Research Article

Exploring Sleep Hygiene Practices and Their Relation to Sleep Quality among Medical Students at Nishtar Medical University Multan

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Abstract

Background: Sleep quality is particularly important for medical students who often face demanding schedules, high stress levels and an atypical sleep pattern.

Objective: To evaluate subjective sleep quality among medical students and its association with sleep hygiene practices.

Methods: This descriptive cross-sectional study design was carried out on 385 undergraduate medical students enrolled through simple random sampling. The questionnaire had three sections. The first part covered demographic information; the second part evaluated subjective sleep quality by using the Pittsburgh Sleep Quality Index; and the third part was related to a 13-item sleep hygiene questionnaire. Data was entered and analyzed using SPSS version 26. Pearson chi-square test was employed to identify the factors linked to deprived sleep quality. A p-value of ≤ 0.05 was considered statistically significant.

Results: This study revealed that 55.3% of medical students experienced poor sleep quality with a mean PSQI score of 5.17 ± 3.71, which was mostly influenced by subjective sleep quality. 45.19% of the study participants reported poor sleep hygiene practices. The analysis revealed that students with habits of watching television, a lack of exercise and taking daytime naps slept worse. A significant association was observed between poor sleep quality and deficient sleep hygiene practices ($p<0.01$).

Conclusion: Insufficient sleep hygiene practices are prevalent among students with poor sleep quality. Sleep hygiene education programs must be given due consideration because these will ultimately improve future doctors' health and enhance their performance in the long term.

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Introduction

Sleep is an indispensable component of human health and essential for physical and mental wellness.[1] Good quality sleep fosters creativity, memory and problem-solving skills.[2,3] A person's satisfaction with their sleep experience, which includes elements of sleep initiation, maintenance, quantity, and wakefulness refreshment, is referred to as their sleep quality.[4] Globally It has been shown that 45 to 70% of college students > 18years experience sleep issues and suffer from poor sleep quality[5,6], with medical students being especially vulnerable

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due to their extended study years, intense coursework, and clinical responsibilities.[7,8,9]

Sleep problems have been related to detrimental effects on learning capacity, academic performance and have also been connected to a variety of chronic illnesses.[1,10] Morey et al analyses concluded that 15% to 22% of the associations between stress and self-rated health were attributable to sleep disturbance — suggesting sleep is a key factor in the stress–health relationship.[11] The American Heart Association updated its Life's Essential 8 in June 2022 to include sleep time as a critical component for cardiovascular health.[12] Cátia et al population-based study showed that participants with shorter sleep duration had a 30% higher risk of developing obesity, diabetes and neoplasm disease.[13]

One of the key elements influencing the quality of sleep is sleep hygiene practices. All elements that increase arousal or upset the regular equilibrium of the sleep-wake cycle are considered to be part of poor or imperfect sleep hygiene practices.[14] Additionally, medical students seem to be unaware of sleep hygiene practices and its effects on their learning capacities, educational achievement, social interaction and mental health.[8,9] Thus, it's critical to raise awareness among medical students about the possible consequences of deprived sleep quality.

At present, only limited data has been available in Pakistan on this issue; therefore to explore this problem further, the aim of this study is to investigate the association of sleep quality with sleep hygiene practices.

Methods

This was a descriptive cross-sectional study conducted from 1st August 2022 to 30th May 2023 at Nishtar Medical University Multan. The sample size of the present research was calculated using the formula ($n=z^2\ p\ q\ /\ d^2$). By taking 95% as a confidence interval, 5% as a margin of error, a z value of 1.96 and an anticipated frequency of 49.16%, the estimated sample size for this study was 385.15 Students from the first to the final year MBBS currently enrolled were included in the research. Exclusion criteria include students with any type of chronic illness, diagnosed sleep disorders and taking psychotropic medications.

After approval from the institutional review board, a list of all the undergraduate students was taken from the student section. Data was collected by using the probability random sampling technique through the table of random numbers method. After assuring the confidentiality of the information provided informed consent was obtained. A self-designed questionnaire was administered to participants comprised three parts. The first part was related to demographic information. The second part assessed subjective sleep quality using the Pittsburgh Sleep Quality Index (PSQI), a self-report questionnaire with 19 items used to assess sleep quality and disruptions over a month period.[16] It yields seven subcategories: sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications, subjective sleep quality, sleep latency, and daytime dysfunction. Each item has a value between 0 and 3, with higher scores suggesting more severe sleep disruptions. Respondents stated how frequently they have encountered a variety of sleep difficulties during the previous month using a four-point Likert-type scale (0 = "few," 1 = "sometimes," 2 = "often," and 3 = "almost always"). The subscales were added together to produce a final score for overall sleep quality. Scores vary from 0 to 21, with 0 to 4 representing good sleep quality and 5 to 21 representing poor sleep quality or sleep disruption.

The third part of the questionnaire is a 13-item SHI (Sleep Hygiene Index) tool that can assess the practices conducive to sleep.[17] By answering a series of questions related to sleep patterns, bedtime routines, sleep environment, regularity of sleep schedule, exposure to electronic devices before bedtime, noise and light levels in the bedroom, consumption of stimulants such as caffeine, tobacco and alcohol four hours before bedtime and physical activity level, the index helps to gauge the overall sleep hygiene of an individual. Each item is rated on a five-point scale: 0 (never), 1 (rare), 2 (sometimes), 3(frequent), 4 (always). Total scores range from 0 to 52, a score less than 26 is considered to be good, 27-34 is normal, and 35 and above is regarded as poor sleep hygiene. Data were entered and analyzed using SPSS software version 26. Pearson chi-square test was used to identify the association of sleep quality with sleep hygiene practices. A P value of ≤ 0.05 was considered statistically significant.

