

Research Article

Sleeping Habits among Medical Students of King Edward Medical University, Associated Stress and Effects on Academic Performance

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Abstract

Background: Inadequate sleep influences mental functioning, increases stress levels, and has a substantial impact on a student's academic performance.

Objectives: The study objective was to ascertain the sleeping habits among medical students of King Edward Medical University, associated stress and effects on academic performance.

Methods: This was a cross-sectional study conducted between May 2017 to July 2017 at King Edward Medical University, Lahore. It included a simple random sample of 227 medical students of the first and second years. A structured questionnaire formulated to assess the level of psychological stress, sleeping habits, academic performance, and demographic data was circulated among the students. Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep quality and Subjective Units of Distress Scale (SUDS) to assess psychological stress. Academic performance was equated to average marks obtained in the previous monthly tests. Chi-square test was performed to find an association of Sleep Quality with Academic Performance while Welch Test assessed the relationship between Sleep Quality and Psychological Stress.

Results: 71.4% of students were found to have poor sleep quality with a mean sleep of 6 hours/night (SD ± 1.636). 52.8% of students were having trouble staying awake during everyday activities. Poor sleep quality was standard for stressed students. No significant association was found between sleep quality and academic performance.

Conclusion: We found a very high frequency of poor sleep quality among medical students, which was more common in stressed students. Sleep quality did not affect academic performance.

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Keywords | Sleep quality, Medical students, academic performance, stress, PSQI, health, SUDS

Introduction

Adequate sleep influences mental functioning and therefore likely to have a substantial impact on the performance of the students in examinations. Patterns of sleep directly correlate with physical health, mood, and mental functioning. One night of shortened sleep duration can result in decreased

memory encoding, which leads to less knowledge retention.¹ These aspects of sleep have been highlighted in various studies, including a study conducted in 2014 at Dow University of Health Sciences, Karachi, where 93.6% of students had poor sleep quality.² In a cross-sectional survey conducted in Shifa College of Medicine, Islamabad, 36.5% of participants felt that their performance was affected

by sleep.³ Similarly, a cross-sectional study conducted at the College of Medicine, King Abdulaziz University between 2011-2012, found that students performing 'average' or 'below average' had trouble sleeping, a later rise time in the morning and increased daytime sleepiness compared to those performing 'above average' 'good' or 'excellent'.⁴ In another study conducted in the College of Medicine, King Saud bin Abdul Aziz University for Health Sciences in 2015, most of the students finding studies stressful had poor quality sleep.⁵

Medical schools have rigorous selection procedures to recognize brilliant students.⁶ In King Edward Medical University, the highest merit achievers are enrolled from all over Punjab. Thus, these students keep studies a priority even at the cost of their health. Medical students carry a massive academic burden, potentially leading to poor sleep quality more than that already experienced by modern society.⁷ Short term consequences of sleep disruption can lead to reduced quality of life, emotional distress, and mental health problems. Long term consequences of sleep disruption include cardiovascular, metabolic disorders, and even cancer.⁸ Owing to the Importance of enough sleep quantity and quality and paucity of information regarding sleeping habits with their effects on medical students, we hope to find the relationship between sleep quality, academic performance, and its associated stress among medical students in King Edward Medical University, Lahore.

Methods

It was a cross-sectional study conducted at King Edward Medical University, Lahore, among 1st-year and 2nd-year undergraduate students from May to July 2017. Simple random sampling technique was used. A sample size of 227-students was determined at 95% confidence level, 6% absolute precision, and with an expected percentage of 36.5% participants feeling that their performance was affected by sleep.³

After receiving ethical approval from The Institutional Review Board of King Edward Medical University, Lahore, a questionnaire containing the Pittsburgh Sleep Quality Index (PSQI), Subjective Units of Distress Scale (SUDS) and questions on academic performance, was distributed among the students of first and second-year MBBS in the

University at the end of a lecture session. Students who were a known case of diabetes, depression or any other mental disorder, as well as students admitted on "Physically Disabled" seats or those on medication that could interfere with the results, were excluded from the study. Informed consent was taken, and students were given the questionnaire to fill and return in 1 hour. Questionnaires were also collected online. A total of 227 questionnaires were distributed. Sleep Quality was found by using PSQI, while SUDS was used to calculate the psychological distress of the medical students. Academic performance was calculated by averaging the percentages of the marks obtained in the tests conducted in the month preceding the study; recording 0% to 50% as poor performance, 50% to 70% as average performance, 70% to 85% as fair performance and 85% to 100% as excellent performance.

