IJMEAR | International Journal of Medical Education And Research
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ORIGINAL RESEARCH ARTICLE
Vol. 5 · No. 36 · June 2026

Impact of Sleep Duration on Memory Retention Among Medical Students: A Cross-Sectional Survey-Based Study

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Abstract

Background: Sleep is an important factor in learning and memory consolidation, and is often disturbed among medical students due to academic workload, stress, and excessive screen time. This study was carried out to find out the sleep pattern of medical students and to see whether they feel that their sleep duration affects their memory retention.

Objective: To assess the sleep duration and sleep habits of medical students and to study their self-reported perception about the relationship between sleep and memory retention.

Methods: A cross-sectional survey was conducted using a self-prepared Google Form questionnaire. The form was circulated among medical students and a total of 26 responses were received. The questions included items on sleep duration, sleep schedule, screen using time before sleep, sleep disturbances, and self-perceived memory performance.

Results: A most of students (about 61%) told that they are sleeping less than 6 hours per night, and 88.5% used electronic devices before sleeping. Around 46% did not have a regular sleep schedule. About 31% of students felt that their memory was affected by lack of sleep, and nearly 69% agreed or strongly agreed that adequate sleep improves memory retention. Most students (about 65%) told they wish to improve their sleep habits to enhance memory.

Conclusion: Poor sleep duration and irregular sleep schedules are common among medical students, and most students believe that better sleep can improve memory retention, even though only some directly feel its effect. Improving sleep hygiene among medical students may help in better academic performance.

Keywords: *Sleep duration, memory retention, medical students, sleep hygiene, cross-sectional survey*

Introduction

Sleep plays an important role in the consolidation of memory and learning. Medical students, because of heavy academic schedules, frequent examinations, and hostel life,

often compromise their sleep duration. Many students stay awake late at night for studying or due to excessive use of mobile phones, which can affect the quality and duration of their sleep.

It has been generally said that adequate sleep helps in better memory retention, while poor sleep may lead to forgetfulness and reduced concentration during classes. However, it is also important to know what students themselves feel about this relationship, since their perception can influence their willingness to improve sleep habits.

This study was therefore planned with the objective of assessing the sleep pattern of medical students and their self-perceived opinion about the effect of sleep duration on memory retention.

Materials and Methods

Study design: This was a cross-sectional, descriptive, survey-based study.

Study population: First-year and other medical students were included in the study. Most of the respondents (88.5%) were first-year students.

Sample size and sampling technique: A total of 26 students participated in the survey voluntarily. Convenience sampling was used, as the form was shared through hostel and class groups, and only those students who agreed to participate filled the form.

Tool used: A self-prepared questionnaire was created using Google Forms. The questions are not a validated one; it was designed for academic exercise and included questions on sleep duration, sleep timing, screen use, sleep disturbances, and self-perceived memory performance.

Data collection: The link to the Google Form was shared among students, and responses were collected accord. Names entered by participants were used only for record purposes and were removed before analysis.

Statistical analysis: Responses were analysed using simple descriptive statistics (percentages) and presented using pie charts, as generated automatically by Google Forms.

Ethical considerations: Ethical considerations: Participation was voluntary, and informed verbal consent was taken before filling the form. No personally identifying information has been used or published in this article.

