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Prevalence of Sleep-Related Problems and Their Link to Stress Triggers: Potential Role of Yoga Interventions

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Abstract:

- ***Background:***
Sleep problems are a growing concern among young adults, with psychological stress strongly linked to poor sleep. While pharmaceuticals are common, yoga offers a promising non-pharmacological option.

- ***Objective:***
To assess the prevalence of sleep problems among Indian college students and examine their association with stress triggers, supporting the design of targeted yoga interventions.

- ***Methods:***
A publicly available Kaggle dataset on stress and sleep patterns of 116 students (aged 18–23 years; 53.4% female) in Southern India was analysed using a cross-sectional secondary data approach. Validated questionnaires based on the Pittsburgh Sleep Quality Index assessed sleep quality, while stress was evaluated across academic, social, and personal domains.

- ***Results:***
Sleep problems affected 75.0% of students, with only 25.0% reporting good sleep. High stress levels were reported in 33.6% of cases. Stress scores showed a weak but significant positive correlation with sleep disruption ($r = 0.270$, $p = 0.003$). Confronting someone (mean: 2.04) was the most stressful trigger, followed by assignment deadlines (1.64) and pre-exam periods (1.63). Students with diagnosed mental health conditions reported higher stress (2.00 vs 1.43, $p < 0.05$) and poorer sleep quality, with 55.6% experiencing poor sleep compared to 24.3% in non-diagnosed peers.

- ***Conclusions:***
Sleep problems are highly prevalent among college students and significantly linked to stress triggers. These findings underscore the need for accessible, evidence-based yoga interventions to improve sleep quality and manage stress in this population.

Keywords: *Yoga, Sleep Disorders, Stress Triggers, Mind-Body Medicine, Sleep Quality.*

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I. INTRODUCTION

Sleep represents one of the most fundamental biological processes essential for physical health, cognitive function, and emotional well-being. However, there is a widespread epidemic of sleep-related issues, especially among young adults and college students, as a result of modern lifestyle demands, scholastic expectations, and technological influences. About 60–70% of college students report having some kind of sleep disturbance, according to recent

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epidemiological studies. This has serious consequences for long-term health, mental health, and academic performance.(1,2)

Psychological stress and sleep quality have been well-documented, and there is growing evidence that the two are causally related. Acute stress can cause hyperarousal of the sympathetic nervous system and increased cortisol levels by activating the hypothalamic-pituitary-adrenal (HPA) axis, which disturbs the usual architecture of sleep. Chronic sleep deprivation, on the other hand, can affect the body's ability to regulate stress, which can lead to a vicious cycle that keeps stress levels high and sleep disruptions occurring.(1,3–7)

Although benzodiazepines, Z-drugs, sedative antidepressants, and antihistamines are common pharmaceutical therapies for insomnia, their long-term usage is constrained by significant dangers. These drugs frequently cause tolerance, dependency, drowsiness the following day, cognitive decline, and disturbance of regular sleep architecture.(1,3) The short-term effectiveness of traditional pharmaceutical treatments for sleep problems is accompanied by serious drawbacks, such as the development of tolerance, dependency potential, and unfavourable side effects. In addition to causing anticholinergic adverse effects, weight gain, and persistent sleepiness, sedative antidepressants and antihistamines are not suggested for long-term usage.(7–9) Because these drugs treat symptoms rather than underlying stress-related mechanisms, their benefits are often short-lived. These limitations justify the need for safe, non-pharmacological options such as yoga-based mind-body interventions that address both physiological and psychological contributors to poor sleep.(3,5,7)

Yoga, a traditional mind-body practice that incorporates breathing exercises, bodily postures, and meditation, has shown promise as a treatment for sleep issues. Yoga's effectiveness in enhancing sleep quality has been shown in numerous randomised controlled experiments, spanning a variety of demographics, including cancer survivors, the elderly, and those suffering from chronic insomnia. Numerous routes contribute to yoga's ability to promote sleep, including increased parasympathetic nervous system activity, decreased inflammatory indicators, altered neurotransmitter systems, and HPA axis regulation.(3,5,9–11)

Yoga practice raises brain levels of gamma-aminobutyric acid (GABA), the main inhibitory neurotransmitter linked to sleep and calm, according to neurobiological studies. After a single 60-minute yoga session, a landmark study showed a 27% boost in GABA levels, with effects lasting up to four days. Additionally, it has been demonstrated that yoga dramatically lowers cortisol levels; in fact, one study found that benefits in mood and sleep quality were directly correlated with sustained cortisol reduction.(3,12–14)

