

## Impact of Long-Term Yoga and Padabhyanga Practice on Sleep Quality and Quality of Life in the Elderly

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### ABSTRACT

Among elderly persons insomnia has become a prevalent issue. It negatively affects their quality of life. Not only has that it also exacerbated other medical disorders. The purpose of the research is to examine how yoga and Padabhyanga are effective in this case. It involved patients who are among the senior citizens or elderly categorised. It investigates the impact of yogic practices and Padabhyanga on the quality of sleep of insomnia sufferers. This study highlights the physiological and psychological mechanisms that underlines through some metrics. Metrics are like sleep latency, duration, and efficiency. It also holds the findings. Findings suggest yoga and Padabhyanga are very effective and holistic approaches. These holistic approaches can manage insomnia in the elderly persons. The study also highlights some limitations and future research. Through the future research this study could explore the long term benefits.

**Keywords:** Elderly, Insomnia, Yogic practices, Padabhyanga, Sleep Quality, Non pharmacological interventions.

### 1. Introduction

Research shows that seniors who suffer from insomnia are not alone. Insomnia symptoms are like having trouble sleeping. The International Classification of Sleep Disorders third edition (ICSD-3) defines insomnia as "a repeated difficulty with sleep initiation, duration, consolidation, or quality that occurs despite adequate opportunity and circumstances for sleep, and results in some form of daytime impairment." The elderly demographic in India is projected to reach 158.7 million by the year 2025, constituting 11.1% of the overall population (UNDP-2024). Therefore, it is imperative to tackle this public health issue. Individuals suffering from insomnia are at an increased risk for concurrent medical conditions (Katz DA et al., 1998). Over 50% of individuals aged 60 and older experience chronic medical conditions, with the incidence of these conditions rising as age increases (Mooventhana, A. et al., 2017). In a study involving more than 9,000 adults living in the community, carried out by the National Institute on Aging, it was found that 28% of the respondents experienced challenges in falling asleep, whereas 42% reported difficulties in both falling asleep and staying asleep (Krishnan P et al., 2008). Sufferers have some symptoms like daytime fatigue, mental health, cognitive difficulties, physical tensions, and increased risk of accidents. Daytime fatigue means feeling tired or sleepy during the day. Having trouble concentrating and focusing on tasks are some examples of cognitive difficulties. Waking up too early is also included. Various symptoms influenced by insomnia. Through this disruption sufferers could have chronic health conditions. Insomnia is also associated with several medical conditions, as it may increase the risk of developing type 2 diabetes, metabolic syndrome, and obesity (Spiegel K et al., 2009).

It also leads to hypertension and a vicious circle of declining health. It is connected to the cognitive function with the higher chance of falling. It also became there as on for a lower standard of living. Prescription medications like hypnotics and sedatives are frequently used to treat insomnia. Sufferers can have serious side effects in this situation. Padabhyanga and yoga techniques have drawn interest due to their ability to enhance the quality of sleep.

### **Aims and Objectives**

**Aims:** Evaluating the impact of the specific yoga poses to improve the sleep quality is the aim of the study. More specifically, this is experienced by the elderly persons who suffer from insomnia.

### **Objectives:**

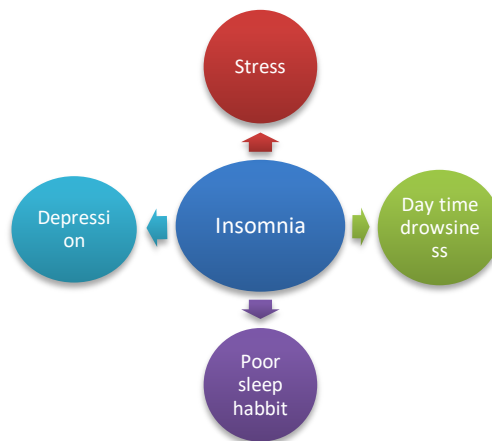
1. Assessing the effect of Padabhyanga on senior patients suffering from insomnia by the metrics of sleep latency, duration, and general quality of sleep.
2. Evaluating the effectiveness of traditional pharmaceutical treatments for senior insomnia versus the use of yoga and Padabhyanga.
3. Examining how yoga and Padabhyanga may improve the quality of sleep through physiological and psychological factors.
4. Identifying the viability and long-term advantages of integrating Padabhyanga and yoga into daily routines.

