison of second and third assessment (7^{th} and 15^{th} day assessments) using paired t test, the trial group showed significance at $p<0.05$ whereas control group showed insignificant values at $p>0.05$. This suggested that the **effect of treatment persisted more in trial group** rather than in control group.

3. Effect of Sirovasti on PSQI Scale (Table 7)

Time point	N	Trial group Mean±SD	Control group Mean±SD
PSQI BT	18	15.17±2.14	15.25±1.34
PSQI AT	18	9±4.18	11.06 ±3.54

Here **Sleep quality and disturbances** over a 1-month time interval was assessed. Descriptive statistics of Effectiveness of treatment in Trial group on PSQI Scale showed value of mean 15.17 ± 2.14 during initial assessment, which was reduced to 9.00 ± 4.2 after 1 month. Descriptive statistics of Effectiveness of treatment in Control group on PSQI Scale showed value of mean 15.25 ± 1.341 during initial assessment, which was reduced to 11.06 ± 3.5 during second assessment on Day 30. And on pairwise comparison using paired t test – results are highly significant in both trial and control group.

4.Effect of Sirovasti between trial and control group on ISI, VAS & PSQI scale –

(Independent sample t test) (Table 8)

	ISI	**VAS**	**PSQI**
BT-AT	P>0.05	P>0.05	-
BT-DAY15	P>0.05	P>0.05	-
BT-DAY30	P>0.05	P>0.05	P>0.05
AT - DAY15	P>0.05	P>0.05	-
AT-DAY 30	P>0.05	P>0.05	-

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DAY15-DAY30	P>0.05	P>0.05	-

Between group analysis has no statistical significance in either of the 3 scales used, showing no group has superiority in reducing the signs and symptoms of insomnia in any of the scales used.

5. **Percentage of relief (Table 9)**

SCALE	**TRIAL GROUP**		**CONTROL**	
	After Intervention	Follow Up	After Intervention	Follow Up
ISI	27.7%	**56.9 %**	29.4%	41.8 %
VAS	43.7%	**58.0 %**	42.5%	55.0 %
PSQI		**40.7 %**		27.5 %

Although the comparative efficacy between the two groups was statistically insignificant, Group A showed a greater percentage of symptom relief. According to the Insomnia Severity Index (ISI), participants in Group A experienced a 27.7% improvement after treatment, which increased to 56.9% after one-month follow-up. Based on the Visual Analogue Scale (VAS), there was a 43.7% reduction in symptoms post-treatment, rising to 58% after follow-up. The Pittsburgh Sleep Quality Index (PSQI) also indicated a 40.7% improvement in the trial group.

Overall, across all three assessment tools, the trial group demonstrated a consistent increase in relief percentage after one month of follow-up.

6. **Assessment on Samyak lakshana of Sirovasti (Table 10)**

	Trial group		Control group		Total	
Signs	Frequency	Percent	Frequency	Percent	Frequency	Percent
Vaktrasrava	0	0	0	0	0	0
Nasika srava	0	0	0	0	0	0
Karna srava	0	0	0	0	0	0

7. **Assessment on Indriyaprasadam (Table 11)**

	Trial group		**Control group**		**Total**	
Symptoms	Frequency	Percent	Frequency	Percent	Frequency	Percent
Indriya prasada	7	38.9	2	12.5	9	26.5

Among the trial group 7 participants reported indriyaprasada. Whereas only two of the 16 participants in the control group reported clarity of sense organs

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8.Assessment on Indriyaprasadam-Within group (Table 12)

Feature Indriyaprasadam	Trial group		Control group	
	Z value	P value	Z value	P value
Day 2	-1.732	P>0.05	0.000	P>0.05
Day 3	-2.449	**P<0.05**	-1.000	P>0.05
Day 4	-2.646	**P<0.05**	-1.414	P>0.05
Day 5	-2.646	**P<0.05**	-1.414	P>0.05
Day 6	-2.646	**P<0.05**	-1.414	P>0.05
Day 7	-2.646	**P<0.05**	-1.414	P>0.05

On analysing using Wilcoxon Signed Rank test, in the trial group from third day onwards P value was found to be statistically significant($p<0.05$) but values are insignificant in the control group. Where as in between group analysis using Mann –whitney U test, values are insignificant at $p>0.05$

9.Assessment on Nidra vegadharana lakshana

90% of individuals reported Siro gourava (heaviness of head), Akshi gourava (heaviness of eyes) and aalsya (drowsiness).80% of individuals reported jrmbha(yawning) and glani(fatigue) 76% of participants reported angamarda (body ache) and jadym (Lethargy). Tantra (Drowsiness), apakti, other vataja rogas are reported by only few of the participants.