Certain yoga techniques have demonstrated especially promising results in improving sleep. Conscious relaxation techniques like *Yoga Nidra*, which is performed while lying down, have been shown to significantly enhance objective sleep metrics as determined by polysomnography as well as subjective sleep quality. The parasympathetic nervous system is also activated and sleep onset is facilitated by *pranayama* (breathing techniques) including alternate nostril breathing and the 4-7-8 breathing pattern.(12,15–19)

Although the evidence for yoga's ability to promote sleep is increasing, there are still unanswered questions about the relationship between particular stressors and sleep disruptions and how this association might guide focused yoga therapy. Moreover, college students, who deal with particular stressors like social pressures, academic obligations, and developmental transitions, have not had much research done on these linkages.(1,2)

The present study addresses these gaps by investigating the prevalence and patterns of sleep-related problems among college students, examining their association with specific stress triggers, and exploring the implications for yoga-based interventions. By identifying the most problematic stress-sleep relationships, this research aims to provide evidence-based recommendations for tailored yoga programs that address the specific needs of young adults experiencing sleep disturbances.

II. METHODS

➢ *Study Design and Participants*

A publicly available Kaggle dataset containing Stress and Sleep Patterns of 116 college students (mean age: 18–23 years; 53.4% female) in Southern India was assessed using the cross-sectional secondary data analysis design.(20) The convenience sampling method is used to collect the data. The dataset contains validated questionnaires assessing sleep quality, based on the components of the Pittsburgh Sleep Quality Index, and stress levels across seven specific situations. Sleep quality was classified as good, moderate, or poor according to total sleep disruption scores, while stress levels were evaluated in academic, social, and personal domains.

➢ *Sleep Quality Assessment*

Sleep quality was assessed using components adapted from the Pittsburgh Sleep Quality Index (PSQI), including:

- Sleep patterns: bedtime, wake time, and sleep duration
- Sleep latency: time required to fall asleep
- Sleep disruptions: frequency of eight specific sleep disturbances, including difficulty falling asleep, staying asleep, bathroom disruption, temperature regulation issues, bad dreams, and pain-related awakenings.

Each sleep disruption was rated on a 4-point frequency scale: "Not during the past month" (0), "Less than once a week" (1), "Once or twice a week" (2), and "Three or more times a week" (3). A total sleep disruption score is calculated by summing all individual disruption scores.

➢ *Stress Assessment*

Stress levels were evaluated across seven specific situational triggers:

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- Assignment submission deadlines (less than 24 hours)
- Pre-examination periods (one week before exams)
- Social interactions (requesting extra service at restaurants)
- Meeting new people
- Asking for help
- Confronting others
- Independent task completion

Each stress trigger was rated on a 5-point scale: "not stressed" (0), "mild" (1), "moderate" (2), "severe" (3), and "very severe" (4). Total and average stress scores were calculated across all triggers.

➢ *Categorization Variables*

Sleep Quality Categories: Based on total sleep disruption scores, participants were classified as having "Good" sleep quality (scores ≤3), "Moderate" sleep quality (scores 4-8), or "Poor" sleep quality (scores ≥9).

Stress Level Categories: Based on average stress scores, participants were classified as having "Low" stress (scores <1), "Moderate" stress (scores 1-2), or "High" stress (scores ≥2).

➢ *Statistical Analysis*

Statistical analysis was done for all variables using the software IBM SPSS Statistics 27. Pearson correlation analysis is used to examine relationships between total stress scores and sleep disruption scores. Chi-square tests and cross-tabulations were used to examine associations between categorical variables. Independent t-tests compared stress levels between participants with and without mental health diagnoses. Statistical significance is set at $p < 0.05$.

III. RESULTS

➢ *Participant Characteristics*

The study included 116 college students with demographics shown in Table 1. The sample was predominantly young adults aged 18-20 years (82.8%) with nearly equal gender distribution (53.4% female, 44.8% male, 1.7% non-binary). Students from Computer Science were the most common (37.9%), followed by Biotech (20.7%) and various design disciplines (9.5%). Mental health conditions were reported by 7.8% of participants, while 10.3% had received mental health treatment.

