



Research Article

ISSN 2320-4818
JSIR 2016; 5(5): 168-173
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Received: 14-09-2016
Accepted: 13-10-2016

Dr. Sneha Borkar

PG Scholar, Department of Swasthavritta, R. A. Podar Medical College (Ayu.), Worli, Mumbai, Maharashtra- 400018, India

Dr. Prachi Dalvi

Associate Professor, Department of Swasthavritta, R. A. Podar Medical College (Ayu.), Worli, Mumbai, Maharashtra- 400018, India

A comparative study of *Shiroabhyang* and *Karnabhyang* in the management of *Nidranash* (primary insomnia)

Sneha Borkar*, Prachi Dalvi

Abstract

Insomnia is the most common sleep disorder and one of those with the greatest health and social significance. About 10% and 30% of adults have insomnia at any given point in time. It is of two types Primary and secondary insomnia. Primary insomnia is sleeplessness or the perception of poor quality sleep that cannot be attributed to a medical, psychiatric, or environmental cause. It is mainly due to long lasting stress and strain. Ayurveda has mentioned many treatments for *Nidranash*. **Aim:** to compare the efficacy of *Shiroabhyang* and *Karnabhyang* in the management of *Nidranash* (Primary insomnia). **Materials and Methods:** Clinical study was done on 60 diagnosed patients with Primary insomnia of age group 30 to 40 year and divided in two groups. Group A had been treated with *Shiroabhyanga* and Group B with *Karnabhyang* for one month. *Tila taila* was common in both the group. Assessment parameters was Pittsburgh Sleep Quality Index (PSQI) scale with 15 self rated questions and 7 components. **Result:** Statistical Analysis of the Result by Wilcoxon – Matched – Pairs Signed – Ranks test of PSQI scale component in both GROUP A and GROUP B was extremely significant with p value <0.0001. By applying Mann-Whitney Test there was no significant difference found between Group A & Group B in all symptoms with P value is >0.05. **Conclusion:** It was observed that both the therapies (*Shiroabhyanga* and *Karnabhyanga*) are effective in the management of Primary insomnia.

Keywords: Insomnia, *Nidranash*, Primary insomnia, *Shiroabhyanga*, *Karnabhyanga*.

INTRODUCTION

Ayurveda is the science of knowledge of *Ayu* [1]. It emphasizes on the importance of maintenance of health of healthy persons and curing the disease of ill [2]. *Aahar*, sleep and *brahmacharya* are known as *trayopstambha* i.e. three supportive pillars of life [3]. Out of which sleep is a very important factor.

Acharya Charaka has described that happiness, misery, nourishment, emaciation, strength, weakness, virility, sterility, knowledge, ignorance, life and death, all of these factors depending on proper and improper sleep [4]. But in today's world sleep-related complaints are common in the general population due to heavy work load, stress, irregular shifts, etc. According to *Acharya Charaka karya, kala, vikara*, and *prakruti* are the *hetus* of *Nidranash* [5]. *Vata pitta prakopa, manastapa, kshaya, abhighat* are also causes *Nidranash* [6].

Insomnia is the most common sleep disorder and one of those with the greatest health and social significance. About 10% and 30% of adults have insomnia at any given point in time [7]. It is of two types Primary and secondary insomnia. Primary insomnia is sleeplessness or the perception of poor quality sleep that cannot be attributed to a medical, psychiatric, or environmental cause. It is mainly due to long lasting stress and strain.

Modern medicine has developed potent drugs for induction and maintenance of sleep but some of these drugs are found to be carcinogenic, teratogenic etc. Therefore modern treatment is not entirely satisfactory. So the world is in search of proper therapeutic measures, which is effective in the management and cure of the burning problem.

Correspondence:

Dr. Sneha Borkar

C/O Mr. Prakash Borkar,
Plot no 531, Khadan Lay-out, near
Lal School, Beznabag, Nagpur-
440004, India

Insomnia is a *vataja nanatmaja vikara* [8]. *Abhyanga* is *vatashamak* and also a part of *Dinacharya* in *Swasth Purush* for maintenance and promotion of health [9]. It can be incorporated in to a routine appropriate for almost everyone. The *Moordhani Tailam* i.e. *Shiroabhyang* has been considered as an important procedure in the management of *Insomnia* [10]. On the other hand *Karna* (Ear) and *Sparshanendriya* (Organ of touch i.e. Skin) are the seats of *Vata* [11]. For *Abhyanga, tila taila* has been selected for both the group as it has *Snigdha guna, Madhura rasa, madhur vipaka* and *Ushna virya* which help in *Vatashamana* [12]. Hence, present study was taken place with a comparison between *Shiroabhyang* and *Karnabhyang* in the management of *Nidranash* (Primary insomnia) in age group 30-40 years. Assessment parameter was Pittsburgh Sleep Quality Index (PSQI) scale with 15 self rated questions and 8 components.

