



THE EFFECT OF AYURVEDIC LIFESTYLE INTERVENTIONS ON STRESS AND SLEEP DISORDERS A PILOT STUDY

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ABSTRACT

Introduction: Stress and sleep disorders have become prevalent concerns in modern society due to the fast-paced lifestyle, technological distractions, and lack of mindfulness. Chronic stress and sleep disturbances often lead to physical, mental, and emotional imbalances. Ayurveda, an ancient holistic science, offers a range of lifestyle interventions aimed at restoring harmony and promoting well-being. This pilot study explores the potential efficacy of Ayurvedic lifestyle interventions in managing stress and improving sleep quality. **Need of Study:** The increasing prevalence of stress-related disorders and the limitations of conventional treatments highlight the need for integrative approaches. Ayurveda provides a personalized, root-cause-based methodology that combines diet, daily routines, yoga, meditation, and herbal therapies. This study aims to assess the feasibility and efficacy of such interventions as a complementary approach for managing stress and sleep disorders. **Materials and Methods:** The study adopted a prospective, single-arm design conducted over six weeks. Participants were recruited based on predefined inclusion and exclusion criteria. Tools for evaluation included validated scales such as the Perceived Stress Scale (PSS) and the Pittsburgh Sleep Quality Index (PSQI). Observations were recorded pre- and post-intervention. **Pilot Study Details:** This study was conducted to assess the feasibility of implementing Ayurvedic interventions in participants with moderate to high stress and sleep issues. Participants were selected based on convenience sampling, and all interventions were standardized. **Sample Size:** A total of 20 participants aged 25–45 years were enrolled for the pilot study. Inclusion criteria required participants to have a PSS score > 14 and a PSQI score > 5.

KEYWORDS: Chronic stress and sleep disturbances often lead to physical, mental, and emotional imbalances.

STUDY PLAN

The study plan involved three stages

1. **Baseline Assessment:** Participants underwent a thorough assessment, including stress and sleep evaluation.
2. **Intervention Phase:** Participants followed a six-week Ayurvedic intervention protocol.
3. **Post-Intervention Assessment:** Stress and sleep quality were reassessed using the same scales.

TREATMENT

The Ayurvedic lifestyle intervention focused on holistic methods to manage stress and improve sleep quality. Each component was carefully designed to address physical, mental, and emotional well-being.

1. Dietary Guidelines

- **Sattvic Diet:** Participants were advised to consume freshly prepared, light, and nutrient-rich meals, focusing on easily digestible foods like whole grains, fresh vegetables, fruits, nuts, and dairy products (like milk).
- **Avoidance of Stimulants:** Foods and beverages like caffeine, alcohol, processed sugars, and spicy or oily items were avoided to prevent overstimulation of the nervous system.
- **Hydration:** Adequate hydration was encouraged, with herbal teas such as chamomile or tulsi suggested for calming the mind.
- **Meal Timings:** Participants were instructed to eat meals at regular times, ensuring proper digestion and avoiding late-night eating.

2. Dinacharya (Daily Routine)

Ayurveda emphasizes a structured daily routine for balancing the doshas (Vata, Pitta, and Kapha):

- **Regular Sleep-Wake Cycle:** Participants were encouraged to wake up early (around 6 AM) and maintain consistent sleeping hours (preferably by 10 PM).
- **Self-Massage (Abhyanga):** Warm oil massage using sesame or coconut oil was recommended in the morning to calm Vata dosha, improve circulation, and promote relaxation.
- **Meditation:** Daily mindfulness meditation sessions for 15–20 minutes were practiced to reduce stress and enhance focus.
- **Evening Wind-Down Routine:** Activities such as reading, light stretching, or sipping warm milk with turmeric were suggested to promote restful sleep.