Results

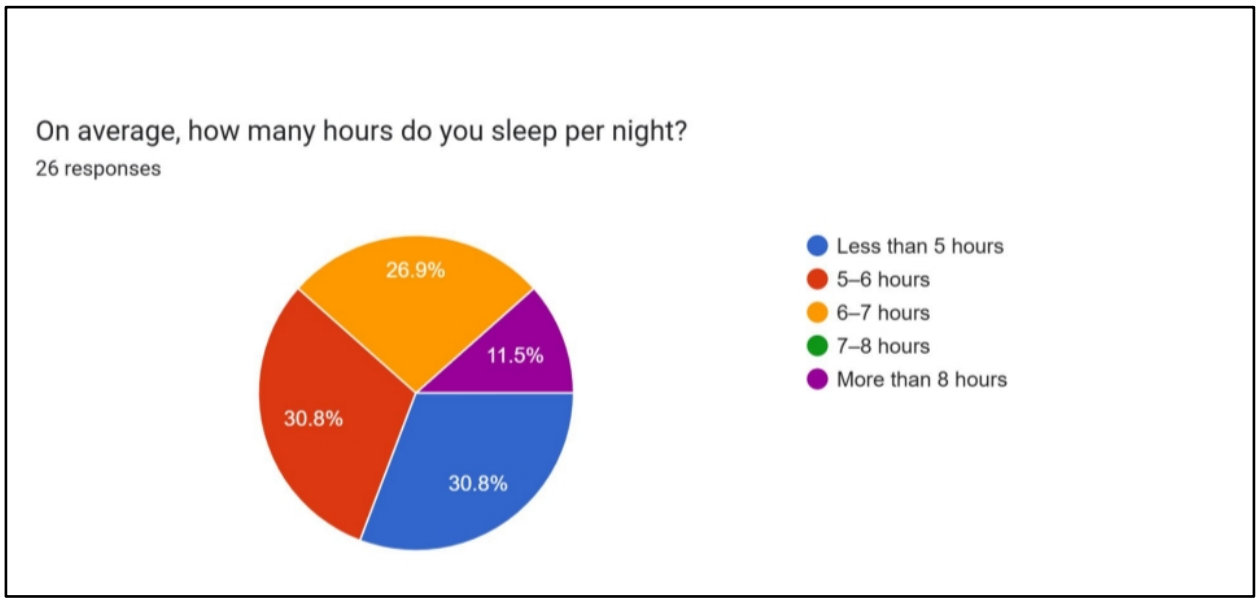
A total of 26 students responded to the survey. The demographic and sleep-related findings are summarised below.

Demographic Profile

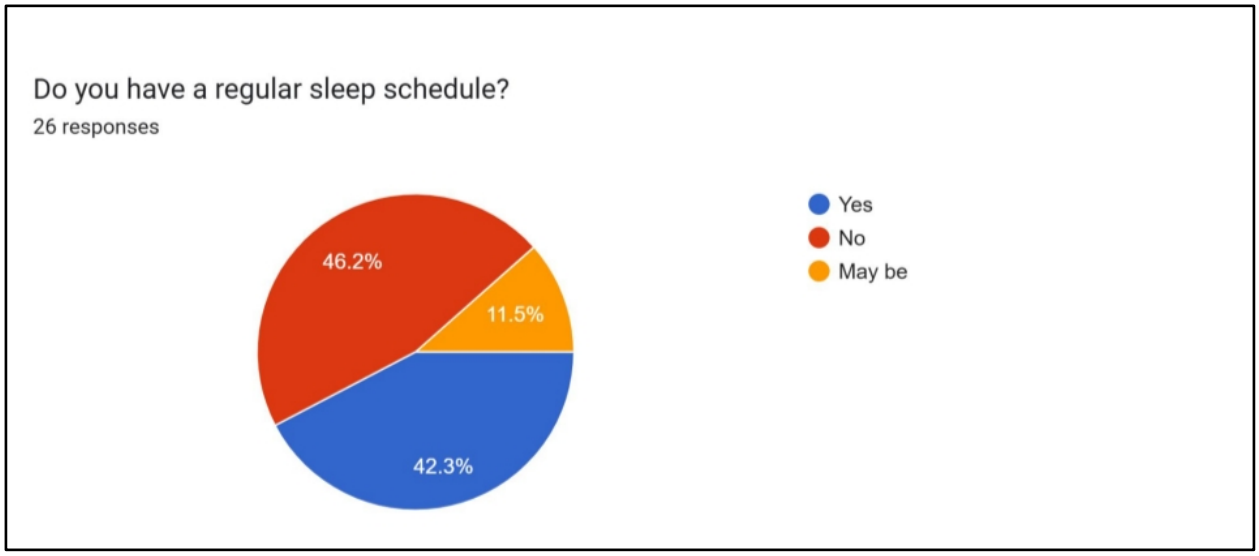
Variable	Category	Percentage
Gender	Female	65.4%
	Male	34.6%
Year of study	1st year	88.5%
	2nd–5th year / working	11.5%
Residence	Hostel	92.3%
	Day scholar	7.7%

Sleep Pattern

Average sleep duration: 30.8% slept less than 5 hours, 30.8% slept 5–6 hours, 26.9% slept 6–7 hours, and 11.5% slept more than 8 hours.