AIMS AND OBJECTIVES

Aim

- To compare the efficacy of *Shiroabhyang* and *Karnabhyang* in the management of *Nidranash* (Primary insomnia).

Objectives

- To study efficacy of *Shiroabhyanga* in management of *Nidranash*.
- To study efficacy of *Karnabhyanga* in management of *Nidranash*.
- To study comparative effect of *Shiroabhyanga* and *Karnabhyanga* in management of *Nidranash*.

MATERIAL & METHODS

Source of data

Literary source:

All classical text of Ayurveda and modern text were referred. Magazines, journals, research paper, MD dissertation and related source of data from Web were referred.

Type of study: An Open Randomized Prospective comparative clinical study.

Selection: Patients were selected randomly.

Ethical clearance: Clearance from ethical committee of our institute was taken.

Written consent: An informed written consent of all 60 patients included in study was taken.

Medium of study: English, supported by Ayurveda terminology, wherever necessary in Sanskrit.

Study centre: Hospital attached to the institute.

Total number of patients: 60 (30 in each group)

Selection criteria

Inclusion criteria:

1. Age group – Age between 30 to 40 yrs.

2. Patients ready to abide by trial procedure & ready to give informed consent.

3. Difficulty in falling sleep or maintaining sleep or sleep of poor quality.

4. If the sleep disturbance has occurred at least 3 times per week for at least 1 month.

5. If the unsatisfactory quality and quantity of sleep either causes marked distress or interferes with social and occupational functioning.

6. Patients with Global PSQI scale score >7 were selected

Exclusion criteria:

1. Any mental disorders.

2. Patients on medication which impact normal sleep retry were excluded.

3. *Insomnia* due to other condition like *Madatyay, Abhighat*, and other systemic disease were excluded.

4. Patients *ayogya* of *abhyang*.

6. The patients which discontinue the treatment were excluded from the study.

7. Patients suffering from Acute or Chronic Suppurative Otitis Media.

8. Patients with Global PSQI scale score <7 were excluded.

Plan of study

- For conducting study total 60 patients were selected randomly.
- Patients with odd serial number were given *Shiroabhyanga* and
- Patients with even serial number were given *Karnabhyanga*
- Standardized *Til tail* was common in both the group.
- Demonstration of *Shiroabhyanga* and *Karnabhyang* procedure was given to all patients through video clip along with training of procedure and related instruction were given.
- Patients were advised to do *Shiroabhyanga* and *Karnabhyanga* daily.
- Daily diary was also given to each patient for maintenance of record of procedure.
- This study was carried out for 1 month.
- Follow up was taken after 15 days of starting treatment procedure.
- Drop out patients were excluded from the study
- **GROUP A**- 30 patients – *Shiroabhyanga* with til tail
- **GROUP B** – 30 patients – *Karnabhyanga* with til tail

Shiroabhyanga:

- **Abhyang kala:** Before going to bed at night
- **Kalawadhi:** 5 min
- **Matra:** 20ml

Karnabhyang:

- **Abhyangakala:** Before going to bed in night.
- **Kalawadhi:** 5 min

➤ **Matra:** 10 - 20 ml

Criteria for assessment

➤ ‘Pittsburgh sleep quality index’ (PSQI) insomnia scale as a rating scale of insomnia [13].

Components of PSQI scale

C1. Component 1: Subjective Sleep Quality:

C2. Component 2: Sleep latency:

C3. Component 3: Sleep duration:

C4. Component 4: Sleep efficiency:

C5. Component 5: Sleep disturbance:

C6. Component 6: Use of Sleep medication:

C7. Component 7: Day time dysfunction:

C8. Global PSQI: Global PSQI score is the sum of all the seven components of PSQI.

RESULTS

Demographic result found during study

Incidence of Primary insomnia was more in 36 to 40 year i.e. 70% and mostly women were affected i.e. 71.66% out of 60 patients. In occupation wise distribution mostly servicemen i.e. 48.33% and housewives’ i.e. 33.33% were affected out of 60 patients. In diet wise distribution incidence was more in mixed diet patients i.e. 83.33% with mostly *Katu Rasatmaka aahara* i.e. 46.66% out of 60 patients. Incidence was common in *Vataj prakriti* i.e. 33.33% and *Pittaja prakriti* i.e. 23.33% out of 60 patients. Patients with *Vishamagni* i.e. 55% were more affected.