Table 1 Participant Demographics

Variable	Category	N	Percentage (%)
Total Participants	—	116	100%
Age Group	18–20 years	96	82.8%
	21–23 years	19	16.4%
	24–25 years	1	0.9%
Gender	Female	62	53.4%
	Male	52	44.8%
	Non-binary	2	1.7%
Major	Computer Science	44	37.9%
	Biotech	24	20.7%
	Design disciplines	11	9.5%
	EEE/ECE/EIE	16	13.8%
	Mechanical	9	7.8%
	Others	12	10.3%
Diagnosed Mental Health Condition	Yes	9	7.8%
Received Mental Health Treatment	Yes	12	10.3%
N - Total number, % - Percentage			

➢ *Sleep Quality and Patterns*

Sleep problems were highly prevalent among participants (Table 2), with only 25.0% reporting good sleep quality, 48.3% experiencing moderate sleep issues, and 26.7% having poor sleep quality (Figure 1).

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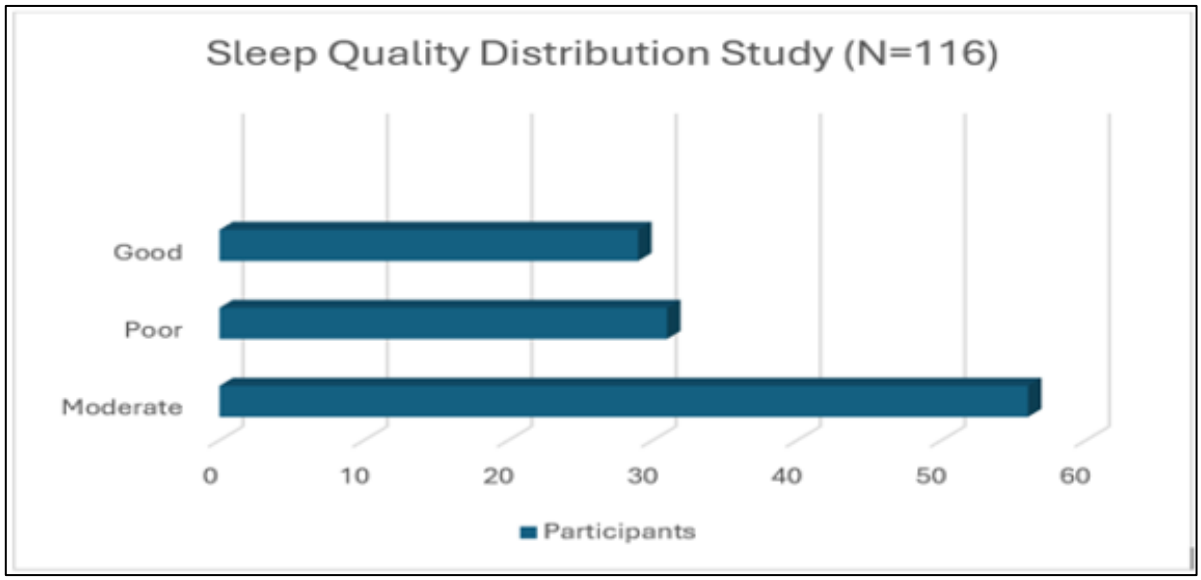


Fig 1 Sleep Quality Distribution

Prevalence of specific sleep problems listed in Table 3. The most common sleep disruption was trouble falling asleep (mean score: 1.38), experienced by 67% of participants at least occasionally (Figure 2). This was followed by trouble staying asleep (mean score: 1.00) and temperature regulation issues, particularly feeling too cold (mean score: 0.95)