Results

A total of 385 study participants meeting the inclusion criteria were assessed to determine the effect of sleep

hygiene practices on their sleep quality. There were 206 (53.8%) males. The mean age of respondents was 21.39 ± 1.64 and 236 were between the ages of 21 and 23.270 (70.1%) were day scholars.90.9% were unmarried. Demographic characteristics of the study population are mentioned in Table 1.

Table 1: *Characteristics of Study Participants*

Characteristics	Frequency	Percentages (%)
Age		
<20	116	30.12%
21-23	236	61.29%
>23	33	8.5%
Gender		
Male	206	53.5%
Female	179	46.5%
Resident		
Day Scholar	270	70.1%
Hostelite	115	29.9%
Marital status		
Yes	35	9.09%
No	350	90.9%
Year of graduation		
1st year	75	19.4%
2nd year	72	18.7%
3rd year	73	18.9%
4th year	83	21.5%
5th year	82	21.2%

The frequency of sleep disturbance is high among medical undergraduates; 55.3% of them had poor sleep quality (PSQI>5). The mean of PSQI's global score was 5.17±3.71, mostly influenced by mean of subjective sleep quality 1.23±0.56 and duration of sleep 1.18±0.60.

Out of the total study participants, 174(45.19%) of undergraduate medical students reported poor sleep hygiene practices. Further analysis of the participants with poor sleep revealed that 52.3% of participants watched television before bed. 41.2% reported studying before bed. Only 27.2% of study participants stated exercise before going to bed and 41% felt stressed or upset in bed, 50.2% of study participants reported daytime naps. 45.3% reported drinking caffeine or smoking before bed. 32% had no fixed bedtime and 30% woke up daily at different times.

Our study results showed that deprived sleep quality and insufficient sleep hygiene practices were highly associated, as shown in Table 2. The value of p is 0.01 which shows a statistically significant association between poor sleep hygiene practices and sleep quality indicating that the quality of sleep improves with better sleep hygiene practices.

Table 2: *Association of sleep quality with sleep hygiene practices*

Sleep Quality	Sleep Hygiene			p-value
	Good	Normal	Poor	
Good Sleep Quality (n=172)	88	16	34	**0.01**
Poor Sleep Quality(n=213)	70	37	140	

Discussion

The findings of the present study revealed that the majority of the students in our research experienced sleep quality issues. These findings are consistent with the bulk of studies carried out in other nations, with a prevalence of poor sleep quality reported from 44 to 62%.[1,10,18-20] Variations in these results might be due to differences in educational methods, years of graduation and variations of structure and duration of clinical rotation in undergraduates across the countries.[21]

In the present study, the higher PSQI (5.17±3.71) global scores were most strongly influenced by subjective sleep quality and duration of sleep. However research conducted in India showed that the components of sleep duration and daytime dysfunction greatly influence the overall sleep quality scores.[22] Our findings are quite similar to the work by Zohreh and colleagues and research conducted on undergraduates in Tehran.[9,23] Both studies found that subjective sleep quality and duration of sleep were major factors in increasing the overall PSQI global score.

In the present study, the frequency of poor sleep hygiene practices reported was 45.19%. This outcome supports findings from a former study among medical students conducted in Ethiopia, in the Qatar and Karachi.[6,8,24]

Analysis of the sleep hygiene index scale in the current study showed that watching television before bed, lack of exercise and daytime naps lead to a high poor sleep hygiene score. Nearly in line with our study, research conducted by Alemayehu found that screen time followed by planning and worrying in bed were the major factors in increasing overall poor sleep hygiene score.[8] The study conducted at Qazvin University revealed that

smoking within two hours of going to bed and worries at bedtime are the major contributor to poor sleep quality,[9] in contrary to this, study conducted in Bahawalpur showed that using bed for the study is reported as a key factor affecting sleep quality of students.[25]

Finally, in the current study higher SHI scores, which reflect insufficient sleep hygiene practices, were significantly linked with higher PSQI global scores, which indicate poor sleep quality. The Chi-square demonstrated the statistical significance between insufficient sleep hygiene practices and inadequate sleep quality. Other works have additionally shown a substantial connection between bad sleeping habits and sleep problems.[22,23]

The major advantage of this study is that it addresses the importance of sleep hygiene factors that are affecting the quality of life of medical students. Findings will aid the strategist in designing and implementing sleep hygiene interventions and will aid future studies to devise novel solutions to this problem and to improve the quality of life of the forthcoming assets of our country.

The main limitation was that the majority of the study's participants came from one educational institution and the generalizability of our sample to a larger group of medical students may be limited. Future multicenter studies with in-depth comparisons and a large sample of students will be required which can increase the reproducibility of the findings. In addition to this in the future, it may be useful to perform longitudinal studies to establish causal links between poor sleep hygiene practices and low sleep quality.

Conclusion

Insufficient sleep hygiene practice is prevalent among those students with poor sleep quality. Encourage medical graduates to engross in regular physical exercises and adherence to a regular, healthy nighttime routine can enhance the quality of sleep among medical graduates. By implementing sleep hygiene educational strategies, medical institutes can positively impact medical student's cognitive ability, patient care and overall development and success of their future healthcare professionals.

Ethical Approval: The Institutional Review Board of Nishtar Medical University, Multan approved the study vide no. Ref. No. 9649.

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Authors' Contribution:

BI: Conception & design, analysis & interpretation of data, drafting of article, critical revision for important intellectual content, final approval

MB: Analysis & interpretation of data, critical revision for important intellectual content, final approval

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