

Sleep Quality, Psychological Health and Academic Performance among Medical Students in Lahore, Punjab, Pakistan

Ambreen Anjum¹, Mamoon Mushtaq²

Virtual University of Pakistan, Federal Government University¹, Islamabad, Govt. M.A.O College², Lahore.

Abstract

Background: Lack of sleep has a detrimental effect on the nervous system, which impairs brain function. Sleep deprivation not only affects students mental health but also academic performance due to the cognitive impairment that results from it.

Objective: To explore effects of quality of sleep, psychological health and academic performance among students of various medical institutes of Lahore, Pakistan.

Study type, settings & duration: This cross-sectional study was conducted at University of Health Sciences, Allama Iqbal Medical College, Services Institute of Medical Sciences and Shaikh Khalifa Bin Zayed Medical and Dental College, Lahore from July to October 2021.

Methodology: The study was conducted on 200 (boys=100 & girls=100) medical students. Data was collected using sleep quality scale, questionnaire for general health, an item of question assessing academic performance and demographic information sheet.

Results: The mean age of participants was 21.84. Results showed that 66.65% of students had poor sleep quality. The psychological health of medical students with good sleep quality was significantly good as compared to those with poor quality of sleep ($t = -9.39, p < 0.001$). Furthermore, academic score of students with good quality of sleep was also significantly high as compared to students with poor quality of sleep ($t = 3.89, p < 0.001$).

Conclusion: Several medical students suffer in poor quality of sleep. Poor sleep is harmful for psychological health and academic performance of students. So, it is vital to identify sleep disturbances at early stage and employ health promoting and educational programs to solve this problem.

Key words: Sleep quality, academic performance, psychological health.

Introduction

Sleep is a crucial physiological process for the life of human being. Good sleep quality is essential for the psychological health of students.¹ Good quality of sleep is essential for several brain functions e.g. insight, attention, decision-making,

speech and particularly learning and memory.^{1,2} These factors are important for the students' good academic achievement. Quality of sleep is assessed on qualitative and quantitative dimensions.³ Sleep qualitative measurement is a subjective assessment of one's response or feeling of tranquility upon awakening whereas quantitative dimension assess time duration of sleep.^{4,5} Several studies described effect of sleep quality on physical health, mental health and academic performance.

Multiple studies showed high prevalence of sleep problems (51%) in medical students.⁶ Furthermore, sleep and wake cycle of students related to medical field is characterized by delayed sleep onset and insufficient sleep duration that has been established to damage cognitive functions in students.

Several researches demonstrated relationship between sleep quality and psychological health.⁷ Studies conducted on

Corresponding Author:

Ambreen Anjum

Virtual University of Pakistan
Federal Government University, Islamabad.
Email: ambreen.anjum@vu.edu.pk

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AA conceptualized the project and performed the statistical analysis. AA & MM did the data collection, literature search and drafting, revision & writing of manuscript.

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students have identified that anxiety stress, irritability, confusion, depressive symptoms are frequent psychological problems observed among them.^{8,9} High quality sleeps lead to good academic performance.¹⁰ On the other hand, students who have poor quality of sleep suffer in problems like poor concentration and attention. Sleep deprivation is also correlated with absenteeism.

Medical students are people who have elevated risk for sleep deficiency because of high academic expectations and clinical duties.^{11,12} Furthermore, they bear the change in their living style for example limited hostel facilities, financial burden and residing away from their parents.¹³

The above stated causes put medical students at high risk of sleep deprivation that affect their mental and physical abilities and academic performance. But unfortunately importance of sleep is not well addressed.

So, the purpose of present study was to highlight importance of sleep, identification of sleep problems at early stage and to examine effects of sleep quality on students' psychological wellbeing and their academic success.

Methodology

This co-relational research was employed to examine the relationship between students' quality of sleep and their academic achievement. Sample of 200 students (100 male & 100 female) was collected through purposive sampling.¹⁴ Sample was collected from Allama Iqbal Medical College, University of Health Science, Shaikh Khalifa Bin Zayed College and Services Institute of Medical Sciences, Lahore. These medical colleges were chosen randomly after compiling the list of the medical institutes of Lahore.

Data was collected from July, 2021 to October, 2021. After briefing participants about study they agreed to participate in the study. Participants were assured that their information would be kept confidential. In the present study only those students were included who had no psychiatric or chronic medical illnesses.

A socio-demographic information sheet was prepared by the researcher inquiring about participants' gender, age, and year of study. To assess quality of sleep (including sleep duration, disturbances during sleep, of participants for the past 1 month Pittsburgh's Quality Index (PSQI)¹⁵ was used. This scale is comprised of 19 items. These 19 items are grouped into 7 categories (i.e. duration of sleep, subjective sleep quality, sleep latency, habitual efficiency in sleep, disturbances during sleep, use of medicine for sleep, and dysfunctioning in daily

working due to sleep deficiency). Each category was equally scored on 0 to 3. The score of 7 categories was added to yield a total score, which ranges from 0 to 21. Higher score on sleep quality scale indicate worse quality of sleep and total score greater than 5 reflects poor quality of sleep. Cronbach alpha of sleep quality scale was .89. This scale has been validated previously on Pakistani students' population. General health questionnaire (GHQ) comprised of 12 questions was used to assess the general psychological health of participants.¹⁶ GHQ was scored on 0 to 3 scales. Total score of GHQ was calculated for all 12 items that would be from 0 to 36, while global score of >15 to 19 indicates psychological problem and score >20 evidence of severe psychological problem in previous month. Cronbach alpha of GHQ was .87. GHQ has been previously employed and validated on medical students in numerous researches. Students' academic performance was determined by their marks. In their respective colleges, students' marks below 40% were classified as grade C, 60% as grade B and 80% and above as grade A. Furthermore, 40% to 59% marks were coded as 1, 60% to 79% coded as 2, and 80% and above coded as 3.