Assessment on Nidra vegadharana lakshanas-(WILCOXEN SIGNED RANK TEST) (Table 13)

FEATURES	TRIAL		CONTROL	
BT-AT	**Z VALUE**	**P VALUE**	**Z VALUE**	**P VALUE**
Angamarda	-3.000	P<0.05	-3.317	P<0.05
Sirogaurava	-3.606	P<0.001	-3.464	P<0.05
Akshi gauravam	-3.464	P<0.001	-3.606	P<0.05
Alasyam	-3.742	P<0.001	-3.317	P<0.05
Jrmbha	-3.742	P<0.001	-3.606	P<0.05
Jadyam	-3.606	P<0.001	-3.162	P<0.05
Glani	-3.606	P<0.001	-3.317	P<0.05
Bhrama	-2.000	P<0.001	0.000	P<0.05
Tantra	-3.606	P<0.001	-3.317	P<0.05
Apakti	-1.000	P>0.05	-1.000	P>0.05

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Vataja rogas	-1.000	P>0.05	0.000	P>0.05

Participants of both trail and control group showed highly significant reduction in the complaints like sirogourava, aalasyam, jrmbha, jadhyam, glani, bhrama and tantra at $p<0.001$ and $p<0.05$ respectively. In other lakshanas like apakti and vataja rogas, the results are insignificant ($p>0.05$). The comparative effects of Group A and Group B both showed statistically insignificant results($p>0.05$) in Mann-whitney U test which means the changes are equally significant in both groups.

5. Discussion

Discussion on Demographic data

Age: Among the 36 participants, the majority were in the 51–60 age group, with the least in the 30–40 group. Insomnia incidence increases with age, possibly due to reduced sleep control function and associated comorbidities[12].

Gender: The male-to-female ratio was ~2:3. Females are more prone to insomnia due to socioeconomic disadvantages, physical issues (like osteoporosis), and higher prevalence of depression and anxiety[13].

Medical History: 19.4% had diabetes and 8.3% had hypertension. Insomnia is significantly more common in diabetic patients ($P = 0.001$)[14].

Addictions: 11% reported occasional smoking and drinking, both of which are known lifestyle factors contributing to insomnia[15].

Occupation: 23.5% were unsatisfied with their job, 11.8% had job breaks post-COVID, and 11.8% worked night shifts. Shift work is linked to poorer sleep and lower job satisfaction[16].

Discussion on Effect of therapy

Effect on Samyak lakshana of Sirovasti- Vaktrasrava, Nasika srava and Karna srava (secretions from mouth, nose or ears) are considered as major signs of samyak lakshana of sirovasti and were assessed daily during the time of procedure. In the present study secretions from ear, nose and mouth were not observed in either of the groups. From the definitions of the term utklesa, it is very clear that the concept of utklesana is mostly pertained to Kapha and Pitta[17]. Utklesana of dosa in siras indicate the saturation of Kapha. From this it can be assumed that this short duration of time will be adequate only to address the Vata kopa along with some degree of Kapha vridhi. Here the saturation point of Kapha is not achieved. However, within this time duration Vyadhi Samana was observed in the participants. The drug selected was Kṣheerabala taila which has an inherent nature of Vata Pitta Samana.So it will not bring any utklesa to the dosas. In a clinical study to assess the effectiveness of sirovasti in Vaatika sirasula by Remya.K.R et al, similar findings were reported[18].

Effect on clarity of sense organs(indriyaprasadam)- Sirovasti is considered as most effective among the four methods of Murdha taila prayogas. In the present study 26% of the total participants reported clarity of sense organs after doing sirovasti. All the observations were purely subjective. Participants noted certain changes like feeling a cooling effect, more clarity while reading the newspapers, reduction in watering of eyes and improvement in stickiness of lids. In Charaka Samhita, Sutrasthana it was mentioned that one who applies oil on his head regularly achieves clear sense organs (indriyani praseedanti) and also good sleep (nidralabha)[19]. In the present study, the trial group exhibited a longer duration of exposure (80 minutes) compared to the control group (53 minutes). The significant outcomes observed in Group A may be attributed to the extended duration of sirovasti using Kṣheerabala taila, which likely

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enhanced the therapeutic effects of the tarpana Karma.The Bramhaneeya, Balya, Snigdha and Guru properties of Kṣheerabala taila along with therapeutic effect of sirovasti helps to pacify the vitiated Vata doṣa and renders good sleep and clarity to sense organs.[20]

Effect on Nidravegadharana symptoms -Apart from deprived sleep, the main associated symptoms in the participants were feeling of body ache (Angamarda), heaviness of head (Sirogaurava), heaviness of eyes (Akshi gaurava), frequent yawning (jrmbha), occasional giddiness (Bhrama) and poor appetite (Apakti). This shows that all participants have almost all consequences of Nidravegadharana. On analysis after procedure with Wilcoxen signed rank test, participants of trial group showed significant reduction in the complaints.

Vata vitiation occurring as a result of nidravegadharana go to the next stage of sthanasamsraya in different dhatus and mind and this dhatugata vata vitiation in turn will lead to different types of physical and mental stress responses.[21]. It was observed that once the sleep disturbance was corrected and the participants slept properly, it helped in relieving all the other associated symptoms.

