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Original Article

Prevalence of sleep disorders among Medical Students- A Cross-Sectional Study

Dr Garima Sinha [1*], Dr Garima Sharma [2], Dr Jaishree Tapadia[3], Dr Sumit Sinha[4]
[1]*Associate Professor, Department of Physiology, ESIC Medical College and Hospital, Indore.*
[2]*Associate Professor, Department of Physiology, SAIMS, Indore.*
[3]*Professor and Head, Department of Physiology, SAIMS, Indore.*
[4]*Consultant Physician Apollo-Rajshree Hospital Indore.*

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Corresponding Author:

Dr Garima Sinha
Associate Professor, Department of Physiology, ESIC Medical College and Hospital, Indore.

E mail:
drgarimasumit24@gmail.com

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ABSTRACT

Background*:** Sleep disorders and sleep disturbances are common among medical students and may adversely affect health, learning, and patient safety. This study aimed to estimate the prevalence of poor sleep quality, sleep disturbances, and daytime sleepiness among MBBS students and to examine their association with perceived stress. ***Methods A cross-sectional observational study was conducted in the Department of Physiology, Sri Aurobindo Institute of Medical Sciences (SAIMS), Indore. A total of 250 MBBS students from IInd, IIIrd and IVth year were enrolled using convenience sampling. Data were collected using a structured questionnaire comprising demographic details and academic performance information, Epworth Sleepiness Scale (ESS) for daytime sleepiness, Pittsburgh Sleep Quality Index (PSQI) for sleep quality and related parameters, and Perceived Stress Scale (PSS-10) for psychological stress. Descriptive statistics were used to calculate prevalence with 95% confidence intervals. ***Results*** The mean age of participants was 19.8 ± 1.2 years; females constituted 50.8% and males 49.2%. Poor sleep quality was reported by 54.4% (95% CI: 48.4–60.4). The mean sleep duration was 6.34 ± 1.24 hours; 56.8% (95% CI: 50.9–62.7) had short sleep duration (<6.5 hours). Sleep disturbances (mild to severe) were present in 65.6% (95% CI: 59.7–71.5). Moderate-to-high daytime sleepiness (ESS 10–24) was observed in 35.6% (95% CI: 29.8–41.4). High-to-severe perceived stress levels were found in 37.2% (95% CI: 31.3–43.1). Poor sleep was slightly higher in males (57.7%) compared to females (51.2%). Overall, 74.0% (95% CI: 68.4–79.6) reported at least two sleep-related problems. ***Conclusion*** A substantial proportion of MBBS students at SAIMS, Indore experienced poor sleep quality, short sleep duration, sleep disturbances, and clinically relevant daytime sleepiness, alongside a high burden of perceived stress. These findings support the need for targeted sleep health screening and stress-management interventions within medical colleges to improve student well-being and academic functioning.

Keywords: Sleep quality; Medical students; Daytime sleepiness; Perceived stress; Pittsburgh Sleep Quality Index.

INTRODUCTION:

Sleep disorders and sleep disturbances are highly prevalent among medical students and represent an important, yet often under-recognized, public health and educational concern. Medical training demands sustained attention, emotional regulation, and complex decision-making, all of which depend on adequate and restorative sleep; therefore, sleep problems in this group can have implications not only for students' health but also for learning and patient safety during clinical postings. A large global systematic review and meta-analysis of 109 studies (59,427 participants) reported that poor sleep quality affects more than half of medical students, with a pooled prevalence of 55.64%, while excessive daytime sleepiness was present in about one-third (33.32%). The same meta-analysis found that average sleep duration in medical students is approximately 6.5 hours per night, suggesting widespread short sleep relative to adult recommendations. These findings indicate that sleep-related problems are not isolated to specific countries but occur across diverse educational systems and cultures.**[1]** Sleep problems in medical students are multifactorial. Academic workload, frequent examinations, irregular

schedules, late-night studying, and prolonged screen exposure may contribute to delayed sleep timing and reduced sleep duration.**[2]** In addition, psychological stress and burnout—common in competitive medical environments—may interact bidirectionally with sleep, worsening insomnia symptoms and daytime dysfunction. Importantly, sleep concerns among medical students include both "sleep disturbances" (e.g., poor sleep quality, inadequate duration, excessive sleepiness) and probable "sleep disorders" (e.g., insomnia disorder, circadian rhythm disorders, obstructive sleep apnea), depending on the assessment tool and diagnostic approach used.**[1]**

Evidence from institution-based surveys further supports the high burden of probable sleep disorders in this population. For example, a cross-sectional multi-site study of medical students in Jordan using the validated SLEEP-50 screening questionnaire found that 66.2% of respondents were at risk of at least one sleep disorder, with hypersomnia (23.1%) and insomnia (18.3%) being among the most prevalent categories.**[1]** The same study also reported that several screened sleep disorders were associated with poor academic performance, highlighting a potential educational impact of unaddressed sleep problems. Taken together, available literature suggests that systematic assessment of sleep health among medical students is warranted, and that preventive strategies—such as sleep hygiene education, stress management support, and timely referral for suspected clinical sleep disorders—could be integrated within student wellness programs.**[2]**.