Data were analyzed using SPSS-21. The data for mean age, mean PSQI score, and mean SUDS score was described using mean $\pm$ SD. The data for gender, accommodation status, year of study, and Sleep quality were described by using frequency and percentages.

A Chi-square test was applied to find an association between Sleep Quality with Academic Performance. Welch test was performed on Sleep Quality and Psychological Stress to find their association. Welch test was chosen after the data failed to uphold the heterogeneity of variance assumption required for performing ANOVA. The heterogeneity of variance of the dataset was tested using Levene's test. The significance level chosen for all statistical tests was 5%.

Results

Out of 227 students included in the study, 98 (43.2%) were males, while 129 (56.8%) were females. Mean age was 19.13 (SD = 0.899). Most students (156, 68.7%) lived in hostels while remaining (71, 31.3%) were day scholars. The distribution per year of study was 1st year 123 (54.2%) and 2nd year 104 (45.8%). The sleep quality of the students was evaluated using PSQI, which showed that 162 students (71.4%) had poor quality sleep. In contrast, only 60 (26.4%) students had good quality sleep, and sleep quality of 5 students could not be assessed due to missing values

(2.2%). The mean PSQI score was 6.47 (SD= 3.023), which means that, on average, students had poor quality sleep. Sleep quality of both males and females, as well as that of hostel fellows and day scholars, was equally affected. More first-year students had poorer quality sleep (77%) when compared to second-year students (68%). Student bedtime was quite varied, wherein some students went to bed as early as 8 PM while others remained awake the entire night and went to bed at 7 AM. 163 students (71.8%) went to bed at 12 AM or later. Mean sleep each night was 6 hours (SD= 1.636).

The perception of students about their sleep quality was compared with their actual sleep quality, as found out by PSQI. In students who perceived their sleep quality to be fairly good, only 35 students (29.9%) were found to actually have good sleep quality for the month preceding the study. Out of Students who perceived their sleep quality to be very good, only 25 students (62.5%) actually had good sleep quality. According to PSQI, 24 (10.5%) students reported taking tranquilizers in the last one month to induce sleep, and 120 (52.8%) students found that they were having trouble staying awake while driving, eating meals, or engaging in social activities. On analysis of these 120 students, 103(85%) were having poor sleep quality. SUDS scale was used to evaluate psychological stress among the students. The mean SUDS score was 43.01 (SD= 24.308). It was found that the percentage of students with poor quality sleep was higher as compared to that of students with good sleep quality at the same SUDS level of 60 and above.

(Table no.1)

Chi-square test revealed no significant association between academic performance and sleep quality (with a Chi-square value=3.847 and p-value= .279) at a 5% significance level.

A significant association between psychological stress and Sleep quality was revealed by the Welch test (Table No. 2) at 5% significance.

Table 2: Association Between Psychological Stress and Sleep Quality

	Sum of squares	Df	Mean Squares	F	Sig.
Between Groups	11251.428	1	11251.428	21.283	.000
Within Groups	111546.694	211	528.657		
Total		212			
Robust Tests of Equality of Means					
Recorded Distress Scale					
	Statistic	df1	df2		Sig.
	31.806	1	138.139		.000

This result was statistically significant. It was very evident in Fig no. 1, where a box plot between Distress scale and Good quality sleep is being compared. The medians of the two box plots do not overlap, indicating that the two groups are different. The median in poor quality sleep box plot lies at a higher distress level compared to the median of the good quality box plot. Also, the poor-quality box plot is spread up to the highest score i.e., highest distress in Distress scale compared to good quality sleepers in

Table 1: Comparison between Sleep Quality and SUDS Scores

Subjective Units of Distress Scale (SUDS)		Good Quality Sleep		Poor Quality Sleep	
SUDS scores	Meaning	Count	Percentage %	Count	Percentage %
0	Totally relaxed	4	7.0%	6	3.8%
10	Alert and wakeful, concentrating well	5	8.8%	13	8.3%
20	Minimal anxiety/ distress	14	24.6%	15	9.6%
30	Mild anxiety/ distress, no interference with performance	13	22.8%	18	11.5%
40	Mild to moderate anxiety or distress	0	0.0%	4	2.5%
50	Moderate anxiety/ distress, uncomfortable but can continue to perform	20	35.1%	49	31.2%
60	Moderate to strong anxiety or distress	0	0.0%	5	3.2%
70	Quite anxious/ distressed, interfering with performance	1	1.8%	25	15.9%
80	Very Anxious/ distressed, can't concentrate	0	0.0%	11	7.0%
90	Extremely anxious/ distressed	0	0.0%	10	6.4%
100	Highest distress/ fear/ anxiety/ discomfort that you have ever felt.	0	0.0%	1	0.6%

which this is not the case. (Fig. No. 1)