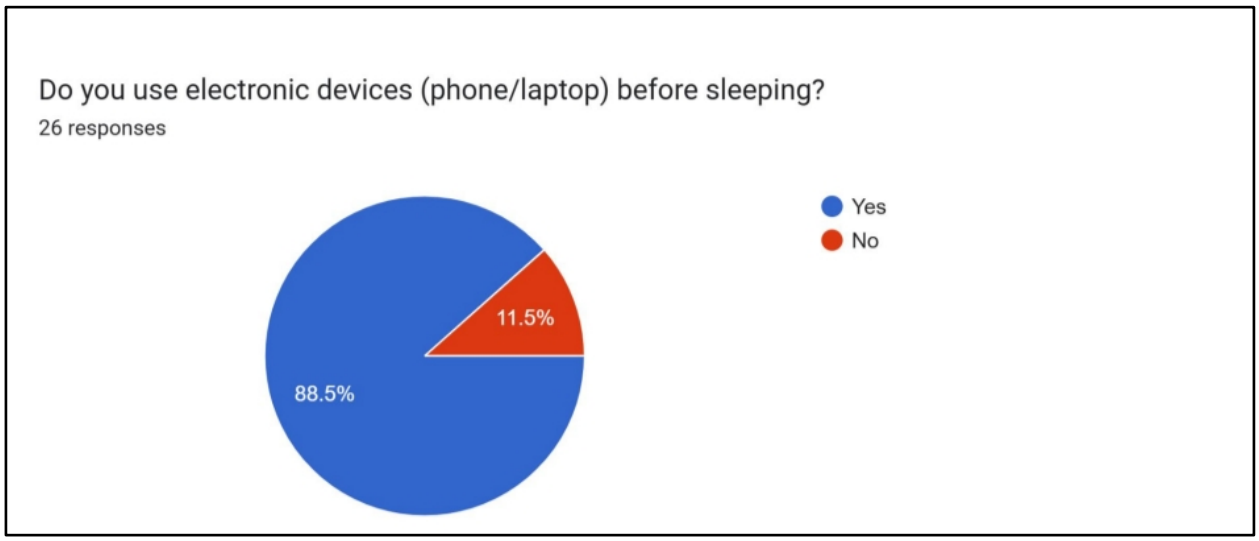
Regular sleep schedule: Only 42.3% reported having a regular sleep schedule; 46.2% did not, and 11.5% were unsure.



Bedtime: Most students (46.2%) went to bed between 10 PM and 12 AM, while 30.8% went to bed between 12 AM and 2 AM.

Wake-up time: 42.3% woke up between 5–7 AM and 34.6% between 7–9 AM.

Electronic device use before sleep: 88.5% of students used mobile phones or laptops before sleeping.



Sleep disturbances: 50% rarely experienced disturbances, while 19.2% reported them often.

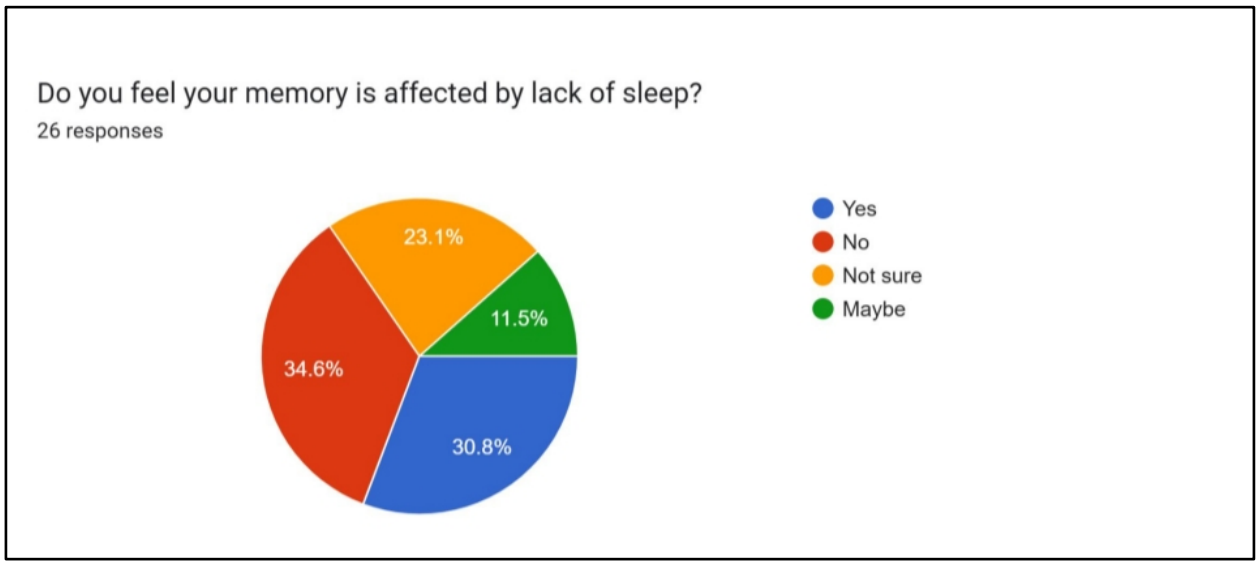
Sleep quality: 53.8% rated their sleep quality as average, 26.9% as good, and only 11.5%

