(International Print/Online Journal)

SJIF IMPACT FACTOR: 6.829
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 8, Issue 5 , Page No: 361-370
September-October 2025

IJMSCR

Impact of Sleep Hygiene Practices on Mental Health Outcomes among Undergraduate Students: A Systematic Review

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Introduction: Poor sleep hygiene practices are common among college students and are believed to worsen mental health outcomes (stress, anxiety, depression). Previous reviews indicate a strong association between inadequate sleep and depression in students. This systematic review explores the impact of sleep hygiene practices on mental health outcomes among undergraduate students.

Aim: To analyze sleep hygiene practices and their impact on mental health outcomes in undergraduates.

Methods: This systematic review followed PRISMA guidelines. Electronic databases such as PubMed, Scopus, PsycINFO, ScienceDirect, and Frontiers were searched using keywords like "Sleep hygiene", "Sleep Quality", "Mental health outcome", "stress", "depression", "anxiety", and "Undergraduate Students". A total of 14 studies were selected for review.

Result: Studies show a high prevalence of poor sleep hygiene among undergraduates, which is linked to adverse mental health outcomes. For example, 9% of Qatari students reported poor sleep hygiene, while Tabuk adults with poor sleep hygiene showed a 75.8% depression rate compared to 59.6% among those with good hygiene. Similarly, 63% of medical students with poor sleep reported anxiety and depression compared to good sleepers. Evidence shows that sleep improvement interventions reduce depression, anxiety, and stress.

Conclusions: Poor sleep hygiene is highly prevalent among undergraduate students and is strongly associated with worse mental health outcomes. Interventions to promote good sleep practices may improve students' psychological well-being.

Keywords: Sleep hygiene; Sleep Quality; Mental health; stress; depression; anxiety; Undergraduate Students

Introduction

Sleep hygiene – behaviours that promote restorative sleep, including factors such as consistent bedtimes, avoiding caffeine, reduced screen exposure before bed, and creating a relaxing sleep environment. Among the college population, poor sleep hygiene and insufficient sleep are common: up to 70% of students reporting less than 8 hours of sleep per night, and nearly 50% experiencing daytime sleepiness. These habits harm both physical and psychological health. Studies consistently link poor sleep to elevated depression, anxiety, and stress in students. Hershner and Chervin note that insufficient sleep-in college students is associated with "impaired mood" and increased risk of depression. Similarly, a recent umbrella review reported that sleep deprivation reliably increases anxiety, aggression, and depressive symptoms in adults.

In undergraduates – particularly nursing students, academic stress combined with irregular sleep may worsen mental health. Thus, a comprehensive review is needed to clarify the relationship between sleep hygiene practices and mental health outcomes in this population.

Impact Of Sleep Disturbances On Mental Health And Brain Function

Disturbed sleep activates the hypothalamic-pituitary-adrenal (HPA) axis, leading to excessive cortisol secretion and increases physiological arousal, which worsens anxiety and emotional instability. Poor sleep can cause neurotransmitter imbalances, particularly by reducing serotonin and norepinephrine levels that regulate mood and maintain a healthy REM sleep cycle. Prolonged sleep loss further stimulates inflammatory pathways, increasing pro- inflammatory cytokines like IL-6 and TNF, which are closely linked to depressive symptoms. In anxiety disorders, sleep deprivation heightens corticotropin-releasing hormone (CRH) activity and hyperactivates the locus coeruleus-noradrenaline system, producing a persistent hyperarousal state that worsens both anxiety and sleep quality.

Statement Of Problem

Impact of sleep hygiene practices on mental health outcomes among undergraduate students.

Objectives

To systematically review and analyze the available literature regarding the impact of sleep hygiene practices on mental health outcomes – specifically stress, anxiety, and depression among undergraduate students (18-25 Years of age).

Methods

PRISMA guidelines were followed for systematic reviews. Electronic searches were performed in databases such as PubMed, Scopus, PsycINFO, ScienceDirect, and Frontiers for English language articles published from 2014 through 2025.

Inclusion Criteria

1) Studies involving participants typically aged from 18 to 25.
2) Studies reported data on both sleep hygiene/quality and mental health outcomes (e.g., stress, anxiety, and depression).
3) Articles published in English from 2014 to 2025

Exclusion Criteria

1) Studies involving participants below 18 years of age.
2) Studies with incomplete data.
3) Studies where participants have been diagnosed with severe psychiatric illness.

Results

Across studies, poor sleep hygiene and sleep quality were highly prevalent among undergraduates. For example, 79% of students in one Qatari university reported inadequate sleep hygiene practices. Similarly, surveys in medical colleges have found roughly 60-65% of students are “poor sleepers”. These data are consistent with broader estimates (e.g., between 50-70% of college students globally report poor sleep quality). Common problematic behaviours included irregular sleep schedules, evening caffeine use, and lack of bedtime routines.