Clinical assessment of patients

Statistical Analysis of the Result by Wilcoxon – Matched – Pairs Signed – Ranks test in both GROUP A and GROUP B was extremely significant with p value <0.0001 (Table 1 & 2).

Table 1: Statistical Analysis of the Result by Wilcoxon – Matched – Pairs Signed – Ranks test of COMPONENTS of PSQI SCALE in GROUP A in 30 patients

S. No.	Symptoms	Mean±SD	P Value	Result
1	C1 BT AT	2.433±0.540 0.833±0.9129	<0.0001	Extremely significant
2	C2 BT AT	2.5±0.7311 0.866±0.7761	<0.0001	Extremely significant
3	C3 BT AT	2.8±0.4068 1.566±0.8584	<0.0001	Extremely significant
4	C4 BT AT	2.666±0.6600 0.933±1.048	<0.0001	Extremely significant
5	C5 BT AT	1.8±0.6103 0.9±0.6618	<0.0001	Extremely significant

6	C6 BT AT	1±1.287 0.033±0.1826	<0.0001	Extremely significant
7	C7 BT AT	2.633±0.5561 0.966±0.8899	<0.0001	Extremely significant
8	GLOBAL PSQI (C8) BT AT	15.833±2.878 6.1±4.245	<0.0001	Extremely significant

Table 2: Statistical Analysis of the Result by Wilcoxon – Matched – Pairs Signed – Ranks test of COMPONENTS of PSQI SCALE in GROUP B in 30 patients

S. No.	Symptoms	Mean±SD	P Value	Result
1	C1 BT AT	2.466±0.5074 0.866±0.8996	<0.0001	Extremely Significant
2	C2 BT AT	2.566±0.5683 0.8667±0.8604	<0.0001	Extremely Significant
3	C3 BT AT	2.733±0.4498 1.5333±0.8996	<0.0001	Extremely Significant
4	C4 BT AT	2.7666±0.5040 1±1.259	<0.0001	Extremely Significant
5	C5 BT AT	1.833±0.4611 0.766±0.5040	<0.0001	Extremely Significant
6	C6 BT AT	0.6±1.037 0.033±0.1826	<0.0001	Very Significant
7	C7 BT AT	2.733±0.4498 0.666±0.7112	<0.0001	Extremely Significant
8	GLOBAL PSQI (C8) BT AT	15.7±2.152 5.733±4.185	<0.0001	Extremely significant

By applying Mann-Whitney Test for comparison between two groups i.e. GROUP A and GROUP B after treatment, there was no significant difference found in all components of PSQI scale with P value >0.05 (Table 3).

Table 3: Comparison between two groups with respect to symptoms score by Mann-Whitney Test in COMPONENTS of PSQI After treatment

S. No.	Symptoms	Mean±SD	Confidence Limits		P Value
			Lower	Upper	
1	C1 Group A Group B	0.833±0.9129	0.4925	1.174	>0.05
		0.866±0.8996	0.5308	1.203	
2	C2 Group A Group B	0.8666± 0.7761	0.5769	1.156	>0.05
		0.266±0.8604	0.5454	1.188	
3	C3 Group A Group B	1.566±0.8584	1.246	1.887	>0.05
		1.5333± 0.8996	1.197	1.869	
4	C4				

	Group A Group B	0.933±1.048 1±1.259	0.5420 0.5298	1.325 1.470	>0.05
5	C5 Group A Group B	0.9±0.6618 0.766±0.5040	0.6529 0.5785	1.147 0.9548	>0.05
6	C6 Group A Group B	0.0333± 0.1826 0.0333± 0.1826	-0.03483 -0.03483	0.1015 0.1015	>0.05
7	C7 Group A Group B	0.9666± 0.8890 0.6666± 0.7112	0.6344 0.4011	1.299 0.9322	>0.05
8	C8 Group A Group B	6.1±4.245 5.733±4.185	4.515 4.171	7.685 7.296	>0.05

By applying Chi-square test for symptom Global component C8 in both Group A and B (Table no. 4), it was found that there is a significant association between B.T. and A.T. grade ($p < 0.0001$). It shows that after therapy patients were shifted from 'clinically significant insomnia of moderate severity' to 'sub threshold insomnia' and 'sub threshold insomnia' to 'no clinical insomnia'. It means there is reduction in severity of insomnia.