## **2. Literature Review**

Insomnia is a serious health problem. It not only lowers quality of life but also makes other age-related health problems worse. More specifically in older populations. There are several researches that have examined the various techniques to address insomnia. Research offered by traditional and alternative medicine like Ayurveda as well as yoga practices.

Research suggests that older adults who engage in regular Yoga practice experience improved overall sleep quality, fewer instances of disturbed sleep, reduced time taken to fall asleep, diminished daytime dysfunction, lower reliance on sleep medications, and an increased sense of restfulness and energy in the morning. These findings align with earlier studies that examined the impact of a six-month Yoga intervention on elderly individuals, revealing that participants in the Yoga group exhibited superior sleep quality and fewer sleep disturbances compared to those in the control group (Bankar MA et al., 2013). Foot reflexology has been shown to notably lower blood pressure in older adults. Additionally, it enhances sleep quality for those suffering from hypertension. The research indicated that foot reflexology led to a substantial improvement in sleep quality among elderly participants, with the average sleep quality score rising from  $7.03 \pm 2.88$  in the pre-test to  $3.23 \pm 1.92$  in the post-test, reflecting a beneficial impact on their overall sleep experience (Mary et al., 2024). Another study conducted in 2022 at Eashwaribai Memorial College of Nursing in Secunderabad, Telangana, India, examined the impact of yoga and exercise on enhancing physical function and quality of life (QOL) among the elderly. The findings indicated positive effects on mental and social well-being, as well as health-related quality of life in older adults (Kumari BNP et al., 2022). Yoga intervention has been shown to enhance the quality of life (QOL) and sleep quality among elderly individuals residing in nursing homes. A total of 120 participants from nine different elderly care facilities were randomly assigned to either the yoga group or the waitlist group. Those in the yoga group engaged in daily yoga sessions for one month, followed by weekly sessions for an additional two months, and were encouraged to continue practicing yoga independently for a total of six months. In contrast, participants in the waitlist group did not receive any intervention during this timeframe. The evaluation of participants was conducted using the World Health Organization Quality of Life (WHOQOL)-BREF to assess QOL and the Pittsburgh Sleep Quality Index to evaluate sleep quality, both at baseline and after six months (Hariprasad VR et al., 2013). Yoga plays a crucial role in enhancing sleep quality among older adults by minimizing sleep disturbances, decreasing the time it takes to fall asleep, and reducing reliance on medication. Additionally, it contributes to increased sleep duration and efficiency. Consistent practice fosters relaxation and stimulates the parasympathetic nervous system, leading to improved sleep results (Nita et al., 2023). Hatha Yoga has been shown to greatly enhance sleep quality among the elderly, supported by research that reports a p-value of 0.000, which signifies a substantial impact. This practice fosters relaxation, alleviates stress, and improves overall well-being, resulting in more favorable sleep results (Devanti NR et al., 2022). Yoga has been shown to enhance sleep quality markedly among older adults. This conclusion is supported by a study indicating that participants who practiced yoga for six months exhibited improved sleep patterns relative to a control group, with results that were statistically significant ( $p \leq .05$ ) (Hung Manh NGUYEN, 2018). Aroma foot massage enhanced the quality of sleep among elderly residents, as evidenced by an increase in post-test scores from 34.72 to 38.44. This intervention promoted relaxation and improved sleep patterns, thereby illustrating its efficacy as a complementary treatment for sleep-related problems in older adults (Kang JI. et al., 2022). A study involving 210 participants was carried out. The experimental group received a combination of foot baths and massages along with auricular point sticking, while the control group was treated solely