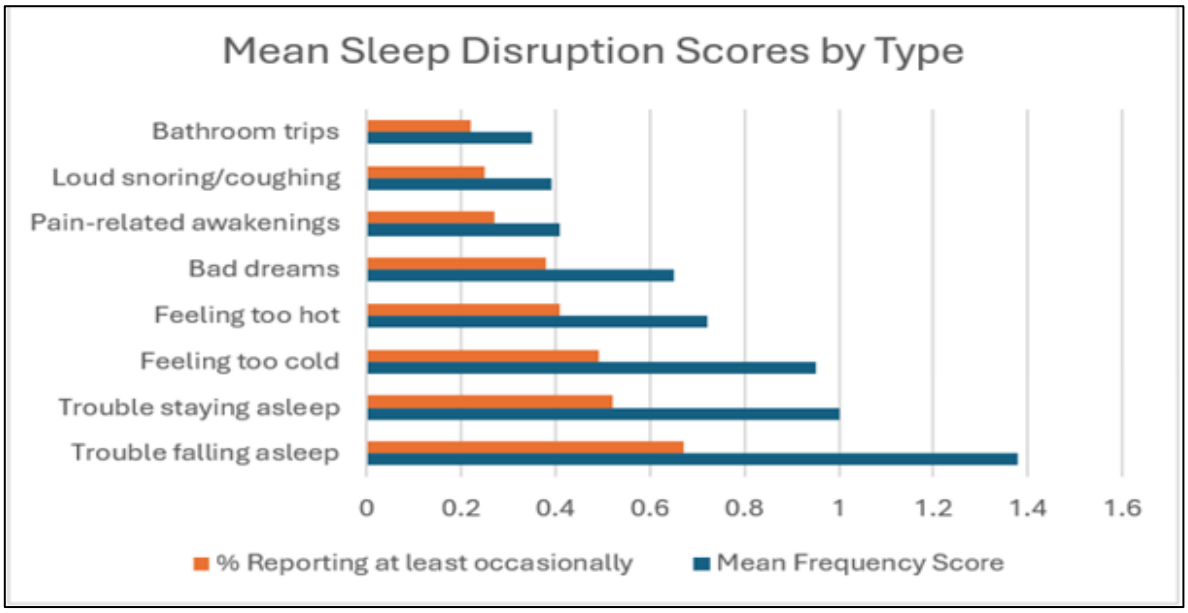


Fig 2 Prevalence of Specific Sleep Problems

Table 2 Sleep Quality Distribution

Sleep Quality Category	Number of Participants	Percentage
Good	29	25.0%
Moderate	56	48.3%
Poor	31	26.7%
Total	116	100%

Regarding sleep patterns, most students (47.4%) went to bed between 11 pm-1 am, while 38.8% had later bedtimes of 1 am-3 am. Sleep latency varied considerably, with 50.9% falling asleep within 30 minutes, 27.6% requiring more than 30 minutes, and 21.5% needing longer than 30 minutes. The majority (55.2%) obtained 7-8 hours of sleep, though 35.3% reported insufficient sleep of 4-6 hours, and 2.6% experienced severe sleep deprivation of less than 4 hours nightly.

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Table 3 Prevalence of Specific Sleep Problems

Type of Sleep Disruption	Mean Frequency Score	Reporting at Least Occasionally
Trouble falling asleep	1.38	67%
Trouble staying asleep	1.00	52%
Feeling too cold	0.95	49%
Feeling too hot	0.72	41%
Bad dreams	0.65	38%
Pain-related awakenings	0.41	27%
Loud snoring/coughing	0.39	25%
Bathroom trips	0.35	22%

➢ *Stress Patterns and Triggers*

Stress levels were substantial across the sample, with 33.6% experiencing high stress, 37.9% moderate stress, and 28.4% low stress levels. The mean total stress score was 10.31 out of a possible 28 points (average: 1.47 out of 4). The most problematic stress triggers, ranked by mean severity scores (Table 4), were Confronting someone (2.04), Assignment deadlines (1.64), Pre-exam periods (1.63), Asking for help (1.58), Meeting new people (1.51) and doing something without help (1.29) resulting in severe/very severe stress (Figure 3).