Table 4: Statistical Analysis of the Result by CHI-SQUARE TEST of GLOBAL COMPONENT (C8) OF PSQI SCALE in 30 patients

Groups		No clinically significant insomnia	Sub threshold insomnia	Clinical insomnia	P value
Global Component(C8) Group a	BT	0	9	21	$p < 0.0001$
	AT	19	11	0	
Global Component(C8) Group b	BT	0	9	21	
	AT	19	11	0	

DISCUSSION

Probable mechanism of action of *Shiroabhyanga* and *Karnabhyanga* in PSQI SCALE COMPONENTS

C1: Subjective sleep quality

This denotes the rating given by the patient about the quality of his or her sleep during past month. It was observed that both the therapies are equally effective in relieving insomnia. The procedures create a feeling of well-being and enhanced self-esteem. It ease emotional trauma through relaxation, hence always keeps the body and mind stress free and results in improvement in sleep quality of patients.

C 2: Sleep latency

This denotes the time taken by the patients to become asleep after lying down on the bed. Both *Shiroabhyanga* and *Karnabhyanga* are equally effective in reducing time taken for sleeping after going to bed. During *Shiroabhyanga* and *Karnabhyanga* the neurotransmitter like serotonin and endorphin get released which helped in inducing sleep in short time after going to bed.

C 3: Sleep duration

It indicates the number of hours patients are experiencing sleep. Both *Shiroabhyanga* and *Karnabhyanga* are equally effective in increasing the sleep duration of patients. During therapy the release of serotonin might have helped in inducing non REM sleep which is also known as slow wave sleep. This is the stage of sleep which is called as actual restful sleep and the therapies are very much effective in promoting this kind of sleep.

C 4: Sleep efficiency

It indicates the sleep efficiency which can be calculated by dividing the number of actual hours of sleep with number of hours spent in bed multiplied by hundred. Both *Shiroabhyanga* and *Karnabhyanga* are equally effective in improving sleep efficiency of patients. *Shiroabhyanga* therapy reduces stress and anxiety by relaxing both mind and body. It relieves tightness, stiffness, spasms and restrictions in the head muscle tissue and stimulates sensory receptors which can stimulate or soothe nerves. Due to this soothing action, one might get sleep in short time and for long duration. During *Karnabhyanga*, vagus nerve get stimulated which activate parasympathetic nervous system. It relaxes the mind and promotes sleep.

C 5: Sleep disturbance

It indicates disturbance in sleep during the night in terms of night awakening without any reason or getting up for micturition. Both the therapies stimulate parasympathetic nervous system, which suppresses the brain activities and relaxes the brain. This in turn stimulates sleep centers which induces sleep. Hence, this decreases the frequency of wakening for any of the reason.

C 6: Use of sleep medication

It represents that the patient need for medication to induce sleep. Both the therapy is equally effective in bringing down the use of sleep medication. During therapy the release of neurotransmitter serotonin may had helped in inducing non REM sleep hence use of sleep medication can be controlled for inducing sleep.

C 7: Day time dysfunction

It indicates the patients had trouble staying awake while driving, eating meals, engaging in social activity during day time or trouble in keeping up enough enthusiasm to get things done. The therapy might have balancing effect on both sympathetic and parasympathetic nervous system which is very much important for normal sensory and motor function. Hence due to therapy the day time dysfunction symptom has reduced.

Probable mechanism of action of *Tila Taila Shiroabhyanga* in *Nidranash*

Ayurvedic view

Acharyas has mentioned that *Abhyanga* is a part of *Dinacharya* procedure and it should be applied at least on Head, feet and ear daily^[14]. *Moordhani taila* i.e. *Shiroabhyang* is prescribed as the best treatment of *Insomnia*.

