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Dr Poornima T

BNYS, M.D., Professor,
Department of Yoga, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

Prama Risha

3rd year, BNYS, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

A Logadarshani

3rd year, BNYS, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

V Dhanusiya

3rd year, BNYS, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

S Sivaranjani

3rd year, BNYS, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

K Layathika Shri

3rd year, BNYS, Kongu
Naturopathy and Yogic Sciences,
Perundurai, Erode, Tamil Nadu,
India

Dr. Annamalai D

M.D Scholar, Department of
Acupuncture and Energy
Medicine, International Institute
of yoga and Naturopathy
medical science, Chengalpattu,
Tamil Nadu, India

Corresponding Author:

Dr. Annamalai D

M.D Scholar, Department of
Acupuncture and Energy
Medicine, International Institute
of yoga and Naturopathy
medical science, Chengalpattu,
Tamil Nadu, India

Integrating yoga into insomnia treatment: A case study on sleep improvement

Poornima T, I Prama Risha, A Logadarshani, V Dhanusiya, S Sivaranjani, K Layathika Shri and Annamalai D

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Abstract

Insomnia is a widespread sleep disorder that affects overall health and daily functioning. This case study examines the impact of a structured yoga program on a 60-year-old man with a five-year history of insomnia characterized by difficulty initiating sleep, frequent awakenings, and irritability. The intervention consisted of a one-hour daily yoga routine for 90 days, including Pawanamuktasana Series I, Surya Namaskar, AUM chanting, and relaxation practices. Sleep quality was assessed using the Insomnia Severity Index (ISI) before and after the intervention.

The patient's ISI score improved from 18 (moderate insomnia) to 12 (subthreshold insomnia), reflecting notable enhancement in sleep quality, reduced anxiety, better emotional regulation, and improved morning freshness. These findings align with existing evidence showing that yoga supports autonomic balance and reduces psychological stress. This case suggests that yoga may serve as an effective, non-pharmacological option for managing chronic insomnia, warranting further research in larger populations.

Keywords: Insomnia, yoga therapy, sleep quality, Insomnia Severity Index, elderly patient, autonomic balance, relaxation techniques

Introduction

Insomnia is one of the most prevalent sleep disorders globally, affecting millions of individuals and contributing to significant physical, psychological, and social consequences. It is characterized by dissatisfaction with the quality of sleep, difficulty in initiating or maintaining sleep, frequent awakenings, or early morning awakenings, associated with daytime fatigue, reduced productivity and decreased quality of life [1]. Epidemiological studies have demonstrated, sleeping disturbances are highly prevalent, affecting 30% of the adult population at some point in their lives. The causes of sleep disturbances are multifactorial, involving physiological, psychological and environmental factors. The major contributors include improper sleep hygiene, disturbed circadian rhythms and stress, anxiety and depression and underlying medical conditions [2].

Diagnosis of insomnia is made when sleep difficulties are present for ≥ 3 nights per week and last for >3 months. Conventional treatment approaches typically involve pharmacotherapy, yet many patients continue to experience residual symptoms or seek non-pharmacological methods due to medication side effects, dependency concerns, or personal preference for holistic care [1, 2].

In recent years, mind - body practices such as yoga have gained growing attention as complementary therapies for sleep disturbances. Studies have indicated that yoga modulates autonomic balance, reduces stress, and promotes mental well-being. Emerging evidence suggests that yoga can improve sleep latency, duration, overall sleep quality, and emotional regulation, making it a promising therapy in the management of insomnia [3, 4]. This case study explores the therapeutic impact of incorporating a structured yoga-based intervention into the treatment plan of an individual with insomnia.

Case Presentation

A 60-year-old man from a middle socio-economic background presented to a Nature Cure and Yoga Hospital in February 2025 with complaints of poor sleep quality for the past five years. Symptoms included difficulty initiating sleep, frequent awakening and irritability occurring three to five

times per week. He had a past medical history of vertigo, with no relevant surgical or family history. No allopathic medications or sleep aids were being used. Diagnosis was based on subjective symptoms and standardized questionnaires. (Details have been given in Table 1).

Table 1: Demographic and Case Details

Parameter	Details
Age	60 years
Sex	Male
BMI	26.2 kg/m ²
Duration of Insomnia	5 years
Frequency of Sleep Disturbance	3 to 5 times/week
Past Medical History	Vertigo
Medications	None
Primary Symptoms	Poor sleep quality, stress, irritability
Diagnosis Basis	Subjective assessment + ISI

Intervention

After the diagnosis, the patient was opted for yoga yoga-based intervention. The protocol has been formed, daily for 1 hour for 90 days (the specific protocol has been given in Table 2).

The patient was evaluated on Day 1 and after 90 days of yoga intervention using the Insomnia Severity Index (ISI), which assesses sleep quality and disturbances over a specified time interval.

Table 2: Protocol for one hour of yoga procedure, sequence and duration.

