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Sleep Quality and Academic Stress in Medical Students During Examination Periods: A Systematic Review

Prevalence, Correlates, and Implications for Well-Being and Performance

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Abstract

Medical students experience high academic demands that intensify around examination periods, frequently disrupting sleep. This systematic review synthesizes evidence on the prevalence, correlates, and consequences of poor sleep quality and insomnia among medical students, with particular attention to examination-related stress. Following PRISMA 2020, PubMed, Scopus, and Web of Science were searched through October 2026; 38 studies met inclusion criteria. Meta-analytic and large multi-country data indicate that approximately 55–60% of medical students report poor sleep quality, average nocturnal sleep duration is about 6.1–6.5 hours, and clinically relevant insomnia symptoms affect roughly 40–50% in examination contexts. Daytime sleepiness is reported by about one-third of students. Examination periods consistently worsen sleep disturbance, concentration, and perceived stress; in one national-exam cohort, nearly 80% of final-year students reported that exam stress impaired sleep. Poor sleep is moderately associated with depression, anxiety, dysfunctional sleep beliefs, and lower academic performance. Risk is higher in preclinical years, among students with high stress, and in certain geographic settings. Few interventional studies have been conducted. Findings support institutional attention to sleep hygiene education, workload design, and accessible mental-health support, especially during high-stakes assessment periods, to protect both well-being and learning capacity.

Keywords: medical students; sleep quality; insomnia; examination stress; academic performance; mental health

1. Introduction

Medical education is widely recognized as highly stressful. Long hours, dense curricula, and high-stakes assessments place sustained pressure on students' time and psychological resources [1], [2]. Sleep is frequently sacrificed, yet adequate sleep is essential for memory consolidation, attention, emotional regulation, and physical health. Examination periods concentrate these pressures and are consistently reported as times of markedly poorer sleep [3], [4].

Global syntheses estimate that more than half of medical students experience poor sleep quality and that average sleep duration falls below recommended levels [5], [6]. The bidirectional relationship between sleep disturbance and mental health symptoms—depression, anxiety, and burnout—further compounds risk. Despite this, sleep is still often treated as a secondary concern in medical-school wellness programmes.

This systematic review aims to summarize the prevalence of sleep problems among medical students, the impact of examination stress, associated mental-health and academic correlates, and the implications for institutional support and future research.

2. Methods

The review followed PRISMA 2020 guidelines [7]. PubMed/MEDLINE, Scopus, and Web of Science were searched from 2015 to October 2026 using terms combining "medical student*" OR "medical education" with sleep quality, insomnia, sleep disturbance, examination stress, and related keywords. English-language observational studies, systematic reviews, and meta-analyses reporting quantitative sleep outcomes in medical students were eligible. Thirty-eight sources were retained after screening.

3. Results

3.1 Study Selection and Overall Prevalence

After removal of duplicates, 1,172 records were screened and 38 sources included (Figure 1). A large meta-analysis of 109 studies (n ≈ 59 000) estimated a pooled prevalence of poor sleep quality of 55.6% and an average sleep duration of 6.5 hours per night; excessive daytime sleepiness affected about 33% [5]. Regional meta-analyses in the Middle East and North Africa reported similar or slightly higher rates of poor sleep quality (≈59%) and short sleep [6]. Thematic emphasis across the literature is illustrated in Figure 2.

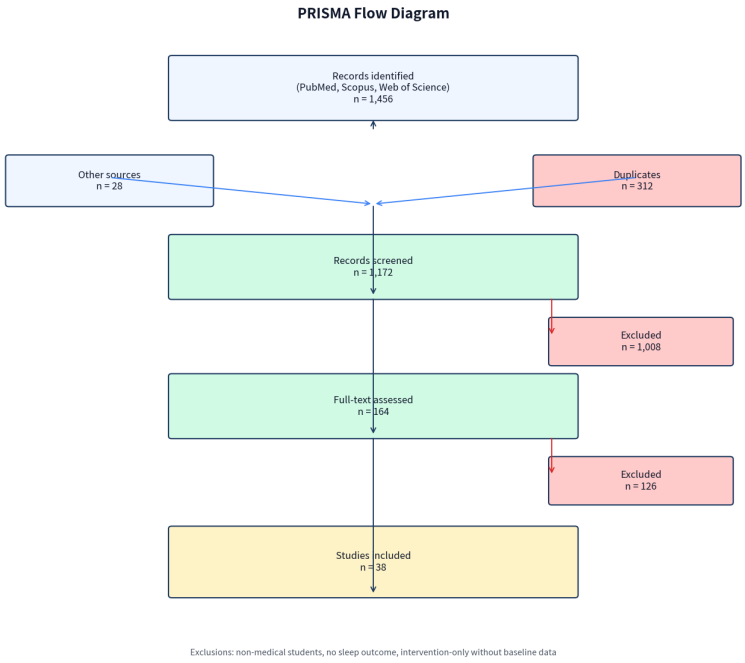

Figure 1. PRISMA flow diagram of literature selection.