Shira or Head is known as *Uttamanga* which is the seat of *Indriyas*^[15]. Therefore all the functions of *Gyanendriya* and *Karmendriya* are controlled by the *Shira* i.e. the Brain. As mentioned in ancient text that *Vayu* remains on the top of the body i.e. *Shira*. In *Nidranash*, functions

of Vata get impaired. Hence *Abhyanga* on head will help in performing *Vatashamana*. *Twacha* i.e. skin is called as *Sparshanendriya* and touching is special attributes of *Vayu mahabhuta* [16]. When *Abhyanga* is performed with luke warm *Tila taila* on the *Shira* it reaches to *Majja dhatu* in 900 *matras* i.e. 285 sec which is nearly equal to 5 min [17, 18]. This is due to the fact that when oil is applied to the skin in *Pratiloma* direction, its active ingredients reaches to the *Romakupa* and through *Swedawahi strotasa* and *Siramukha* it is carried to the *Majjadhatu* [19]. *Tila taila* is having *Vyavayi, Vikasi and Sukshma guna*, which helps the oil to cross all the *Dhatu* from *Rasa* to *Asthi* and reach up to *Majja dhatu* [20]. After reaching *Majja dhatu*, *Madhura rasa, Madhura vipak*, and *Snigdha guna* will help in reducing *Rooksha, Lagho* and *Chala guna* of *Vata*. *Madhura rasa* and *Madhura vipaka* also helps in pacifying *Pitta*. *Snigdha guna* will helps in reducing *Kaphakshaya* and *Majja dhatu kshaya*. Due to *Vatashamana, Rajo guna* also get decreased. Due to this mechanism *Gyanendriya* and *karmendriya* also get relaxed. *Mana* which is *ubhayendriya* also gets relaxed. Hence due to *Indriya prasadana, Sleep* occurs.

Modern view

During *Shiroabhyanga* different type of mechanical sensation is given to the skin like pressure, rubbing, touches etc. So these sensory impulses are received by respective receptors present on the surface of skin and carried to the hypothalamus in the brain [21]. After reaching hypothalamus it provides soothing effect and stimulates Para sympathetic nervous system (PNS). PNS decreases the activity of Sympathetic nervous system. So decreases releases of stress hormones like cortisol and adrenalin. Due to this, heart rate decreases, blood pressure decreases, blood glucose level returns to normal and blood vessels get dilate. All these factors provide relaxation to the mind. When mind gets relax, the Ascending reticular activating system (ARAS) which is responsible for wakefulness stops functioning and the sleep centers in the brain get activated. One of the sleep centers, Raphe nucleus starts releasing serotonin from nerve fibers arising from its nucleus, which is responsible for Non REM (non rapid eye movement sleep) sleep. This is a deep and rest full form of sleep. Another centre Locus Ceruleus of Pons also get activated and releases Nor-adrenalin from nerve fibers arising from its nucleus [22]. Nor-adrenalin is responsible for REM (rapid eye movement) sleep. *Tila taila* contain protein Tryptophan which is precursor of serotonin, so after getting absorbed by dermis, it enters into blood circulation and then help in inducing sleep.

Probable mechanism of action of *Tila Taila Karnabhyanga* in *Nidranash*

Ayurvedic view

Shrotra is the *sthans* of *vata*. When ear skin get massaged with *tila tail* its active ingredients gets absorbed by *romakupa* and through *swedawahi strotasa* and enters in circulation. *Tila tail* is having *madhura rasa* and *ushna virya* which help in *vatashamana*. *madhura rasa* and *madhura vipaka* will help in *pitta shaman* and *snigdha guna* will increase *snigdha guna* of *kapha*. In this way the basic function of *vata* get normalized. *indriyas* get relaxed and due to this *mana* which is *ubhayendriya* also get relaxed. This mechanism helps in inducing Sleep.

Modern view

Ear skin is very sensitive because it is rich in nerve supply. Upper two-third and lower one-third of lateral surface external ear is supplied by auricular nerve which is a branch of vagus nerve. When external ear gets massage with warm *til* oil, the vagus nerve get stimulated and these

afferent sensory impulses are carried by afferent sensory nerve pathway to hypothalamus via peripheral nerve and spinal cord where it activates parasympathetic nervous system (PNS). PNS is responsible for relieving stress by lowering blood pressure, lowering blood glucose level and decreasing heart rate. After brain gets relaxed Ascending reticular activating system get suppressed and sleep centers get stimulated. Sleep centers releases serotonin and noradrenalin which are responsible for inducing non-REM and REM sleep respectively.

CONCLUSION

On the basis of conceptual Analysis and observations made in the study, the following conclusions can be drawn;

- *Vatavridhhi* along with *Kaphakshaya* is the main reason for *Insomnia*.
- Patients with predominance of *Vata Pitta prakruti* are more prone to Primary *Insomnia*.
- Female population is more sufferer of Primary *Insomnia* than male.
- Both the therapies (*Shiroabhyanga* and *Karnabhyanga*) are effective in the management of Primary *insomnia*.

Conflict of interest: Nill

Financial assistance: No

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