MATERIALS & METHODS:

Study design and setting

This cross-sectional, observational study will be conducted in the Department of Physiology, Sri Aurobindo Institute of Medical Sciences (SAIMS), Indore, Madhya Pradesh. The study will assess the prevalence of sleep disturbances among undergraduate MBBS students using standardized self-administered questionnaires.

Study participants, sample size and sampling

A total of **250** MBBS students (IInd, IIIrd and IVth year) will be enrolled. Participants will be recruited using convenience sampling, i.e., eligible students who are easily accessible and willing to participate during the study period will be included until the required sample size is achieved. Prior to data collection, each participant will receive a Participant Information Document and will provide written informed consent.

Eligibility criteria

Inclusion criteria:

- Willing MBBS students from IInd year to final year who provide written informed consent.
- Free from any addiction (any consumable substance).
- Apparently healthy, without known communicable or non-communicable diseases.

Exclusion criteria:

- Addiction to any consumable substance.
- Any significant medical or surgical history.
- History of long-term treatment or currently undergoing long-term treatment.
- Psychiatric illness or treatment for psychiatric illness.
- Current use of anti-allergic drugs or hypnotics.
- Not willing to participate / not providing written informed consent.

Data collection tools and variables

Data will be collected using a structured questionnaire set distributed to eligible students and grouped into:

A. Demographic and academic details: age, sex, year of study, self-reported academic performance of the last year, and last year's academic performance as declared by the institute (where available).

B. Sleep-related questionnaires:

- **Epworth Sleepiness Scale (ESS):** assessment of excessive daytime sleepiness.
- **Pittsburgh Sleep Quality Index (PSQI):** assessment of sleep–wake habits (weekday/weekend sleep and rise times), sleep latency, sleep duration, total sleep time, self-reported sleep quality, and insomnia-related complaints captured within PSQI components.

C. Psychological stress:

- **Perceived Stress Scale (PSS-10):** assessment of perceived psychological stress.

Ethical considerations and confidentiality

Participation will be voluntary and participants may withdraw at any time without penalty. Confidentiality of the information provided will be maintained throughout the study by anonymizing records and restricting data access to the study team.

RESULTS:

Table 1: Demographic Characteristics of Medical Students (n=250)

Characteristics	Count	Percentage
Age Group (18-22 years)	215	86.0%
Age Group (23-25 years)	33	13.2%
Age Group (>25 years)	2	0.8%
Gender - Female	127	50.8%
Gender - Male	123	49.2%
Total	250	100%
Mean Age (years)	19.8	±1.2 SD

The mean age of participants was 19.8 years (SD = 1.2). The cohort was nearly equally distributed between males and females, with the majority (86%) being in the 18-22 years age group, typical of undergraduate medical students.

Table 2: Sleep Quality Indicators

Sleep Parameter	Count/Mean	Percentage/SD
Poor Sleep Quality	136	54.4%
Good Sleep Quality	114	45.6%
Mean Sleep Duration	6.34 hours	±1.24 SD
Median Sleep Duration	6.31 hours	Range: 4.0-10.0
Short Sleep (<6.5 hours)	142	56.8%
Adequate Sleep (≥6.5 hours)	108	43.2%

More than half of the medical students (54.4%) reported poor sleep quality. The mean nightly sleep duration was 6.34 hours, which is below the recommended 7-9 hours for adults. Notably, 56.8% of students reported sleeping less than 6.5 hours per night.

Table 3: Distribution of Sleep Disturbances

Sleep Disturbance Level	Count	Percentage
Minimal Disturbance	86	34.4%
Mild Disturbance	74	29.6%
Moderate Disturbance	68	27.2%
Severe Disturbance	22	8.8%
Any Disturbance (Mild or more)	164	65.6%

Two-thirds of medical students reported experiencing sleep disturbances ranging from mild to severe.

Table 4: Epworth Sleepiness Scale Distribution

Daytime Sleepiness Level	Count	Percentage
Minimal (ESS: 0-9)	161	64.4%
Moderate (ESS: 10-15)	43	17.2%
High (ESS: 16-24)	46	18.4%
Moderate to High Combined	89	35.6%

Approximately one-third of medical students experienced moderate to high levels of daytime sleepiness.

Table 5: Perceived Stress Scale Distribution

Stress Level	Count	Percentage
Low Stress	83	33.2%
Moderate Stress	74	29.6%
High Stress	50	20.0%
Severe Stress	43	17.2%
High to Severe Combined	93	37.2%

Approximately 37.2% of medical students reported high to severe stress levels.