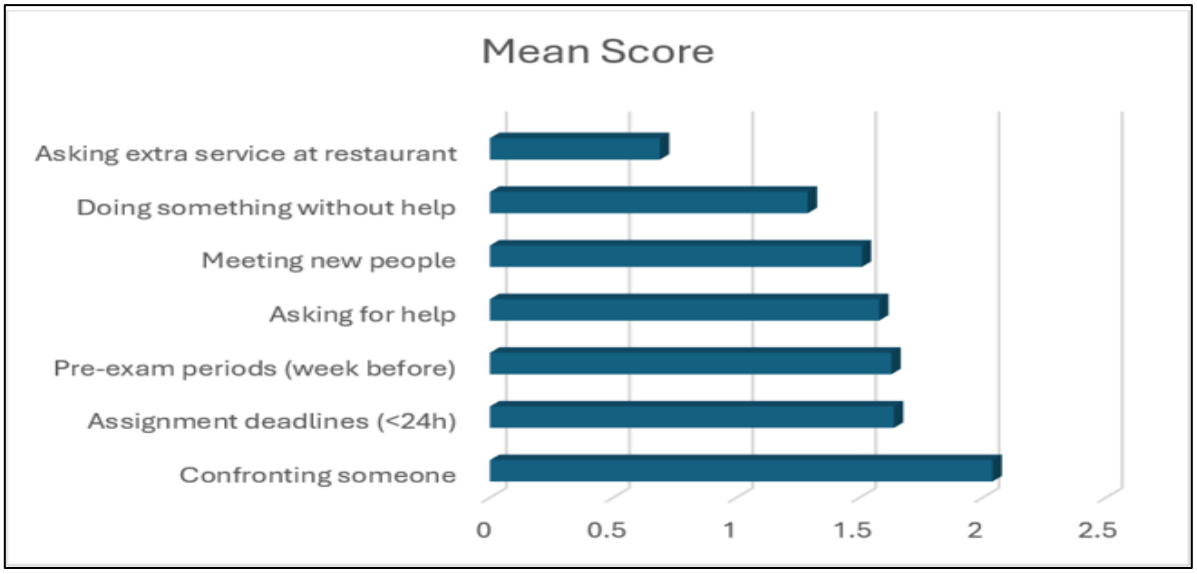


Fig 3 Mean Stress Scores by Trigger

Table 4 Mean Stress Scores by Trigger

Stress Trigger	Mean Score	Severity (%)
Confronting someone	2.04	35.3%
Assignment deadlines (<24h)	1.64	19.0%
Pre-exam periods (week before)	1.63	22.4%
Asking for help	1.58	20.7%
Meeting new people	1.51	25.0%
Doing something without help	1.29	16.4%
Asking extra service at restaurant (Social interactions)	0.69	5.2%

Notably, routine social interactions like requesting extra service at restaurants caused minimal stress (mean: 0.69), suggesting that interpersonal conflict and academic pressures were the primary stress drivers.

➢ *Stress-Sleep Relationship*

There was a weak but statistically significant positive correlation between total stress scores and sleep disruption scores ($r = 0.270$, $p = 0.003$), indicating that higher stress levels were associated with slightly increased sleep disturbances. This relationship was particularly evident when examining stress categories with sleep quality.

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Table 5 Association between Stress Level and Sleep Quality

Stress Category	Good Sleep (%)	Moderate Sleep (%)	Poor Sleep (%)
Low	45.5%	42.4%	12.1%
Moderate	20.5%	43.2%	36.4%
High	12.8%	59.0%	28.2%

Among participants with low stress levels (Table 5), 45.5% maintained good sleep quality compared to only 12.8% of those with high stress. Conversely, poor sleep quality was present in only 12.1% of low-stress individuals but increased to 28.2% among high-stress participants. The moderate stress group showed intermediate patterns, with 20.5% having good sleep quality and 36.4% experiencing poor sleep (Figure 4)