as excellent.

Weekday–weekend variation: 46.2% reported a 1–2 hour difference in sleep timing between weekdays and weekends.

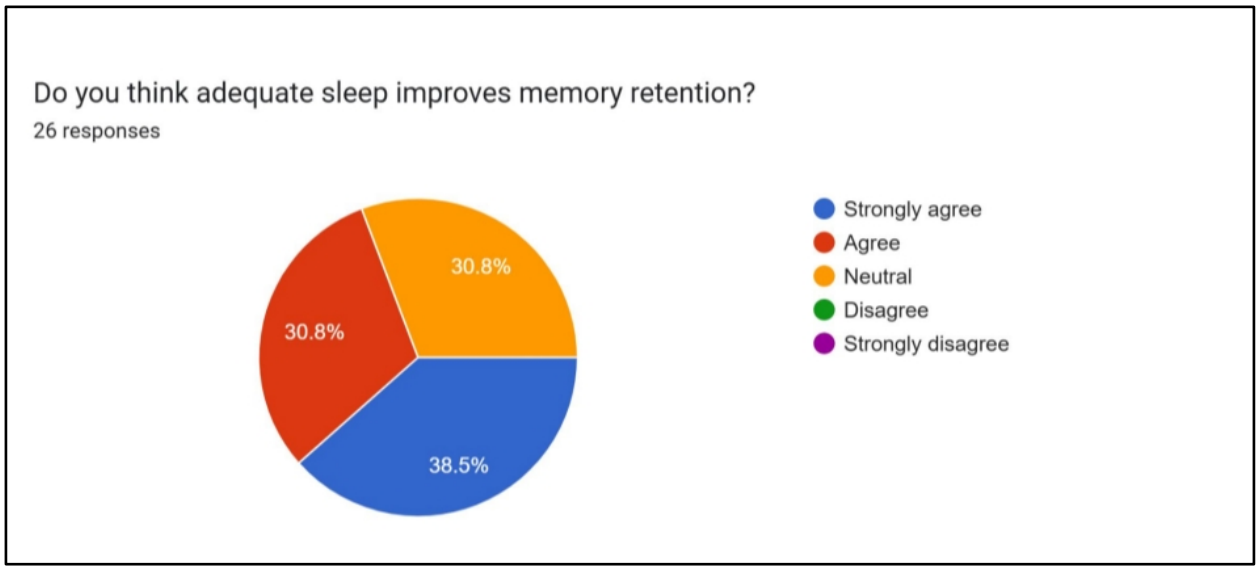
Perceived Effect on Memory

30.8% felt their memory was affected by lack of sleep, 34.6% felt it was not, and the rest were unsure or said ‘maybe’.