The ethical approval was obtained from the Ethical Research Committee of Govt. M. A. O. College, Lahore.

Results

In the present Table-1 show that 100 male (50%) and 100 female (50%) were included in the study. Sample age ranged was 20 to 24 years (21.84±1.46). 133 (66.65%) participants had poor quality of sleep (PSQI score > 5).

Table 1: Demographic detail. (N=200)

Characteristics	Frequency	Percent (%)
<i>Gender</i>		
Male	100	50
Female	100	50
Students' age Mean±SD	21.84±1.46	
<i>Year of study</i>		
2 nd	62	31
3 rd	68	34
4 th	70	36
Duration of sleep Mean±SD	5.8± 2.48	
Good sleep (score ≤ 5)	67	33.05
Poor sleep (score >5)	133	66.65
<i>Academic performance</i>		
Grade A (80% and above)	30	15
Grade B (60% to 79%)	90	45
Grade C (40% to 59%)	80	40
<i>GHQ</i>		
Good health score ≤ 15	65	32.5
Poor health score >15	135	67.5

Table-2 shows that students who had good quality of sleep had better academic performance as compared to those with poor quality of sleep ($p < 0.001$). Furthermore, students' psychological health with poor quality of sleep was also notably poor than students who had good quality of sleep ($p < 0.001$).

Table 2: Differences in students' academic performance and health based on their sleep quality. (N=200)

Variables	Good Sleep (n=92) Mean±SD	Poor Sleep (n=108) Mean±SD	t	df	P
Academic Performance	3.03 ±1.04	2.38 ±1.18	3.89	198	.000
Students' Health	1.28 ±0.45	1.85±0.35	-9.89	198	.000

Table-3 shows results regarding relationship of quality of sleep with students' academic performance and psychological health. The academic performance improved as the PSQI score reduced ($p < 0.01$). Results also demonstrated positive relationship between PSQI and GHQ ($p < 0.01$).

Table 3: Correlation between sleep, health and students' academic performance. (N=200)

	Sleep Quality	Health	Academic Performance (CGPA)
Sleep quality	-	.57**	-.27**
Students' health	-	-	-.25**
Academic performance	-	-	-

Discussion

Results of present study showed that prevalence of poor sleep quality is high among medical students. 66.65% of study participants were categorized as poor sleepers. Our findings are related to the result of previous studies.^{2,17} Furthermore, data from 512 students at a medical university in Karachi, Pakistan, was reported by Maheshwari.¹⁸ They also found that the mean GPA of those students who had trouble sleeping was considerably worse than that of those who did not.

Sleeping habits of medical students in Pakistan were not satisfactory as compared to medical students of other countries. Most of the Pakistani medical students (70%) sleep after midnight. So, we found that students had actual sleep of less than 6 hours. Less sleep leads to worse effects on students' physical and

psychological health and their academic performance. So, there is a need for adopting healthy habits for example going to bed early.

In the present study participants with good quality of sleep had better academic achievement than students with poor quality of sleep. Our findings are consistent with results of earlier studies.¹⁹ Previous study reported that as much as 38.9% students had a poor sleep quality as indicated by their PSQI scores, which was affecting their academic learning.²⁰ One important factor that plays a role in good concentration is that when students take good sleep, they concentrate more, and that have an affect on their academic performance. So, insufficient sleep is significantly associated with poorer academic performance.

Findings of our study also describe crucial relationship between quality of sleep and psychological health. Students with good quality of sleep also showed good psychological health as compared to students with poor quality of sleep. These findings are similar with studies conducted earlier.²¹ A study conducted in Pakistan also showed similar findings. Their results showed that sleep disturbance among medical students adversely impacts their emotional intelligence, cognitive skills, and academic performance.²² This may be because poor sleep harm various brain parts, particularly frontal and parietal regions as well as sub-cortical structures (e.g. thalamus and ganglia).²³ These structures play important role in mathematics computation, concentration, decision-making, reasoning, and inhibitory control that are extremely significant for excellent academic performance. Poor sleep leads to numerous psychological and neuro-physiological problems like mood variations and decreased alertness that directly effect on students' academic performance. Maheshwari's research also found similar results. Moreover, sleep adequacy is vital for students' memory consolidation to achieve good academic grades. Our study findings will be useful for the students to improve their psychological health and their academic performance and for clinicians to treat problems that occur in the result of poor quality of sleep.

Findings of this study show that medical students suffer more sleep disturbance problems. Good quality of sleep is essential for students. Good quality of sleep plays an essential role in their academic achievement. Furthermore, students with poor sleep quality also suffer from health problems than those who are getting adequate sleep time. So, there is an extensive need to educate and help students to solve sleep problems that ultimately influence their health and academic performance.

Conflict of interest: None declared.

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