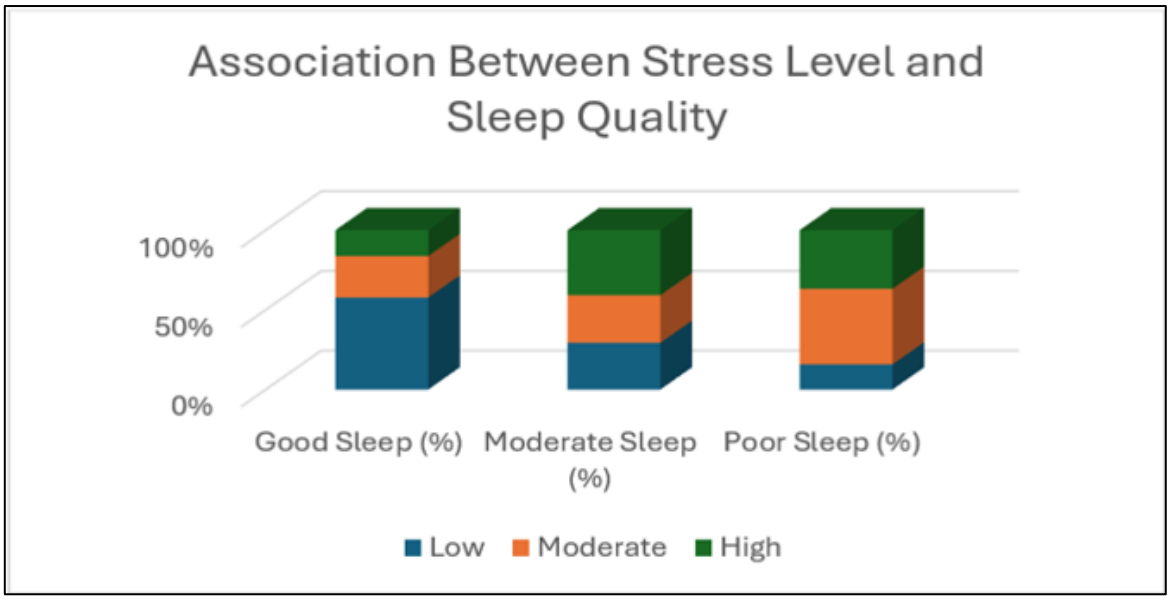


Fig 4 Association between Stress Level and Sleep Quality

➢ *Mental Health Impact*

Participants with diagnosed mental health conditions demonstrated (Table 6) significantly higher stress levels (mean: 2.00) compared to those without diagnoses (mean: 1.43). The mental health group also showed markedly poorer sleep quality, with 55.6% experiencing poor sleep compared to 24.3% in the non-diagnosed group. Only 22.2% of participants with mental health conditions achieved good sleep quality, compared to 25.2% of those without diagnoses.

Table 6 Sleep Quality in Mental Health Condition Groups

Mental Health Diagnosis	Good Sleep (%)	Moderate Sleep (%)	Poor Sleep (%)
Yes	22.2%	22.2%	55.6%
No	25.2%	50.5%	24.3%

➢ *Sleep Duration and Quality Relationships*

Sleep duration showed (Table 7) clear associations with sleep quality categories. Among participants obtaining 7-8 hours of sleep, 29.7% maintained good sleep quality and only 20.3% experienced poor sleep. In contrast, those with 4-6 hours of sleep showed deteriorated quality, with only 17.1% achieving good sleep and 36.6% experiencing poor sleep quality. The three participants with severe sleep deprivation (less than 4 hours) all demonstrated poor sleep quality, with 66.7% in the poor category and none achieving good quality sleep.

Table 7 Sleep Duration by Sleep Quality

Sleep Duration	Good Sleep (%)	Moderate Sleep (%)	Poor Sleep (%)
≥7–8 hours	29.7%	50.0%	20.3%
4–6 hours	17.1%	46.3%	36.6%
<4 hours	0%	33.3%	66.7%

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IV. DISCUSSION

This study reveals a concerning prevalence of sleep-related problems among college students, with three-quarters of participants experiencing some degree of sleep disturbance. Although the correlation between stress and sleep disruption was weak in magnitude ($r = 0.270$, $p = 0.003$), the statistical significance suggests that stress contributes modestly to sleep problems, consistent with findings in similar student populations.(3,4) The identification of "confronting someone" as the most severe stress trigger (mean score: 2.04) provides novel insights into the interpersonal dimensions of student stress. This finding, combined with the high stress associated with academic deadlines and examinations, suggests that yoga interventions should incorporate both stress management techniques and social skills development components. The predominance of sleep initiation difficulties (experienced by 67% of participants) aligns with previous research on young adult sleep patterns. It suggests that interventions targeting pre-sleep arousal and anxiety may be particularly beneficial. This pattern is consistent with the activation of the sympathetic nervous system during periods of high stress, leading to physiological hyperarousal incompatible with sleep onset.(2–4,15)

- *Implications for Yoga Interventions*

The study findings provide a strong empirical foundation for developing targeted yoga interventions that address the specific stress-sleep patterns identified. Based on the neurobiological mechanisms documented in recent research, several yoga components show particular value for this population.(3,14)

- *Pranayama (Breathing Techniques)*

Since sleep onset issues are so common, pranayama techniques that stimulate the parasympathetic nervous system are a prime target for intervention. Studies reveal that certain breathing methods can quickly change the autonomic nervous system's equilibrium in favour of sleep-promoting relaxation states.(16,17)

The 4-7-8 breathing technique, developed by Dr. Andrew Weil, has shown efficacy in reducing sleep onset latency by up to 55 seconds in individuals with chronic insomnia. This technique involves inhaling for 4 counts, holding the breath for 7 counts, and exhaling for 8 counts, creating a pattern that promotes parasympathetic activation and reduces pre-sleep anxiety.(16,21)

Nadi shodhana pranayama (Alternate nostril breathing) shows significant improvements in sleep quality over 12-week intervention periods, with participants reporting reduced insomnia and fatigue. This technique balances left and right brain hemisphere activity while promoting overall nervous system equilibrium.(16)

Bhramari pranayama (Humming bee breath) has been shown to rapidly reduce breathing and heart rate, creating optimal physiological conditions for sleep transition. The vibrations produced during this practice may also stimulate the vagus nerve, enhancing parasympathetic tone.(17)

- *Yoga Nidra for Sleep Enhancement*

Yoga Nidra, or "Yogic sleep," shows the most evidence-based yoga intervention for sleep disorders. Recent randomized controlled trials have demonstrated significant improvements in both subjective sleep quality and objective sleep parameters.(12,15,18)