with auricular point sticking. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). The results indicated that the PSQI scores in the experimental group were significantly lower than those in the control group ( $P>0.05$ ) after treatment. These findings suggest that the combination of foot baths and massages may enhance sleep quality in patients (Lai C et al., 2014). A quasi-experimental clinical trial was conducted involving elderly women diagnosed with Restless Legs Syndrome (RLS) to assess the impact of foot reflexology on their sleep quality. Each participant received a five-minute massage on the sole of the foot and the outer side of the big toe using a neutral lotion (Vaseline). The post-test evaluations were carried out in the fifth week following the conclusion of the intervention. The analysis revealed a statistically significant difference in the mean sleep scores between the groups. The observed reduction in the mean sleep quality score indicates an enhancement in the sleep quality of the elderly participants in the intervention group ( $P<0.001$ ). The findings of the study suggest that foot reflexology exerts a significant influence on the nervous system and sensory stimuli to the brain, thereby promoting the secretion of dopamine. Ultimately, the results indicate that alleviating the symptoms of RLS has led to an improvement in the sleep quality of elderly women (Fakhravari et al., 2018). In critical evaluation of insomnia and Ayurvedic treatment, Irshad, Singh, and Varsakiya reflect the comprehensive approach. Through the research Ayurveda takes to treat this sleep problem. Insomnia, or Nidranash, is categorised by Ayurveda as a disorder (Irshad et al. 2021). This disorder is resulting from an imbalance. This view reflects the impact of insomnia. This study also underlines the imbalance of Vata and Pitta doshas. Those are sources of stress, worry, and worse lifestyle choices. There are a variety of interventions. Herbal medicines, dietary changes, and lifestyle adjustments are some examples of interventions (Mishra and Verma 2020). There are also specialized therapies like Shirodhara and Padabhyanga. Shirodhara refers to the process of applying oil to the forehead (GHORE et al. 2021). On the other hand, Padabhyanga refers to the process of massaging the feet. This view highlights the significance of holistic non-invasive techniques. These techniques could manage the reasons for insomnia through the long term improvements. Rathod and Mishra's study in the year of 2021 reflects the perspective of the Ayurvedic perspective on insomnia (Rathod and Mishra 2021). This study also highlights ayurvedic management with an emphasis on the therapeutic remedies. They describe how to employ a variety of herbal remedies. Ashwagandha, brahmi, and jatamansi are some instances of herbal remedies. Remedies have sedative qualities and aid in stress reduction and mental calmness (Hiremath et al. 2022). All of these components are important for better sleep. Rathod and Mishra illustrate the way therapies could effectively treat insomnia. This supports Ayurveda's position as a useful substitute. These substitutes are for conventional medicines. Without using medicines non medical therapies could effectively treat insomnia without any side effects (Godara et al. 2021).



**Fig1: Absolute caution of Impaired Sleep**

Ayurveda views neurological disorders as a consequence of imbalances in vata dosha or a reduction in the functioning of kapha dosha. When vata dosha is aggravated, it disrupts the harmony of the body; leading to neurological issues (Mahato N et al., 2021). Their study reflects health pillars in relation to neurological disorders. According to Ayurveda, these pillars are vital for preserving both physical and mental well-being (Light et al., 2020). Insufficient sleep or irregular sleep patterns disturb the balance of the three Doshas, particularly increasing the dryness or Rukshata of the body, which aggravates Vata dosha. This imbalance in Vata can negatively affect all bodily

functions. Adequate sleep is crucial for maintaining harmony among the Doshas, both physically and mentally. A balanced state of the Doshas supports overall health and ensures the well-being of the Dhatus (Sree Parvathy et al.,2024). Those methods can enhance sleep quality and neurological well being. The reason behind this is Padabhyanga can balance doshas and activate the important energy points. Even though foot care is the main focus of the study. It offers important insights into Padabhyanga's broader impacts. That is including its potential to enhance sleep quality. In Padabhyanga, the feet are gently massaged with warm oils to promote relaxation, reduce stress, and soothe the nervous system. all of procedure are helpful to improve sleep quality.