Mental Health Outcome

Anxiety, Depression, Stress: Studies report elevated anxiety and depressive symptoms in students with poor sleep hygiene. In the Tabuk study, 75.8% of those with poor sleep hygiene had depression, compared to 59.6% of those with good hygiene. In an Indian medical college, 63% of “poor sleepers” met criteria for anxiety or depression, significantly higher than among good sleepers. A review noted that inadequate sleep quality is linked to higher depression rates in college populations.

In Qatar, sleep hygiene was the strongest predictor of overall sleep quality; students with good hygiene were approximately 4 times more likely to have healthy sleep. Other studies indicate a similar pattern for mental health, even though that study did not measure mood: people who have disciplined sleep habits report feeling better and experiencing less depression.

Association Between Sleep Hygiene and Mental Health

Most studies show a clear link between sleep hygiene and mental health outcomes. For example:

Volume 8, Issue 5; September-October 2025; Page No 361-370

- Singh et al. found that students with better sleep hygiene reported fewer mood problems and better sleep quality. Similarly, Varadharasu et al. reported strong positive correlations ($r > 0.75$) between good sleep habits, such as keeping a regular schedule and using relaxation routines, and both sleep quality and mental ability score.
- After looking for various factors like academic discipline, sleep hygiene often remained one of the strongest predictors of outcomes. In a Canadian study, Kuhn et al. found that sleep hygiene and sleep attitudes predicted both sleep quality and insomnia severity, while academic discipline no longer mattered once these factors were considered. This highlights that the variations in students' sleep, along with well-being, are influenced by personal sleep habits rather than the field of study itself.
- There are fewer studies on training programs, evidences suggest that improving sleep leads to better mental health. Scott et al.'s meta-analysis of randomized controlled trials showed that enhancing sleep quality reduced depression and anxiety scores by a medium-sized effect. Similarly, a meta-analysis of sleep interventions in students found that multi-component programs significantly reduced depressive symptoms (SMD ≈ -0.295) and anxiety (SMD ≈ -0.226). These findings suggest that improving sleep may directly improve mental health.

Overall, both studies indicate that students with good sleep hygiene tend to have better mental health. In contrast, those with irregular or poor sleep routines are more likely to experience stress, anxiety, and depression.

Sleep Hygiene and Mental Health Outcome in relation to Theories

Two-process Model: Irregular bed or wake time, late light exposure, naps, and evening caffeine all disrupt process S (homeostatic sleep drive) and misalign process C (circadian rhythm), which predicts worsened mood, cognitive control, and stress problems. Sleep hygiene routines that stabilize timing, light, and stimulants line up with this model.

Social Zeitgeber/ Social Rhythm Theory: Social cues and routines (sleep-wake time, meals, social activity) act as "Zeitgebers" that control circadian rhythms. Disruption of these routines can destabilize circadian timing and precipitate or worsen depressive and anxiety episodes; Stabilising routines, on the contrary, are therapeutic.

Emotion-regulation/ affective neurosciences account (amygdala-prefrontal circuitry): sleep loss increases amygdala reactivity and weakens prefrontal control, producing greater negative affect, poorer stress regulation, and heightened anxiety or depressive symptoms. Restorative sleep and good hygiene support emotional processing and resilience.

Discussion

Poor sleep hygiene is common among undergraduates and is consistently linked to negative mental health outcomes. Dinis and Bragança (2018) reported a strong link between poor sleep and depression in students, while Hershner and Chervin (2014) showed that sleep deprivation impairs mood. An umbrella review further confirmed that sleep loss increases anxiety and depression across populations, and these effects are particularly concerning for undergraduates, who often face academic and social pressure. Chronic poor sleep can disturb cortisol regulation and heighten amygdala activity, making students more reactive to stress and vulnerable to emotional instability. Supporting this, Scott et al. and Chandler et al. showed that improving sleep and using sleep programs reduces depression and anxiety among students. Together, these findings indicate that poor sleep hygiene not only accompanies but also contributes to mental health problems.

Conclusion

Poor sleep hygiene is extremely common in undergraduate populations and is consistently linked with worse mental health. Students who engage in irregular sleep schedules, nighttime screen use, or caffeine use at night are more likely to experience stress, anxiety, and depression. Importantly, improving sleep quality (through better sleep practices) has a demonstrable benefit on mood and well-being. These findings suggest that sleep hygiene should be a priority in student health promotion. By

Volume 8, Issue 5; September-October 2025; Page No 361-370

emphasizing regular sleep routines and good sleep habits, educators and clinicians can help safeguard the mental health of college students.