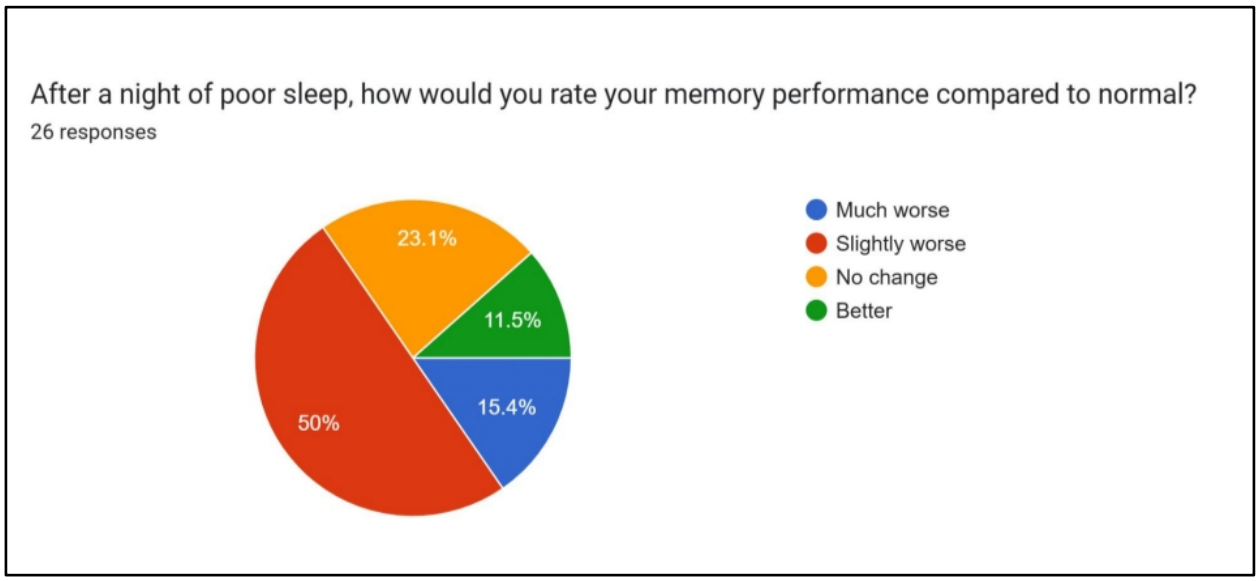


53.8% felt that their memory improves after a good night's sleep.

69.3% (Strongly agree + Agree) believed that adequate sleep improves memory retention; none disagreed.



After a night of poor sleep, 50% felt their memory performance was slightly worse and 15.4% felt it was much worse.



Only 26.9% strongly agreed that they find it easier to remember information studied after a full night's sleep; the majority (57.7%) were neutral.

Academic and Lifestyle Correlates

42.3% sometimes felt sleepy during classes, and 38.5% rarely felt sleepy.

Regarding alertness in morning classes, 38.5% felt only slightly alert and 34.6% felt moderately alert.

84.6% of students stated they had tried to improve their sleep schedule at some point.

The main reasons given for reduced sleep were mobile usage (30.8%), studying (26.9%), stress (19.2%), and other activities (19.2%).

84.6% agreed or strongly agreed that stress or academic pressure affects their sleep duration.

65.4% said they would be willing to improve their sleep habits to enhance memory, while 15.4% said they would not.

Discussion

The findings of this survey show that a large proportion of medical students sleep less than the recommended 7–8 hours per night, which is consistent with commonly reported sleep patterns among medical students due to academic pressure and hostel lifestyle. The high rate of electronic device use before sleeping (88.5%) is also a common contributing factor for delayed and reduced sleep duration.

Interestingly, although only about one-third of students directly felt that their memory was affected

by poor sleep, a much larger proportion (about 69%) agreed that adequate sleep generally improves memory retention. This difference suggests that students may be more aware of the general concept of sleep and memory than of its effect on their own day-to-day performance.

The fact that 84.6% of students had attempted to improve their sleep schedule, and 65.4% expressed willingness to do so for better memory, indicates that students are generally aware of the importance of sleep and are open to making changes, even though academic stress remains a major barrier.

These findings suggest that sleep hygiene awareness programs and better time-management guidance may be useful for medical students, particularly in the first year when adjustment to a new academic environment is greatest.

Limitations

The sample size was small (n = 26) and limited to students from a single institution, so the results cannot be generalised to all medical students.

Sampling was done by convenience method and not by random selection.

Memory retention was assessed only through self-perception and not through any objective memory test, so the results reflect perceived rather than measured impact.

Being a cross-sectional study, it can only show association and not a cause-and-effect relationship between sleep duration and memory.

The questionnaire used was self-designed and not a standardised or validated tool.

Conclusion

This survey shows that poor and irregular sleep patterns are common among medical students, largely due to academic stress and excessive use of electronic devices before sleeping. While only a section of students directly felt an effect of poor sleep on their own memory, most students believe that adequate sleep improves memory retention and are willing to improve their sleep habits. Encouraging better sleep hygiene practices among medical students may have a positive effect on their academic performance and well-being.

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