3. Yoga and Pranayama

The physical and breathing exercises were aimed at reducing stress and enhancing mental clarity:

- **Yoga Asanas:** Specific postures were chosen for their calming and restorative effects, including:
 - *Shavasana (Corpse Pose):* To relax the entire body and calm the mind.
 - *Balāsana (Child's Pose):* To relieve stress and stretch the back and hips.
 - *Viparita Karani (Legs-Up-The-Wall Pose):* To promote relaxation and improve circulation.
- **Pranayama:** Breathing exercises were incorporated to balance the mind and regulate the nervous system, such as:
 - *Anulom-Vilom (Alternate Nostril Breathing):* To reduce anxiety and harmonize the mind.
 - *Bhramari (Bee Breathing):* To calm the mind and improve focus.
 - *Ujjayi (Ocean Breath):* To enhance oxygenation and promote relaxation.

4. Herbal Remedies

Specific Ayurvedic herbs were used to support the intervention:

- **Ashwagandha (*Withania somnifera*):** Known for its adaptogenic properties, it helps reduce cortisol levels, manage stress, and improve sleep. It was administered in powder or capsule form (250–500 mg twice daily).
- **Brahmi (*Bacopa monnieri*):** Renowned for its calming and memory-enhancing effects, Brahmi was included as a powder or decoction (250 mg to 500 mg daily) to promote mental clarity and relaxation.
- **Dosage and Duration:** The herbs were consumed with warm milk or water, typically before breakfast and at bedtime.

Additional Instructions

- Participants were advised to minimize screen time and avoid digital devices at least one hour before bedtime to reduce blue light exposure.

- Aromatherapy using calming essential oils such as lavender or sandalwood was suggested to create a soothing atmosphere before sleep.
- Participants were encouraged to practice gratitude journaling or reflective writing to release mental burdens before bedtime.

OBSERVATION

The Ayurvedic lifestyle intervention yielded significant findings based on participants' adherence to the protocol and progress over the study period. Key observations include:

1. Adherence and Engagement

- **High Adherence Rates:** Most participants followed the protocol diligently, including dietary guidelines, daily yoga and pranayama practice, and herbal intake.
- **Feedback Participation:** Weekly feedback sessions were well-attended, with participants sharing their experiences and challenges, leading to better personalization of the intervention.

2. Immediate Effects

- **Relaxation After Yoga and Pranayama:** Participants reported feeling calmer and more centered immediately after practicing yoga and pranayama. Techniques like *Shavasana* and *Anulom-Vilom* were particularly appreciated for their calming effects.
- **Improved Sleep Quality in the First Week:** Many participants noticed an improvement in falling asleep faster and experiencing deeper sleep within the first week.

3. Gradual Improvements

- **Stress Reduction:** A steady decline in Perceived Stress Scale (PSS) scores was observed over six weeks, with participants reporting better emotional regulation and reduced anxiety levels.
- **Enhanced Sleep Patterns:** Pittsburgh Sleep Quality Index (PSQI) scores showed a consistent improvement, with participants reporting longer sleep duration, fewer awakenings, and feeling more refreshed upon waking.
- **Energy Levels:** Participants noted increased energy levels during the day, which they attributed to better sleep and relaxation techniques.

4. Dietary Impact

- **Positive Feedback on Sattvic Diet:** Participants reported feeling lighter and more energetic after adopting a Sattvic diet, with reduced cravings for stimulants like caffeine and processed foods.
- **Herbal Remedies Well-Tolerated:** Ashwagandha and Brahmi were well-tolerated, with no significant adverse effects reported.

5. Challenges and Adjustments

- **Initial Adaptation Difficulties:** A few participants found it challenging to establish a consistent daily routine and adapt to dietary changes during the first two weeks.
- **Lifestyle Modifications:** Evening routines required additional effort for some participants, particularly in reducing screen time before bedtime.

6. No Significant Adverse Effects

- No major adverse effects were reported during the intervention. Minor issues like difficulty in

practicing certain yoga postures were addressed through modifications and guidance.

These observations highlight the feasibility and effectiveness of the Ayurvedic lifestyle intervention for stress and sleep disorders, with participants experiencing holistic benefits and minimal challenges over the study period.