A landmark study comparing *Yoga Nidra* to cognitive behavioural therapy for insomnia found equivalent improvements in subjective sleep measures, with *Yoga Nidra* showing superior effects on deep sleep (N3) stages and cortisol reduction. Polysomnographic studies revealed that *Yoga Nidra* practice increased N2 (Slight or second sleep stage) and N3 (deep sleep stage) sleep stages while reducing total wake duration.(12)

- *Stress-Targeted Asana Sequences*

The identification of specific stress triggers, particularly interpersonal conflict and academic pressure, suggests that yoga sequences should incorporate poses that release physical tension associated with these stressors. Research indicates that certain asanas can effectively reduce cortisol levels and improve mood regulation.(13)

Hip-opening poses such as the pigeon pose and bound angle pose can release tension stored in the pelvic region, which often accumulates during periods of interpersonal stress. Heart-opening poses like camel pose and fish pose can counteract the physical contraction associated with anxiety and defensive posturing during conflicts.(22)

Inversions such as legs-up-the-wall pose and supported shoulder-stand pose can activate the parasympathetic nervous system while improving venous return and reducing physical symptoms of stress. These poses are particularly suitable for evening practice as they promote relaxation without overstimulation.(22)

- *Mindfulness and Meditation Components*

The high prevalence of mental health conditions in the poor sleep quality group (55.6%) suggests that yoga interventions should incorporate mindfulness-based components targeting the cognitive aspects of stress and sleep disturbance.(7)

Mindfulness-Based Stress Reduction (MBSR) techniques integrated within yoga practice have demonstrated moderate to large effect sizes in improving sleep quality compared to control interventions (SMD = 0.33-0.54). Such approaches enhance metacognitive awareness, enabling practitioners to recognize stress-related thoughts and emotions without reacting impulsively.(18)

Body scan meditation, commonly integrated within *Yoga Nidra* practice, can help students develop awareness of physical tension patterns associated with specific stressors. This awareness enables more effective self-regulation and earlier intervention during stress episodes.(18)

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➢ *Neurobiological Mechanisms*

The effectiveness of yoga interventions for stress-related sleep problems is supported by robust neurobiological evidence demonstrating multiple pathways of benefit.(3,5,14)

➢ *GABA System Modulation*

Yoga practice produces significant increases in brain GABA levels, with studies showing 27% increases following single sessions and sustained elevations with regular practice. GABA, the brain's primary inhibitory neurotransmitter, plays crucial roles in sleep regulation, anxiety reduction, and muscle relaxation.(3,14,22,23)

The time-limited nature of post-yoga GABA elevation (lasting approximately 4 days) supports the recommendation for at least twice-weekly practice to maintain therapeutic levels. This finding aligns with successful intervention protocols showing that 2-3 weekly sessions produce optimal sleep quality improvements.(5,14,24)

➢ *HPA Axis Regulation*

Multiple studies have documented yoga's capacity to reduce cortisol levels, with particularly strong effects on awakening cortisol and bedtime cortisol patterns. The normalization of cortisol circadian rhythms is essential for healthy sleep-wake cycles and stress resilience.(4,12,25)

The correlation between cortisol reduction and sleep quality improvement observed in yoga studies ($r = 0.60$-0.80) suggests that HPA axis regulation may be a primary mechanism underlying yoga's sleep-promoting effects. This is particularly relevant for college students, who often experience chronically elevated cortisol due to academic and social stressors.(4,12)

➢ *Autonomic Nervous System Balance*

Yoga practice consistently produces shifts toward parasympathetic nervous system predominance, as measured through heart rate variability, breathing patterns, and electroencephalographic changes. These autonomic changes create optimal physiological conditions for sleep onset and maintenance.(3,26,27)

The enhancement of vagal tone through yoga practice may be particularly beneficial for the stress-sleep relationship observed in this study. Increased parasympathetic activity promotes the relaxation response while dampening sympathetic activation associated with stress-related sleep disruption.(26,27)

➢ *Intervention Protocol Recommendations*

Based on the study findings and supporting literature, we propose a structured 4-week yoga intervention protocol specifically designed for college students with stress-related sleep problems.