Recommendations

1. Universities should make sleep hygiene a part of student learning by teaching how regular sleep improves concentration and emotional well-being.
2. Offer Workshops on time management and stress reduction can guide students to prevent all-nighters.
3. Adopt academic policies that can further promote balanced workloads and integrate wellness initiatives to create a healthier environment.
4. Building awareness of the strong link between sleep and mental health can improve both academic performance and resilience.

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Volume 8, Issue 5; September-October 2025; Page No 361-370

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S.No.	Authors (Year)	Title of Study	Age of Participants	Measurements / Methods	Results
1	Alanazi, E. M., Alanazi, A. M. M., Albuhairy, A. H., & Alanazi, A. A. A. (2023)	Sleep Hygiene Practices and Its Impact on Mental Health and Functional Performance Among Adults in Tabuk City: A Cross-Sectional Study	Adults ≥18 (included college-aged students)	Cross-sectional survey; SHI, PHQ-9	Poor sleep hygiene significantly associated with higher depression (75.8% vs. 59.6% in good hygiene group).
2	Ali, R. M., Zolezzi, M., Awaisu, A., & Eltorki, Y. (2023)	Sleep Quality and Sleep Hygiene Behaviours Among University Students in Qatar	Undergraduates 18–24	Cross-sectional; PSQI, SHI	79% reported poor sleep hygiene; poor hygiene predicted poor sleep quality.
3	Borbély, A. (2022)	The two-process model of sleep regulation: Beginnings and outlook	Adults, (theoretical)	Narrative Review of sleep regulation models	Provides physiological basis for how disrupted sleep hygiene impairs mood and cognition.
4	Chandler, L., Patel, C., Lovecka, L., et al. (2022)	Improving university students' mental health using multi-component and single-	University students 18–25	Meta-analysis of RCTs; sleep interventions, DASS, BDI	Multi-component interventions reduced depression (SMD –0.30) and anxiety (SMD –0.23).