S. No	Practice	Description	Duration
A) Pawanamuktasana Series I			15 minutes
1.	Toe Bending	Move toes forward and backwards rhythmically.	1 minute
2.	Ankle Bending	Bend feet forward (point) and backward (flex).	1 minute
3.	Ankle Rotation	Rotate ankles clockwise & anticlockwise.	1 minute
4.	Knee Bending	Bend the knee and straighten while sitting.	1 minute
5.	Half Butterfly	Fold one leg, gently move the knee up & down.	1 minute
6.	Full Butterfly	Bring both feet together; flap knees up & down.	1 minute
7.	Hip Rotation	Rotate the bent knee in a circular motion.	1 minute
8.	Hand Clenching	Open and close fists repeatedly.	1 minute
9.	Wrist Bending	Bend wrists forward and backwards.	1 minute
10.	Wrist Rotation	Rotate wrists clockwise & anticlockwise.	1 minute
11.	Elbow Bending	Fold and straighten elbows.	1 minute
12.	Shoulder Rotation	Rotate shoulders forward & backwards.	1 minute
13.	Neck Bending	Move neck forward & backwards.	1 minute
14.	Neck Rotation	Rotate neck in circular motion.	1 minute
B) Suryanamskar. (12 Steps) – 6 rounds			25 minutes
1.	Pranamasana	7. Bhujangasana	
2.	Hastauttanasana	8. Parvatasana	
3.	Padahastasana	9. Ashwa Sanchalanasana	
4.	Ashwa Sanchalanasana	10. Padahastasana	
5.	Parvatasana	11. Hastauttanasana	
6.	Ashtanga Namaskarasana	12. Pranamasana	
C) AUM Chanting			10 minutes
D) Rest in Shavasana			5 minutes

Results

After completing the 90-day integrated yoga therapy program, the participant demonstrated marked improvement in physical, psychological, and mental health. The most notable changes were observed in sleep quality, emotional regulation, and daily functioning. The Insomnia Severity Index (ISI) score decreased from 18 (indicating moderate clinical insomnia) to 12 (subthreshold insomnia), reflecting a clinically meaningful improvement in sleep quality. (Table 3, Figure 1)

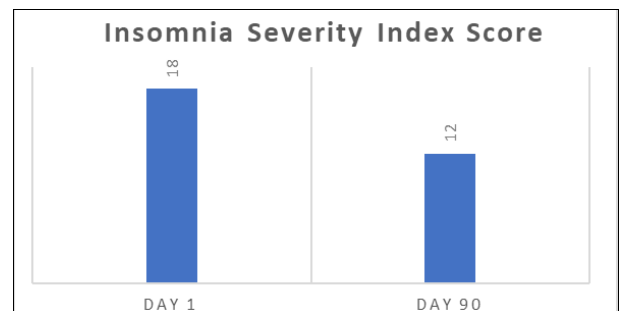


Fig 1: Results of Pre and Post Insomnia Severity Score.

Table 3: Pre- and post-intervention results by ISI category

Assessment Time	ISI Score	Severity Category
Pre-intervention	18	Clinical Insomnia – Moderate
Post-intervention	12	Subthreshold Insomnia

Discussion

The present case highlights that the effectiveness of the structured protocol improves the sleep quality, indicated by a

reduction in the score of the insomnia severity score. Additionally, the patient showed reductions in sleep-onset latency, nighttime awakenings, and subjective anxiety levels, along with improvements in morning freshness and overall well-being. These outcomes are consistent with previous research indicating that yoga influences both physiological and psychological mechanisms involved in sleep regulation.

From a physiological perspective, yoga influences the autonomic nervous system, especially the parasympathetic nervous system and hypothalamic pituitary adrenal axis. This activation reduces the sympathetic overactivity that commonly contributes to the development of insomnia and sleep disorders [3, 5]. Reduced muscle tension and autonomic arousal likely contributed to the improvement in initiating and maintaining sleep. The inclusion of slow, rhythmic movement practices may have also supported neuromuscular relaxation and promoted mind-body awareness, both of which are beneficial for sleep regulation [5, 6].

Psychologically, yoga offers an effective strategy for reducing stress, cognitive hyperarousal, which are key maintaining factors in chronic insomnia. The patient reported enhanced emotional regulation, reduced anxiety at bedtime, and improved self-efficacy in managing sleep disturbances. These aspects are aligned with prior evidence suggesting that mindfulness and breath-regulated practices promote a calmer mental state, thereby facilitating restorative sleep [7].

This outcome aligns with the study by Shathirapathiy *et al.* (2022) conducted in Tamil Nadu, where the mean ISI score significantly decreased from 17.9 to 8.17 following a yoga-based intervention. Their findings highlight the therapeutic potential of yoga in reducing both the severity and frequency of insomnia symptoms [8]. Similarly, Verma *et al.* (2021) reported a substantial reduction in ISI scores, with participants' scores improving from 7.6 to 3.31 post-intervention [9]. Together, these studies reinforce the present case results, demonstrating that yoga practices are effective in modulating autonomic activity, reducing hyperarousal, and improving sleep patterns.

The consistency between our findings and those of previous research strengthens the evidence base for yoga as a non-pharmacological, cost-effective, and accessible approach for managing insomnia. Although the current case study focuses on a single participant, the magnitude and direction of improvement parallel larger controlled studies, suggesting that similar structured protocols may be beneficial for broader populations.

Conclusion

This case study demonstrates that a structured one-hour yoga-based intervention can significantly reduce insomnia symptoms and enhance overall sleep quality. The participant showed marked improvement in sleep initiation, continuity, and daytime functioning following regular practice. Although this report focuses on a single case, the positive changes observed highlight the potential of yoga as a safe, accessible, and non-pharmacological therapeutic option for individuals experiencing chronic sleep disturbances. Further studies with larger sample sizes and controlled designs are recommended to validate these findings and to develop standardized yoga protocols for insomnia management.

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