### 3. Methodology

**Study Design:** This study was designed as an analysis that is based on secondary data collected from various Randomized Controlled Trials as well as other observational studies(Varshneyetal.,2024).This study illustrates a direct causal link between the treatments and the observed results. It is to reduce the ratio of bias. The study keep focus on the effects of yoga as well as Padabhyanga on the quality of sleep experienced, specifically by elderly persons who suffer from insomnia. Previous RCTs and other relevant research studies were selected and analyzed in this section. The findings from these studies were compared to assess the impact on sleep habits.

**Sampling Design:** Studies were chosen on the basis of purposive sampling. It has selected various research that included elderly participants (65 years or older) with a clinical history of insomnia. This respective aspect provided the opportunity for the study to keep focus on relevant populations without random selection. This is how it made sure that only applicable studies were used.

**Participants:** As per the core area of the study, participants from the reviewed literature were chosen. The selected studies concentrated on senior people who clinically suffer from insomnia. Participants were included on the basis of the inclusion and exclusion criteria used in these studies. The studies involved participants aged 65 years or older with a history of insomnia to achieve the inclusion area. In the reviewed studies, participants were self-reported for at least three months. On the other hand, their Insomnia Severity Index scores were recorded. Exclusion criteria were noted from the reviewed studies. It included severe cognitive impairment, ongoing psychiatric therapy for sleep disorders, usage of sleep medicines as well as any physical restrictions. On-going psychiatric therapy for sleep disorders, usage of sleep medicines as well as any physical restrictions.

**Data Collection Techniques:** Data for this study was collected through secondary research. It relied on published RCTs and observational studies. The relevant metrics including sleep latency, duration, and overall sleep quality, were extracted from these studies as well as aggregated for analysis. This secondary data collection provided the opportunity for a comprehensive review of various interventions without directly engaging new participants.

**Interventions:** For interventions, the selected studies on yoga and Padabhyanga examined their capacity to promote relaxation and facilitate sleep. The studies involved groups engaging in organised yoga programs. It included postures (asanas) and breathing exercises (pranayamas),as well as guided meditation. On the other hand, other studies used Padabhyanga. Here trained Ayurvedic practitioners massaged participants' feet with warm sesame oil for30minutes, three times a week. Data from these studies were analysed to draw conclusions about the impact of these interventions on sleep quality in elderly individuals.

### 4. Data Analysis

Focusing on the improvement of the sleep quality this study reflects the yoga poses and padabhyanga. Those are very effective to improve the sleep cycle of the elders. More specifically, elders who suffer from insomnia. There are some sleep metrics for instance, sleep latency, sleep duration, and lastly, sleep efficiency. For clarification, sleep latency defines the amount of time it takes to fall asleep. On the other hand, sleep efficiency defines the ratio of time spent a sleep to time spent in bed. After making proper calculation of these metrics the result could show notable benefits to participants. More specifically, participants who follow yoga programs As per the yoga groups, 35% of average sleep latency dropped. Not only that 20% of sleep length needs to be improved. Moreover, there was 15% improvement in sleep efficiency. All that means, participants they were not only sleeping through the night longer but also with less interruption. Those are the reasons for falling asleep faster. On the other hand, padabhyanga refers to the significant quality of improvement. It reflects a 25% increase in the amount of time spent sleeping. In an average way there was a 30% decreased time to fall asleep. Doing comparison to the yoga group, padabhyanga group could help to improve the self efficiency by 18%. All these showed the effect of the foot massage that holds a major role. It becomes the reason for more restful sleep.

Aspect	Details
Prevalence	- Affects 40-60% of elder persons.
	- Higher incidence in those 65years.
Causes	- Age related changes in sleep schedule
	- Chronic health conditions
	- Side effects of medications
	- Psychological factors
Consequences	- Increasing the risk of falls
	- Reduced quality of life
	- Mood disturbance
Conventional Treatments	- CBT-I, cognitive behavioral therapy for insomnia
	- Sleep aids
Non-Pharmacological Interventions	- Yogic Practices
	- Padabhyanga

**Table1: Key aspects of Insomnia in Elderly Persons**

In the part of additional observation it must be shown that there search also has some significant decreases in sleep quality. Beyond the quality of sleep it also decreases the level of anxiety and stress. It happened among the individuals in both groups. Anxiety decreased by 25% and similarly stress declined by 30% in the yoga group. All these information are helpful in the purpose of general increase in sleep quality. Yoga emphasises mindfulness, meditation, and breath control (Pathak 2021). These seemed to have a significant effect in lowering psychological stressors. It can frequently interfere with sleep schedule. It may be especially useful for sustaining restful sleep all night long. The footmassages are helpful for reduction of stress and encouragement of relaxation (Vijayan et al. 2022). These advantages show that yoga and Padabhyanga are effective in a holistic way to treat insomnia.