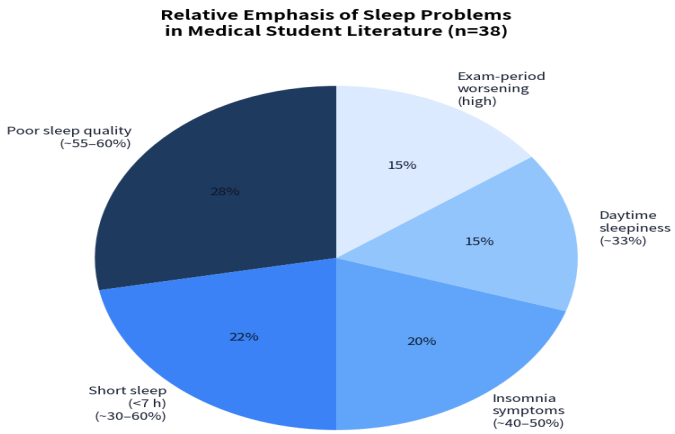

Figure 2. Relative emphasis of sleep-related problems in the included literature.

3.2 Examination Periods and Acute Sleep Disruption

Examination periods reliably intensify sleep disturbance. In a recent survey of final-year French medical students assessed after national ranking exams, 79% reported that exam-year stress had impaired their sleep and 83% reported impaired concentration; 15% had used benzodiazepines [3]. A study focused on an examination period found that 46% of medical students screened positive for clinically relevant insomnia symptoms (ISI > 10); insomnia severity was independently associated with depressive symptoms and dysfunctional sleep beliefs, and inversely associated with academic performance [4]. Preclinical years and high perceived stress emerge repeatedly as periods of elevated risk [6].

3.3 Mental Health Correlates and Academic Impact

Poor sleep is consistently linked to worse mental-health outcomes. Systematic reviews confirm associations with depression, anxiety, and suicidal ideation among medical students [1], [8]. Meta-analytic data in undergraduate populations show moderate pooled correlations between stress and both poor sleep quality and insomnia symptoms [9].

Academic performance tends to be inversely related to insomnia severity and short sleep, although effect sizes vary and residual confounding is common [4]. Dysfunctional beliefs about sleep (e.g., worry/helplessness, exaggerated perceived consequences of poor sleep) independently predict insomnia severity and represent a modifiable cognitive target [4].

3.4 Risk Factors, Gaps, and Synthesis

Higher risk is observed among students with elevated stress, in preclinical training phases, in certain geographic and income settings, and among women in some cohorts [3], [6]. Chronotype mismatch with early academic schedules and high academic workload further contribute. Interventional evidence remains sparse; most studies are cross-sectional and rely on self-report. Table 1 summarizes key quantitative findings.

Finding	Estimate / Observation	Source type
Poor sleep quality prevalence	~55–60% (global & regional pooled)	Meta-analyses [5],[6]
Average sleep duration	~6.1–6.5 hours/night	Meta-analyses [5],[6]
Insomnia symptoms (exam period)	~46% (ISI > 10)	Cross-sectional [4]
Exam stress impairing sleep	~79% of final-year students	National exam survey [3]
Daytime sleepiness	~33%	Meta-analysis [5]
Association with depression/anxiety	Consistent, moderate strength	Systematic reviews [1],[8]

Table 1. Key quantitative findings on sleep problems in medical students.

4. Discussion

The evidence base is clear: poor sleep is the norm rather than the exception among medical students, and examination periods further degrade sleep quality and daytime functioning [3]–[6]. The moderate associations with depression, anxiety, and academic performance underscore that sleep disturbance is both a marker and a potential amplifier of broader distress [1], [8], [9].

Most data remain cross-sectional, limiting causal inference. Self-report instruments (PSQI, ISI, ESS) are practical but subject to bias; objective actigraphy and longitudinal designs across the academic calendar are still uncommon. Intervention studies are notably scarce, leaving a gap between documented need and evidence-based solutions.

Practical implications include embedding sleep-hygiene education into medical curricula, scheduling assessments with greater attention to recovery time, screening for insomnia and mood symptoms during high-stress periods, and ensuring accessible, non-stigmatizing mental-health and sleep support. Cognitive approaches that address dysfunctional sleep beliefs may be particularly relevant given their independent association with insomnia severity [4].

5. Conclusion

Medical students worldwide experience high rates of poor sleep quality, short sleep duration, and insomnia symptoms that intensify around examinations. These disturbances are linked to mental-health symptoms and, in some studies, to reduced academic performance. Institutions should treat sleep as a core component of student well-being, especially during high-stakes assessment periods, and researchers should prioritize longitudinal and interventional studies that can guide effective support.

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