

SLEEP HEALTH OF MEDICAL STUDENTS BEFORE THE ANNUAL OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)

Zahidullah Khan, Javeria Javed, Iqbal Haider, Inamullah Khan, Hamza Ali Khan, Aliena Badshah

Department of Medicine, Khyber Teaching Hospital, Peshawar - Pakistan

ABSTRACT

OBJECTIVES: To determine the sleep health of medical students before the annual OSCE at Khyber Medical College Peshawar (KMC) / Khyber Teaching Hospital Peshawar (KTH).

MATERIALS AND METHODS: This descriptive cross-sectional study was conducted from April 6–14, 2022, in the Department of Medicine, KTH Peshawar. All students of final-year MBBS of KMC appearing in Final OSCE were included in the study after receiving informed consent. Students were classified as day scholars and hostelites. Levels of stress alertness, sleep efficiency, duration, and timing of sleep were checked in both genders, and all were categorized according to the SATED questionnaire.

RESULTS: A total of 245 students were included in this study, of which 148 were male and 97 were female. Among these students, 84 were day scholars, and 161 were hostelites. Thirty-two students were completely unsatisfied with their sleep, 45% were satisfied sometimes, 20.2% felt drowsy during most of their daytime, and 46.5% felt drowsy during some of the day. Males had significantly better sleep health (5.35 ± 2.0) compared to females (4.4 ± 1.9) with p value $< .001$. Males had significantly higher average satisfaction (0.99 ± 0.72 , $p = .027$) and average duration (1.34 ± 0.69 , $p < .001$) of sleep compared to females (0.77 ± 0.74 , 0.93 ± 0.74 , respectively).

CONCLUSIONS: Students' sleep health was considerably worse before the annual practical examination and this difference was somewhat higher among hostelites.

KEYWORDS: Sleep health, Sleep quality, medical students

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INTRODUCTION

The overall population suffers from sleep issues frequently, with medical students being especially vulnerable compared to non-medical students. Medical students have sleep disruptions more regularly.

The high frequency of sleep issues among medical students can be attributed to various factors, such as long study and class hours, clinical clerkships that require night-time labor, emotional stress, lifestyle implications, and extensive use of social media.¹

It has been connected to an increase in workplace and automobile accidents as well as a higher risk of medical errors in doctors who are sleep deprived.² A study on Brazilian medical students reported 45.3% of students getting less than five hours of sleep the night before an ex-

amination.³ Research investigations show heterogeneity in the sleep health of medical students before annual tests begin. An analysis of one particular case showed that the prevalence of sleeplessness was 32.9% before examinations and dropped to 27.1% afterward.⁴ Before the start of the yearly examinations in Pakistan, medical students' sleep health reveals a propensity for students to sleep less on exam days.

Studies conducted at several Pakistani medical facilities have found that the average time people sleep before a test is less than recommended. It has been noted that compared to men, women appear to have less of a tendency to sleep. With an average of $4.74 + 2.57$ hours of sleep before an exam, most students in this study conducted at Shifa College in Islamabad got less sleep on exam days.⁵

Another research of undergraduate students studying medicine and non-medicine in Islamabad and Rawalpindi in 2017 revealed that 50.4% of students who were not medical students and 67.3% of medical students were categorized as bad sleepers, respectively. The average score for inadequate quality of sleep was 6.386 ± 2.923 . Medical students' ratings were noticeably higher, suggesting their sleep was lower quality. The quality of sleep was even poorer for medical students who were

Correspondence

Dr. Iqbal Haider

Associate Professor

Department of Medicine, Khyber Teaching Hospital,
Peshawar - Pakistan

Cell: +92-313-9696192

Email: iqbal.haider@kmc.edu.pk

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female. Yet, among students who were not medical students, there was no gender difference.⁶

Sleep health is defined by Buysse DJ as a multidimensional pattern of sleep-wakefulness, adapted to individual, social, and environmental demands, that promotes physical and mental well-being. Good sleep health is characterized by subjective satisfaction, appropriate timing, adequate duration, high efficiency, and sustained alertness during waking hours.⁷

The modern medical student's poor sleep environment and excessive screen time make this study essential. So, this study aims to determine the sleep health of medical students before going for an annual clinical examination. This study might help to enhance awareness of this important topic and encourage conversations and actions to support medical students' mental and physical health before their annual examinations.

MATERIALS AND METHODS

This descriptive cross-sectional study was carried out between 6th April and 14th April 2022 in the medical department of Khyber Teaching Hospital Peshawar after getting approval from the hospital ethical committee (Ref No. 176/DME/KMC dated 30/3/2022).

After taking informed written consent, all final-year MBBS students (n=245) of both genders were registered in the study. Students were classified as day scholars and hostelites. Levels of stress alertness, sleep efficiency, duration, and timing of sleep were checked in both genders, and all were categorized based on duration and severity. Sleep health was categorized according to the SATED (Satisfaction, Alertness, Timing, Efficiency, and Duration) questionnaire.^{7,8}

The SATED questionnaire assesses five aspects of sleep health that have been linked to several health results, including 1) satisfaction; 2) level of sleep alertness; 3) timing of sleep; 4) sleep efficiency; and 5) sleep duration. Five items make up the original questionnaire, each of which is concerned with how frequently a particular aspect of sleep health is met.

A score of 0 represents "never", 1 represents "sometimes", and 2 represents "always" for each item. The overall score is between 0 and 10, where 0 and 10 indicate the highest and lowest levels of sleep health, respectively. This questionnaire has been found reliable (Cronbach's $\alpha = 0.77$) and valid in the general population.

Statistical analysis was done using SPSS 22. Frequency and percentages were calculated for categorical variables, whereas mean and standard deviation were calculated for scale variables. P values below 0.05 were considered significant.