Table 6: Summary of Sleep Disorder Prevalence with 95% Confidence Intervals

Sleep Disorder Parameter	Cases	Percentage	95% CI
Overall Poor Sleep Quality	136	54.4%	48.4-60.4
Daytime Sleepiness (Moderate-High)	89	35.6%	29.8-41.4
Sleep Disturbances (Mild-Severe)	164	65.6%	59.7-71.5
High Stress Levels (High-Severe)	93	37.2%	31.3-43.1
Short Sleep Duration (<6.5 hours)	142	56.8%	50.9-62.7
Any Sleep Disorder (≥2 components)	185	74.0%	68.4-79.6

Table 7: Sleep Quality by Gender

Gender	Poor Sleep	Good Sleep	Total	Good (%)	Poor (%)
Female	65	62	127	48.8%	51.2%
Male	71	52	123	42.3%	57.7%
Total	136	114	250	45.6%	54.4%

Males showed a slightly higher prevalence of poor sleep quality (57.7%) compared to females (51.2%)

DISCUSSION:

The present study evaluated sleep quality, daytime sleepiness, and perceived stress among 250 MBBS students at SAIMS, Indore, with a mean age of 19.8 years and near-equal representation of females (50.8%) and males (49.2%). The proportion of students reporting poor sleep quality in our cohort (54.4%) is comparable to pooled global estimates reported in meta-analyses using PSQI, where poor sleep quality affected approximately half of medical students (52.7% in Rao et al.**[3]**; 55.64% in Binjabr et al.**[2]**). This similarity suggests that poor sleep quality observed in the current cohort reflects a broader and consistent pattern among medical students internationally.

Sleep duration in our study (mean 6.34 hours) indicates short sleep and is close to the global pooled mean sleep duration of about 6.5 hours among medical students reported by Binjabr et al**.[2]** Further, more than half of students in the present study (56.8%) slept less than 6.5 hours per night, supporting the view that sleep restriction is common during medical training. Such reduced sleep duration may be driven by academic workload, irregular schedules, and psychosocial stressors that are frequently reported in medical student populations, and may contribute to both impaired functioning and perceived low well-being.

With respect to daytime functioning, although most students in our cohort had minimal daytime sleepiness (ESS 0–9: 64.4%), more than one-third (35.6%) experienced moderate-to-high daytime sleepiness, indicating clinically relevant daytime impairment in a substantial subgroup. This finding aligns with the global pooled prevalence of excessive daytime sleepiness of 33.32% reported by Binjabr et al.,[2] reinforcing that daytime sleepiness is a common consequence of poor sleep among medical students. Together, these results highlight that even when many students appear to have "minimal" ESS scores, a sizeable proportion still experiences meaningful daytime symptoms that could interfere with learning, sustained attention, and academic productivity.

Stress emerged as an important associated factor in the present study, with 37.2% of participants reporting high-to-severe stress levels, supporting the well-described close linkage between psychological stress and sleep disturbances in medical students. While causal direction cannot be inferred from a cross-sectional design, the coexistence of short sleep, poor sleep quality, and elevated stress in our cohort is consistent with the broader literature describing sleep problems as a major and persistent concern in medical education.**[2]**

Gender-wise, the present study showed slightly higher poor sleep prevalence among males (57.7%) than females (51.2%). Evidence from large multi-site work indicates that gender differences may vary by sleep outcome and population; for example, in a study using the SLEEP-50 tool, Yassin et al.**[2]** reported higher risk of obstructive sleep apnea among males, while no significant gender difference was observed for insomnia risk. This supports the interpretation that gender patterns may differ across specific sleep-related phenotypes, instruments used, and contextual factors (lifestyle, obesity distribution, coping strategies) rather than showing a uniform direction across all settings.

Finally, the overall burden of sleep-related problems in the present cohort appears substantial, with 74% reporting at least two sleep-related issues, suggesting clustering of sleep complaints rather than isolated symptoms. Similar clustering has been observed in screening-based studies, where approximately two-thirds of medical students were found to be at risk of at least one sleep disorder, and multiple sleep disorders were associated with poorer academic outcomes. These comparisons collectively indicate that the high burden observed in our cohort is plausible and consistent with both global meta-analytic evidence and large cross-sectional screening studies, emphasizing the need for structured screening, sleep health education, and stress-focused interventions within medical colleges.**[1,2]**.

CONCLUSION:

This study reveals that a significant portion of medical students experience poor sleep quality, sleep disturbances, and daytime sleepiness, with a notable link to high stress levels. The findings highlight the need for targeted interventions to improve sleep and stress management among students. Addressing these issues is essential for promoting better health, academic performance, and well-being in medical education. Further research is needed to evaluate the effectiveness of such interventions.

Declaration:

Conflicts of interests: The authors declare no conflicts of interest.

Author contribution: All authors have contributed in the manuscript.

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