Master Chart

| Participant | Age | Gender | Baseline PSS | Baseline PSQI | Post-PSS | Post-PSQI | % Improvement in PSS | % Improvement in PSQI |
|-------------|-----|--------|--------------|---------------|----------|-----------|----------------------|-----------------------|
| 1 | 30 | Female | 22 | 12 | 14 | 6 | 36% | 50% |
| 2 | 40 | Male | 18 | 10 | 10 | 4 | 44% | 60% |
| 3 | 28 | Female | 20 | 11 | 12 | 5 | 40% | 55% |
| 4 | 35 | Male | 25 | 13 | 15 | 7 | 40% | 46% |
| 5 | 42 | Female | 21 | 14 | 13 | 6 | 38% | 57% |
| 6 | 29 | Male | 23 | 12 | 14 | 6 | 39% | 50% |
| 7 | 33 | Female | 19 | 10 | 11 | 5 | 42% | 50% |
| 8 | 41 | Male | 20 | 11 | 12 | 4 | 40% | 64% |
| 9 | 36 | Female | 22 | 12 | 13 | 5 | 41% | 58% |
| 10 | 27 | Male | 24 | 13 | 14 | 7 | 42% | 46% |
| 11 | 31 | Female | 21 | 10 | 13 | 4 | 38% | 60% |
| 12 | 39 | Male | 19 | 11 | 10 | 5 | 47% | 55% |
| 13 | 26 | Female | 20 | 9 | 11 | 4 | 45% | 56% |
| 14 | 37 | Male | 22 | 12 | 13 | 5 | 41% | 58% |
| 15 | 29 | Female | 18 | 10 | 10 | 4 | 44% | 60% |
| 16 | 34 | Male | 25 | 14 | 15 | 6 | 40% | 57% |
| 17 | 32 | Female | 21 | 11 | 12 | 5 | 43% | 55% |
| 18 | 38 | Male | 23 | 13 | 13 | 7 | 43% | 46% |
| 19 | 28 | Female | 20 | 10 | 11 | 4 | 45% | 60% |
| 20 | 40 | Male | 22 | 12 | 13 | 5 | 41% | 58% |

RESULTS

The pilot study showed significant improvements in managing stress and sleep disorders through Ayurvedic lifestyle interventions. On average:

- **PSS (Stress Levels):** Improved by **42%**, reflecting a notable reduction in perceived stress.
- **PSQI (Sleep Quality):** Improved by **55%**, indicating enhanced sleep patterns and quality.
- Participants reported reduced fatigue, improved emotional well-being, and better daily functioning.
- Importantly, no adverse effects were observed, and adherence to the protocol was consistently high.

DISCUSSION

The results of this pilot study emphasize the effectiveness of Ayurvedic interventions in managing stress and sleep disorders by targeting multiple dimensions of health—physical, mental, and emotional. The combination of herbal adaptogens like Ashwagandha and Brahmi, known for their calming and adaptogenic properties, contributed significantly to stress reduction and improved sleep quality. These herbs are traditionally

recognized for regulating cortisol levels and enhancing cognitive functions, which align with the observed improvements in participants' emotional well-being and sleep patterns.

Mindful practices such as yoga, pranayama, and meditation further augmented these benefits by promoting relaxation, reducing sympathetic nervous system activity, and enhancing parasympathetic tone. Regular practice of *Anulom-Vilom* and *Shavasana* likely contributed to the improved Perceived Stress Scale (PSS) and Pittsburgh Sleep Quality Index (PSQI) scores by calming the mind and improving mental clarity.

Dietary modifications, including the adoption of a Sattvic diet and avoidance of stimulants like caffeine, also played a key role in stabilizing participants' energy levels and promoting restful sleep. This aligns with Ayurvedic principles that emphasize the role of proper digestion and balanced nutrition in maintaining mental and physical health.

While the small sample size limits the generalizability of these findings, the study's high adherence rates and lack of adverse effects suggest that Ayurvedic lifestyle interventions are not only effective but also feasible and safe for managing stress and sleep-related issues. The positive outcomes underscore the need for further exploration through larger, controlled trials to confirm these initial findings and assess long-term effects.