Effect on ISI, VAS & PSQI SCALE

It was found that on assessing ISI and VAS Scores in both trial and control group, there was significant reduction in the mean scores. Assessments were done before treatment, after treatment, on 15th day and on 30th day. Insomnia may result from neuronal cells remaining in an activated potential state—neither fully at rest nor actively firing—making them highly responsive to minimal stimuli[22]. Murdha Taila procedures utilize medicated oils as carriers to deliver sedative agents to the central nervous system, facilitating restoration of the resting membrane potential and thereby promoting sleep.

PSQI values in both groups were compared and were significant at $p<0.001$in both groups. This implies sirovasti with Kṣheerabala taila done in 2 different durations (80 minutes in group A and 53 minutes in group B) produces significant results in PSQI score after the treatment. However, the percentage of relief was reported more in the trial group (40.7% after the follow up) compared to the control group (27.5%).

Discussion on Matra- This study was an attempt to make an operational clarity regarding Matrakala. Overall, on analysing the results, it is observed that on pacifying the signs and symptoms of insomnia and on subsiding the ayurvedic parameters of nidravegadharana lakshana, both groups have significant changes after the intervention and also during the follow up period suggesting that the intrinsic property of sirovasti to impart its effects to subtle structures of siras has attained in both durations. The marked sustained effect of the therapy even after the follow up period was more reported in the trial group. It might be due to the prolonged tarpana karma by sirovasti. Thus, even though the values are statistically insignificant, clinically more improvement was noticed in the trial group, suggesting that the contact period of oil on the scalp might have a role for begetting its benefits.

Probable mode of action of therapy

Modern view - Transdermal drug delivery is gaining attention due to its non-invasive nature, though the stratum corneum (SC)—a lipid-rich, multi-layered barrier of dead keratinized cells—poses a major challenge to drug penetration. Absorption primarily occurs via passive diffusion and filtration. Several factors influence this process, including the application site, skin thickness, surface area, temperature, exposure time, drug concentration, solubility, and molecular size. Regions with thinner skin—such as the face, scalp,

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neck, and wrist—show enhanced absorption, with the scalp being the most effective site.

In addition to transdermal diffusion, the trans follicular route is considered as a secondary pathway due to the hair follicle's large surface area and storage capacity. Another potential route is the vascular pathway, particularly through emissary veins that connect extracranial regions to intracranial venous sinuses via foramina in the skull. There are 13 such veins facilitating this connection. These venous sinuses, interconnected by anastomosing veins, ultimately drain into the jugular veins, offering a potential route for drug diffusion into the brain's neural tissue.

Ayurvedic View - can be explained through 2 aspects.

Procedural Effect

In sirovasti the medicine is retained over the scalp without any movement for a stipulated time. Here, pressure without movement is the stimulus. This stimulus may help to correct the tonic circulatory changes and thereby helps in correction of blood flow to the cells of various vital centres of the brain including limbic system and hypothalamus and correct the brain cell metabolism. The only material used in the procedure is the medicated oil. The sukhoshnata (lukewarm condition) of the oil is maintained throughout the procedure which stimulates the efferent blood vessels and causes vasodilation. It in turn improves the blood circulation, increases fresh oxygen and glucose supply to the brain and relaxes the muscles and nerve endings. Retention of oil in sirovasti enhances absorption and transduction of energy. It refers to conversion of stimulus energy into a neural signal. The stimulus energy here is the pressure exerted by the oil and the temperature of the oil. This prolonged pressure causes stimulation which leads to systemic reaction and transduction of energy[18].

Drug effect- In anidra, vata kopa occurs which will further vitiate pitta as well as kapha. The epidermis of the skin is lipophilic/ hydrophobic barrier. So, use of lipid content is preferable for better transdermal absorption. Kṣheerabala taila is vata pitta shamaka, vedanasthapana as well as balya and brimhaniya to sharira dhatus. Hence sirobasti with this taila provides relief from ataprakopa lakshanas. As it is included under bahi parimarjana chikitsa, the veerya of the drug is absorbed by the braajaka pitta which is situated in the skin. All the ingredients of kṣheerabala taila are madhura and tikta rasaatmaka, sheeta viryayukta and have madhura vipaka. Madhura rasa mitigates both vata and pitta doṣa. It is dhaatunam prabalam and is good for sense organs (shadindriyaprasadaka). Tila taila possesses tikta rasa, the most effective in mitigating Pitta and Kapha in addition to madhura rasa. Tikta rasa is effective in relieving fainting and promotes memory and intellect. Though it possesses ushna veerya, it has gone through processing by seeta veerya drugs like Bala and Ksheera and its ushnatva may get altered. It gives soothing to mind as treatment of insomnia should be aimed at improving the quality of sleep. The dravya used in this taila are rasayana in nature also.[23]

6.Results

There is no statistical difference in the effectiveness of sirovasti with kṣheerabala taila done in 2 groups with 53 minutes and 80 minutes duration respectively in non-organic insomnia. This indicated that doing sirovasti in two different time durations is equally effective in reducing the signs and symptoms of non-organic insomnia, suggesting that the maatrakala mentioned by Susruta (1 matra= 0.3 sec) was sufficient for attaining the samyak lakshana of sirovasti in terms of vyadhi samana.

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