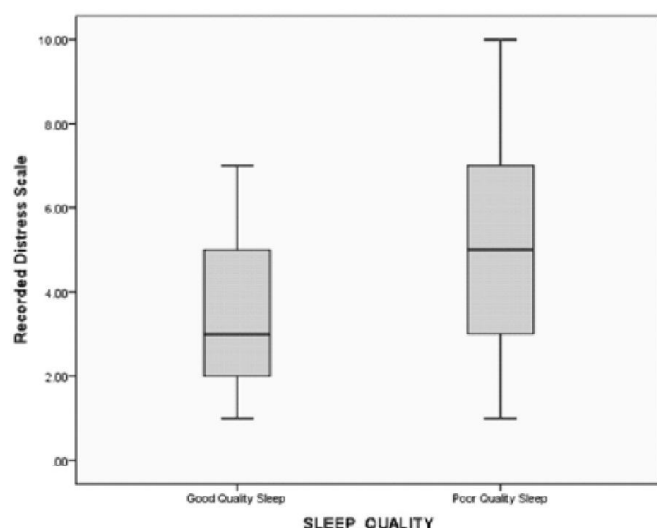


Figure no.1. Association between Quality of Sleep and Distress Level

Discussion

Medical students face strict study schedules and tough routines. Their study courses demand hard work that requires a compromise of their sleep duration and quality. Poor sleep quality can predispose to the development or exacerbation of psychological distress and mental illness.⁷

Our results show a high frequency of poor sleep quality (71.4%) among medical students, which is in accordance with other studies conducted on medical students in Pakistan.^{2,3,9,10} Both males and females experience equal sleep disturbance, not very different from other studies.^{4,9} Additionally, the sleep quality of boarders and day scholars was found to be equally affected, which is consistent with the findings of Nita JN and Jaydeep K.¹¹ Sleep quality of 1st-year students was more effected than 2nd-year students, which is contradictory to the result of the study by Surani AA et al.¹⁰ This may be the result of anxiety among 1st-year students experiencing hostel issues and extensive curriculum for the first time.

The majority of the students (71.8%) went to bed after midnight, an observation consistent with findings of Surani AA and Alsaggaf MA et al.^{10,12} Mean sleep that the students got each night was 6 ± 1.636 hours, a figure consistent with the findings of many studies.^{4,10,12} Interestingly, while 120 students (52.8%) perceived their sleep quality to be fairly good, most of these students (85.83%) had, in fact, poor quality

sleep according to PSQI results. Hence, showing that the students' perception of their sleep quality was incorrect.

A positive association was found between sleep quality and psychological stress. Poor quality sleepers had more psychological stress as compared to good quality sleepers, which is consistent with many national and international studies.^{5,6,9,13,14,15,16}

No significant association was found between sleep quality and academic performance in our study. Many researchers had similar findings,^{2,3,17} but other studies revealed that these are associated with each other.^{4,18} This shows that those students who did not compromise their sleep for good academic performance performed equally well when compared to those compromising it, therefore, suggesting no need to compromise the sleep for studying.

Enough sleep is crucial for the health of an individual. Sleep, in multiple ways, restores both normal levels of brain activity and healthy "balance" among the different functions of the central nervous system.¹⁹ Lack of sleep has also been found to be associated with many lifelong health problems, including severe medical conditions like hypertension, diabetes, and heart diseases. These conditions may, in turn, reduce life expectancy.²⁰

Our study was a cross-sectional study and had its limitations. The main limitation was the lack of a control group and the use of limited data collection duration. Since the results of our study revealed that perceived sleep quality contradicted actual sleep quality; Therefore, student guidance is paramount in this aspect. Further studies are recommended in other medical institutions to get generalized results for the entire medical student population in Pakistan.

Conclusions

The frequency of poor sleep quality among medical students was very high, and it was more common in stressed students. Perception of sleep quality of medical students was not right. Sleep quality had no effect on academic performance.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest

Funding Source: None

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