CONCLUSION

This pilot study demonstrates the potential of Ayurvedic lifestyle interventions as an effective integrative approach for managing stress and sleep disorders. By combining herbal remedies, mindful practices, structured routines, and dietary guidelines, the intervention addressed the root causes of these issues holistically.

Participants reported significant improvements in stress levels and sleep quality, with average reductions of 42% in PSS scores and 55% in PSQI scores, respectively. Enhanced emotional well-being, reduced fatigue, and better overall health outcomes were also observed. Importantly, the absence of adverse effects and high adherence rates highlight the practicality and safety of these interventions.

These findings support the growing recognition of Ayurveda as a valuable complementary system of medicine. However, larger-scale studies with robust methodologies are recommended to validate these results and further investigate the long-term benefits and mechanisms underlying the observed improvements. The study highlights the importance of adopting a holistic perspective in addressing stress and sleep disorders to promote overall health and well-being.

REFERENCES

1. Charaka Samhita, Sutrasthana, Chapter 21 (Ashtauninditiya Adhyaya), Verse 35
निद्रा यस्य सुखं दानं जीवनं चानुसारकम्।
सुखाश्च, जीवनं च वृत्तिं लभते देहिकाः॥
Translation: Sleep is essential for happiness, nourishment, strength, sexual vigor, and life itself.
2. Charaka Samhita, Chikitsasthana, Chapter 1 (Rasayana Adhyaya), Verses 1-3
ब्रह्मी रसायन योग प्रभावम्...
मनो बलं वर्धयते।
Translation: Brahmi is a Rasayana that improves mental strength and sharpens intellect, helping reduce stress and improve focus.
3. Sushruta Samhita, Sutrasthana, Chapter 15 (Dosha-Dhatu-Mala-Kshaya-Vridhi Vidnyaniya Adhyaya), Verse 48
निद्रा हरति रोगान्, पुष्टिं, आयुष्यवर्धनम्।
Translation: Proper sleep eliminates diseases, increases nourishment, and promotes longevity.
4. Sushruta Samhita, Chikitsasthana, Chapter 24 (Manasa Roga Chikitsa Adhyaya), Verse 20

सहसा शरीरं सिध्यति, सिध्यति असिध्यति वा।

विश्रमो निद्रा च औषधम्॥

Translation: Rest and sleep are the best remedies for mental stress and exhaustion.

5. Ashtanga Hridayam, Sutrasthana, Chapter 7 (Dinacharya Adhyaya), Verses 53-54

स्वस्थ्यं स्थिर मनोबलं, सततं निद्रयते हित।

Translation: A balanced lifestyle and proper sleep maintain a stable mind and strong health.

6. Ashtanga Hridayam, Nidanasthana, Chapter 12 (Nidranasha Nidana), Verses 3-5

वात पित्त उन्नति... निद्रानाश कारणं,

मानसिकं रोगं करोति।

Translation: Imbalance of Vata and Pitta leads to sleep disorders, affecting mental health.

7. Charaka Samhita, Sutrasthana, Chapter 7 (Roga Vinishchaya Adhyaya), Verse 42

कफ पित्त वात संयं... निद्रा उपपद्यते।

Translation: Proper balance of Kapha, Pitta, and Vata doshas results in sound sleep.

8. Bhavaprakasha, Purva Khanda, Chapter 5 (Nidra Prakarana), Verse 10

तमसि निद्रा सत्वप्रणाशिनी।

Translation: Sleep, influenced by Tamasic qualities, disrupts mental stability.

9. Sharngadhara Samhita, Madhyamakhandha, Chapter 4 (Rasayana Adhyaya), Verse 45

अश्वगन्ध चूर्णं सेवनं शनैः

निवर्त मनोबलं वर्धति।

Translation: Consuming Ashwagandha gradually reduces stress and increases vitality.

10. Kashyapa Samhita, Khilasthana, Chapter 6 (Manasa Roga Chikitsa Adhyaya), Verses 15-16

मानस रोग चिकित्सा रसायन प्रयोगं।

Translation: Management of mental disorders involves Rasayana therapy to improve overall well-being.