- *Phase 1: Foundation Building (Weeks 1-2)*

✓ Frequency: 3 sessions per week (2 group sessions, 1 home practice)
✓ Duration: 45 minutes per session
✓ Components:

- Basic pranayama techniques (4-7-8 breathing, alternate nostril breathing)
- Gentle asana sequences focusing on hip and heart opening
- Introduction to *Yoga Nidra* (15 minutes)
- Sleep hygiene education integrated with yogic principles

- *Phase 2: Skill Development (Weeks 3-4)*

✓ Frequency: 3 sessions per week
✓ Duration: 60 minutes per session
✓ Components:

- Advanced pranayama practices (Bhramari, extended ratios)
- Stress-specific asana sequences for academic and interpersonal triggers
- Extended *Yoga Nidra* practice (20-25 minutes)
- Mindfulness meditation for stress reactivity

➢ *Clinical and Public Health Implications*

The 75% prevalence of sleep problems identified in this study represents a significant public health concern requiring systematic intervention. The correlation between stress and sleep disruption suggests that addressing psychological stress through yoga interventions could yield substantial benefits for both sleep quality and overall well-being among college students.(1,2)

The relatively low cost and high accessibility of yoga interventions make them particularly suitable for campus-wide implementation. Unlike pharmaceutical interventions, yoga practice carries minimal risk of adverse effects while providing multiple health benefits beyond sleep improvement. The development of abbreviated protocols suitable for busy student schedules could enhance adoption and adherence.(1,7,15)

V. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The cross-sectional secondary data analysis design prevents causal inferences about the stress-sleep relationship, though the bidirectional nature of this association is well-established in longitudinal research. The convenience sampling method may limit generalizability to broader student populations, particularly those from different cultural or socioeconomic backgrounds.(4)

The reliance on self-reported measures introduces potential bias, though the use of validated instruments and objective sleep quality indicators helps mitigate this concern. Future research should incorporate objective sleep measures such as actigraphy or polysomnography to complement subjective assessments.(12,18)

The relatively small representation of participants with diagnosed mental health conditions (7.8%) may limit conclusions about this important subgroup. Given the

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elevated risk of sleep problems among individuals with mental health conditions, targeted research on yoga interventions for this population is warranted.(7,9)

Future randomized controlled trials should evaluate the proposed yoga intervention protocol's effectiveness compared to standard treatments such as cognitive behavioural therapy for insomnia or sleep hygiene education. Long-term follow-up studies are needed to assess the sustainability of intervention benefits and optimal maintenance protocols.(5,28)

Research examining dose-response relationships could inform optimal intervention intensity and duration recommendations. Individual differences in stress reactivity, yoga experience, and intervention preferences should be considered in developing personalized treatment approaches.(7)

VI. CONCLUSION

This study documents a substantial prevalence of sleep-related problems among college students, with 75% experiencing some degree of sleep disturbance significantly correlated with specific stress triggers. The identification of confronting others, academic deadlines, and examination periods as primary stressors provides clear targets for intervention development.

The robust neurobiological evidence supporting yoga's mechanisms of action through GABA system modulation, HPA axis regulation, and autonomic nervous system balance provides a strong scientific foundation for implementing yoga-based interventions in this population. The documented effectiveness of specific techniques such as *Yoga Nidra*, pranayama, and mindfulness-based approaches offers concrete intervention components with established efficacy.

The proposed 4-week intervention protocol addresses the specific stress-sleep patterns identified while incorporating evidence-based yoga techniques shown to improve both sleep quality and stress management. The integration of individual practice development with group support components may enhance both effectiveness and sustainability.

From a public health perspective, the implementation of yoga-based sleep interventions in academic settings represents a cost-effective, accessible approach to addressing widespread sleep problems among young adults. The potential for reducing both immediate sleep disturbances and long-term health risks associated with chronic sleep deprivation supports institutional investment in such programs.

Future research should focus on randomized controlled trials evaluating the proposed intervention protocol, investigating optimal delivery methods, and examining long-term maintenance strategies. The development of personalized approaches based on individual stress profiles and sleep patterns may further enhance intervention effectiveness.

The convergence of ancient wisdom and modern neuroscience in understanding yoga's mechanisms provides a compelling foundation for integrating these practices into contemporary healthcare approaches for sleep disorders. As the burden of sleep problems continues to grow among young adults, evidence-based yoga interventions offer a promising pathway toward improving both individual well-being and population health outcomes.

- *Ethical Clearance*

No data has been collected directly from the human subjects, as we have used secondary data, and there is no harm to any subjects.

- *Acknowledgement*

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- *Financial disclosure*

There is no external funding.

- *Conflict of Interest*

There is no conflict of interest in the study.

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