Volume 8, Issue 5; September-October 2025; Page No 361-370

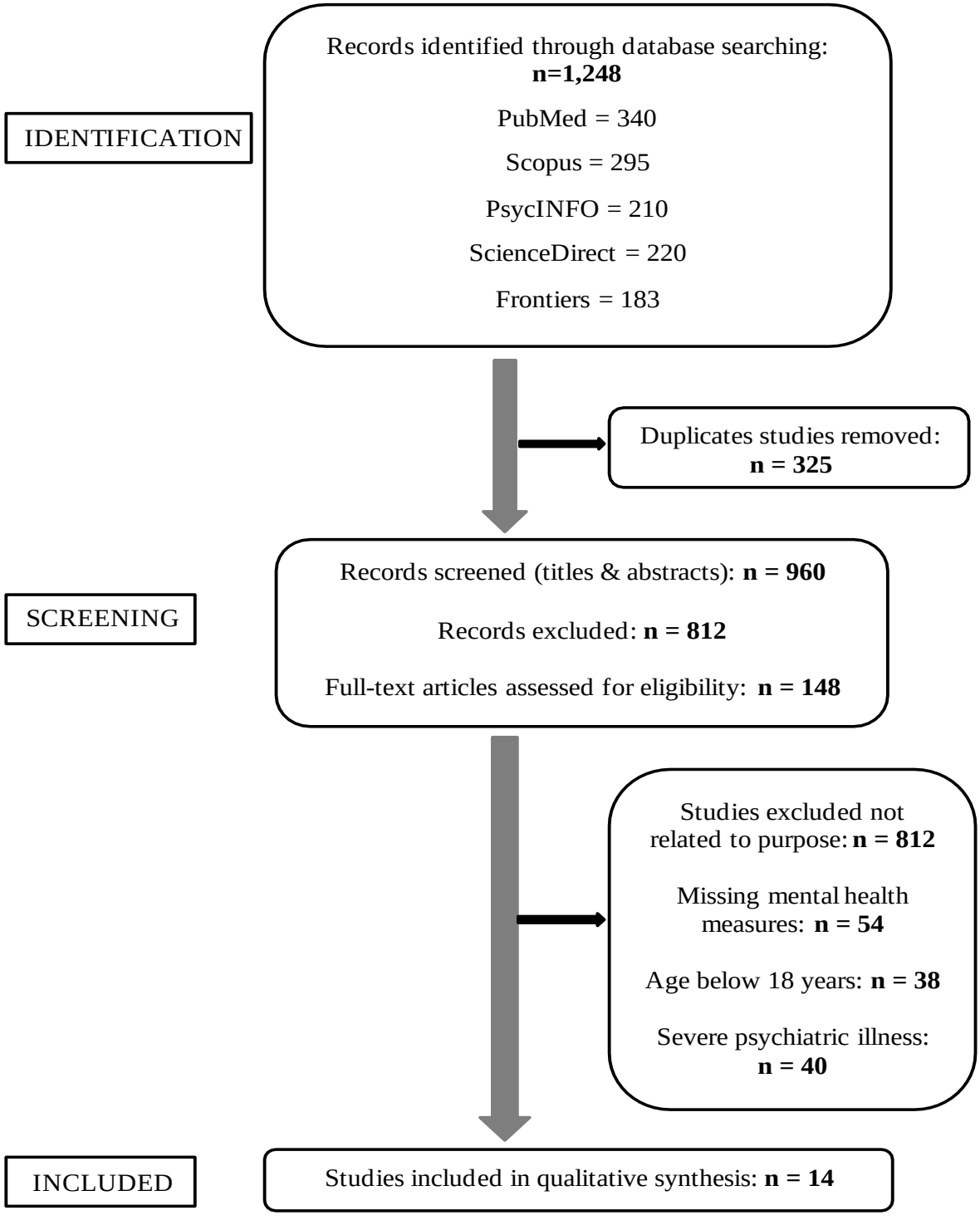
		component sleep interventions: A systematic review and meta-analysis			
5	Dinis, J., & Bragança, M. (2018)	Quality of Sleep and Depression in College Students: A Systematic Review	College students 18–25	Systematic review; PSQI, BDI, CES-D	Strong link between poor sleep quality and depression across studies.
6	Fang H, Tu S, Sheng J, Shao A (2019)	Depression in sleep disturbance: A review on a bidirectional relationship, mechanisms and treatment	Not applicable	Mechanistic review (inflammation, monoamines, HPA axis, circadian)	Sleep disturbance and depression are bidirectionally linked; treating sleep before/during/after depression improves outcomes
7	Hershner, S. D., & Chervin, R. D. (2014)	Causes and consequences of sleepiness among college students	Undergraduates 18–25	Narrative review; surveys, PSQI, sleep diaries	70% of students <8h sleep; poor sleep linked to impaired mood and depression.
8	Kharche, P., & Patle, R. A. (2021)	Sleep quality, mental health and BMI among undergraduate medical students: A cross-sectional study	Medical undergraduates 18–24	Cross-sectional; PSQI, DASS-21	63% were poor sleepers; poor sleep linked with higher anxiety & depression.
9	Kuhn, T., Karsan, S., Heisz, J. J., & Middleton, L. E. (2024)	The differing relationships between academic discipline, sleep hygiene, and dysfunctional	University students 18–25	Cross-sectional; SHI, ISI (Insomnia Severity Index)	Sleep hygiene predicted sleep quality; discipline was not significant once hygiene included.

Volume 8, Issue 5; September-October 2025; Page No 361-370

		sleep attitudes on sleep quality and duration in Canadian university students			
10	Scott, A. J., Webb, T. L., Martyn-St James, M., Rowse, G., & Weich, S. (2021)	Improving sleep quality leads to better mental health: A meta-analysis of randomized controlled trials	Adults including students (18–30 subgroup)	Meta-analysis of RCTs; depression, anxiety, stress measures	Sleep interventions improved depression (g=–0.63), anxiety (g=–0.51), and stress.
11	Shah, A. S., Pant, M. R., Bommasamudram, T., et al. (2025)	Effects of Sleep Deprivation on Physical and Mental Health Outcomes: An Umbrella Review	Adults including students	Umbrella review of systematic reviews	Sleep deprivation consistently increased anxiety, aggression, and depressive symptoms.
12	Singh, R., Roy, M. M., Alvi, A., et al. (2025)	Sleep hygiene practices and its impact on sleep quality and mood	Adolescents & undergraduates (18–22)	Cross-sectional; SHI, self-report mood scales	Better sleep hygiene correlated with improved sleep quality and mood.
13	Vandekerckhove, M., & Wang, Y. L. (2017)	Emotion, emotion regulation and sleep: An intimate relationship	Adults	Narrative review; affective neuroscience framework	Poor sleep hygiene affects emotion regulation, leading to anxiety/depression.
14	Varadharasu, S., & Das, N. (2024)	Sleep hygiene efficacy on quality of sleep and mental ability among insomniac patients	Young adults 18–25	Intervention study; PSQI, cognitive ability scale	Good hygiene significantly improved sleep quality and mental ability scores.

Volume 8, Issue 5; September-October 2025; Page No 361-370

IDENTIFICATION OF STUDIES THROUGH DATABASE



SCREENING FLOW CHART

Volume 8, Issue 5; September-October 2025; Page No 361-370