RESULTS

A total of 245 students were included in this study, of which 148 were male and 97 were female. 32.2% of students were completely unsatisfied with their sleep, 45% were satisfied sometimes, 20.4% felt drowsy during most of their daytime, and 46.5% felt drowsy during some of the day (Table 1). 19.6% of students were not getting 6 to 8 hours of sleep, 37.6 % were getting 6 to 8 hours occasionally, and 31.8% were taking more than 30% to fall asleep (Figure 1). Males have significantly better sleep health (5.35 ± 2.0) compared to females (4.4 ± 1.9), $p < .001$ (Table 2).

Male students had significantly higher average satisfaction (0.99 ± 0.72) and average duration (1.34 ± 0.69) of sleep compared to female students (0.77 ± 0.74 ; 0.93 ± 0.74 , respectively; $p = .027$ - $p < .001$ (Table 2).

Table No 1: Demographics and other characteristics of study participants

Parameters		Frequency	Percentage (%)
Age (years)	Mean \pm SD	24.2 \pm 1.1	
Gender	Male	148	60.4
	Female	97	39.6
Day scholar	Yes	84	34.3
	No	161	65.7
Hostelite	Yes	162	66.1
	No	83	33.9

Table No 2: Mean SATED Score stratified based on gender

	Male	Female	p-value
Overall SATED score	2.0 \pm 5.35	1.9 \pm 4.4	0.000
Satisfaction	0.72 \pm 0.99	0.74 \pm 0.77	0.027
Alertness	0.75 \pm 0.92	0.67 \pm 0.80	0.224
Timing	0.71 \pm 1.16	0.77 \pm 1.03	0.194
Efficiency	0.73 \pm 0.94	0.75 \pm 0.86	0.349
Duration	0.69 \pm 1.34	0.74 \pm 0.93	0.000

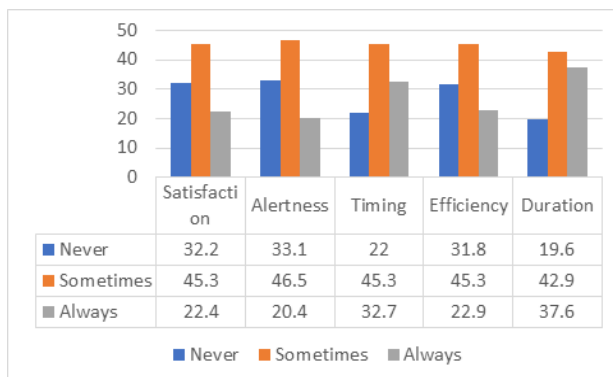


Fig 1: Percentage of sleep health as per SATED score among medical students

DISCUSSION

The medical profession is considered the most challenging, demanding, time-consuming, rewarding, and stressful. Medical students pass through long, intensive, and tiring academic years before becoming physicians. Frequent mid-term class tests and annual exams put an extra burden on undergraduate students. Therefore, they are more vulnerable to stress and sleep problems than students of other less tiring and less stressful disciplines. Our study aims to determine the sleep health of undergraduate medical students during their clinical examinations.

According to a study conducted in Brazil, 45.3% of medical students reported sleeping for less than five hours before an exam, indicating a poor sleep pattern before exams.³ In another study in New Zealand by Falloon et al., short sleep duration (≤ 6 h) was reported by 22.7% of medical students.⁹

In our study, 20% of students felt drowsy most of the day, and 46.5% felt drowsy at some point during exam day. This suggests that sleep is drastically reduced before the annual exam. According to the National Sleep Foundation, one-fourth of medical students generally slept on average ≤ 6 hours per night, whereas 7–9 hours are recommended.¹⁰

Another study conducted in India found that 40% of study participants experienced a sleep onset delay of more than 30 minutes.¹¹ Our study found that 31.8% of people needed more than 30 minutes to fall asleep, similar to a study done in India. This study in India shows some students were taking pharmacological drugs to help them sleep better.

Another study was done in Iran, where sleep satisfaction was reported as “perfect” by only 14% of participants, and 86% of students were not completely satisfied with their study.¹² Our study showed that 77% of students were unsatisfied with their sleep. A meta-analysis was conducted in 13 nations, including Pakistan, China, and the United States. Medical students’ average nightly sleep time, when pooled, was 6.3 hours, and 55% of students reported poor sleep quality.¹³

Our study shows that 37.5 % were getting 6 to 8 hours of sleep occasionally, and most days of the week, they slept fewer than 6 hours. Sleep insomnia was reported in 44.6% of medical students, as per Malik et al.¹⁴ Another study conducted in Vietnam in which more than 1500 students participated through a web survey exhibited poor sleep quality in more than half of the studied population. Similarly, in a study by Tran et al. in Vietnam, 22% of medical students experienced a low-stress level, 63% had mild stress, and 15% had a high-stress level.¹⁵ The main limitations of this study are that it is a uni-centered and single-subject-based study. We did not inquire

about any pharmacological treatment students received before sleep.

CONCLUSION

Students’ sleep health was considerably worse before the annual exam, and this difference was somewhat higher among hostelites. Health education programs should be created by the government and college administration to increase student awareness of the value of getting enough sleep before exams.

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Authors Contribution:

Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Khan Z	✓	✓	✓	✗	✓	✗
Javed J	✓	✓	✗	✗	✓	✗
Haider I	✓	✓	✓	✓	✓	✓
Khan I	✓	✗	✓	✓	✗	✗
Khan HA	✓	✓	✗	✓	✗	✗
Badshah A	✗	✓	✗	✓	✓	✗

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethical Approval:

This Manuscript was approved by the Ethical Review Board of Khyber Medical College, Peshawar. Vide No. 176/DME/KMC.

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