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, vika, and prakrutti 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.
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, Abhigbat, 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 Karnabhyanga 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
**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 Vataja 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

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Symptoms</th>
<th>Mean±SD</th>
<th>P Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C1</td>
<td>2.433±0.9129</td>
<td>0.033±0.1826</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2</td>
<td>C2</td>
<td>2.666±0.6000</td>
<td>0.933±0.148</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>3</td>
<td>C3</td>
<td>2.8±0.4068</td>
<td>1.566±0.8584</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4</td>
<td>C4</td>
<td>2.666±0.6000</td>
<td>0.933±0.148</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>5</td>
<td>C5</td>
<td>1.8±0.6103</td>
<td>0.9±0.6168</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>6</td>
<td>C6</td>
<td>1±1.287</td>
<td>0.033±0.1826</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>7</td>
<td>C7</td>
<td>2.633±0.5561</td>
<td>0.966±0.8899</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>8</td>
<td>GLOBAL PSQI (C8)</td>
<td>15.833±2.878</td>
<td>6.1±4.245</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Symptoms</th>
<th>Mean±SD</th>
<th>P Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C1</td>
<td>2.466±0.5074</td>
<td>0.866±0.8996</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2</td>
<td>C2</td>
<td>2.566±0.5683</td>
<td>0.866±0.8604</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>3</td>
<td>C3</td>
<td>2.733±0.4498</td>
<td>1.533±0.8996</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4</td>
<td>C4</td>
<td>2.766±0.5040</td>
<td>1±1.259</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>5</td>
<td>C5</td>
<td>1.833±0.4611</td>
<td>0.766±0.5040</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>6</td>
<td>C6</td>
<td>0.6±1.037</td>
<td>0.033±0.1826</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>7</td>
<td>C7</td>
<td>2.733±0.4498</td>
<td>0.666±0.7112</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>8</td>
<td>GLOBAL PSQI (C8)</td>
<td>15.7±2.152</td>
<td>5.7±3.185</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Symptoms</th>
<th>Mean±SD</th>
<th>Confidence Limits</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C1</td>
<td>0.833±0.9129</td>
<td>0.4925</td>
<td>1.174</td>
</tr>
<tr>
<td>2</td>
<td>C2</td>
<td>0.866±0.8996</td>
<td>0.5769</td>
<td>1.156</td>
</tr>
<tr>
<td>3</td>
<td>C3</td>
<td>1.533±0.8996</td>
<td>1.246</td>
<td>1.887</td>
</tr>
<tr>
<td>4</td>
<td>C4</td>
<td>1.533±0.8996</td>
<td>1.246</td>
<td>1.887</td>
</tr>
</tbody>
</table>

**Matra:** 10 - 20 ml
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

<table>
<thead>
<tr>
<th>Groups</th>
<th>No clinically significant insomnia</th>
<th>Sub threshold insomnia</th>
<th>Clinical insomnia</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Component (C8)</td>
<td>BT</td>
<td>0</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Group a</td>
<td>AT</td>
<td>19</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Global Component (C8)</td>
<td>BT</td>
<td>0</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Group b</td>
<td>AT</td>
<td>19</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

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 Tala Shiroabhyanga in Nidranash

Ayurvedic view

Acharyas has mentioned that Abhyanga is a part of Dinacharya and it should be applied at least on Head, feet and ear daily [14]. Moordhani tala i.e. Shiroabhyang is prescribed as the best treatment of Insomnia. Shira or Head is known as Uttananga which is the seat of Indriya [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 Vaya mahabhuta [16]. When Abhyanga is performed with Luke warm Tila taila on the Shira it reaches to Majja dhata 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 Vayavyati, Viskasi and Sukshma guna, which helps the oil to cross all the Dhata from Rasa to Asthi and reach up to Majja dhata [20]. After reaching Majja dhatu, Madhura rasa, Madhura vipak, and Snigdha guna will help in reducing Rooksha, Lagho and Chala pungya of Vata. Madhura rasa and Madhura vipaka also helps in pacifying Pitta. Snigdha guna will helps in reducing Kaphakhshaya and Majja dhata 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 get suppressed and sleep centers get stimulated. Sleep occurs.

PROBABLE MECHANISM OF ACTION OF TILA TAILA KARNAABHYANGA IN NIDRANASH

Ayurvedic view

Shroatra 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:

- Vatavriddi 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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