## 5. Discussion

Through the demonstration of the results of this study it shows how well Ayurvedic therapies are applied in daily life. More specifically yoga and Padabhyanga these work to overcome insomnia like sleeplessness. Mentioning the limitations of the study the discussion reflects entire information within the framework. The discussion also highlights the current literature review. It also investigates the overall potential mechanism of action.

Research continuously demonstrates both approaches to improve sleep characteristics. Through the review of Irshad, Singh, and Varsakiya it delves into how sleeplessness is visible by the Ayurveda. They show that it stems from dosha imbalance (Irshad et al. 2021). Their research supports the theory that yoga and Padabhyanga both help. They help to regulate doshas, pitta and Vata. The reason behind this is that these are connected to sleep disorder. Here are integrative characters of practices. It addresses the mental and physical components of insomnia. This can be responsible for the improvement in sleep efficiency. Not only is that it responsible for decreasing sleep latency. The effect of yoga on the autonomic nerve system holds an explanation through its effect on the sleep quality (Schexnaildre et al., 2022). On the other side the parasympathetic nervous system is activated by yoga asanas and pranayama. Pranayama reflects the breathing technique and asanas reflect postures. Otherhand, meditation helps people to relax and cope with stress. This physiological change contributes to the reduction of cortisol levels. Melatonin and serotonin are examples of neurotransmitters that help to balance sleep regulations. The research by Rathod and Mishra reflects the effectiveness of Ayurvedic medications. Brahmi and Ashwagandha are some ayurvedic medications. Those are helpful to promote relaxation and increase the quality of sleep. It refers to the help of foot massage and padabhyanga that helps for better sleep. It promotes general relaxation and activating energy points. Enhancement of blood circulation, decreasing of muscle tension, and the activation of specific energy points are happening by Padabhyanga. Muscle tension is decreased by the light and rhythmic pressure. According to Schexnaildre's research, this technique not only reduces physical stress but also fosters mental tranquility. This is essential for both getting to sleep and staying asleep. Padabhyanga increases sleep efficiency and decreases the frequency of night time awakening. There are several limitations mentioned in their research on padabhyanga for insomnia. The generalizability of the result can be limited in sample size. It might not properly reflect the heterogeneous elderly population. The study becomes bigger with varied sample sizes and longer. The findings could be strong as per the combination of subjective evaluation and objective evaluation.

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## 6. Conclusion

The entire study illustrates pieces of evidence that benefit greatly from yoga asana and padabhyanga. This reflects from the senior patients who overcome insomnia from both yoga asanas and Padabhyanga. Yoga asanas are helpful in some way. Increasing sleep latency, length and overall efficiency are some glimpse of benefits. On the other hand Padabhyanga helps to decrease nightmares, nighttime awakening, and mostly sleep initiation latency. These are the non pharmacological alternatives to overcome insomnia in an effective way. It is proven by the entire research. The fact that control group did not experience any notable improvements. It emphasizes the unique advantages of yoga and Padabhyanga in improving the quality of sleep.

In the part of the conclusion it must be mentioned that there are some significant applications for clinical practices for the sufferers of insomnia. It becomes critical when it is time to prescribe someone yoga or foot massage. But asanas and Padabhyanga can provide a risk free natural solution. It is helpful for better sleep without any side effects of medication. In this case future study must examine the long term effects of yoga and Padabhyanga. Even though this study focuses on the short term effect, it is common to keep focus on the sustainable effects. This study can look at some non pharmacological treatments like mindful meditation or cognitive behavioral therapy to overcome insomnia.

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