Investigating the Impact of Sleep Quality on Psychological Well-being and Academic Achievement in a Cohort of Medical Students

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ABSTRACT

OBJECTIVE: The aim of this study was to examine the influence of sleep quality on psychological well-being and academic performance among medical students.

METHODOLOGY: A cross-sectional descriptive study was undertaken, involving a sample of 100 medical students (50 male and 50 female) from a private medical college. Data collection utilized the Pittsburgh Sleep Quality Index (PSQI), a general health questionnaire, a question item addressing academic performance, and a demographic information sheet.

RESULTS: The mean age of participants was 21.84 years. Findings revealed that 66.65% of medical students experienced poor sleep quality. Medical students with good sleep quality exhibited significantly better psychological health than those with poor sleep quality (t= -9.39, p<0.001). Additionally, students with good sleep quality demonstrated significantly higher academic scores compared to those with poor sleep quality (t= 3.89, p<0.001).

CONCLUSION: A considerable portion of medical students face challenges with poor sleep quality, which detrimentally affects their psychological well-being and academic performance. Implementing health-promoting and educational programs tailored to address these issues is crucial.

KEYWORDS: Sleep quality, Academic performance, psychological health

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Introduction

Sleep stands as a critical physiological process vital to human existence. The quality of sleep holds a pivotal role in nurturing the psychological well-being of students [1]. Optimal sleep quality is indispensable for a myriad of brain functions, encompassing insight, attention, decision-making, speech, and notably, learning and memory [1, 2]. These cognitive functions lay the groundwork for achieving commendable academic performance. Evaluation of sleep quality entails considerations of both qualitative and quantitative dimensions [3]. The qualitative aspect entails a subjective assessment, gauging the feeling of tranquility upon awakening, while the quantitative aspect delves into the duration of sleep [4, 5]. A plethora of studies has expounded upon the profound impact of sleep quality on physical health, mental well-being, and academic prowess.

Multiple studied showed high prevalence of sleep problems (51%) in medical students[6]. Furthermore, sleep wake cycle of medical students is characterized by delayed sleep onset and insuûcient 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 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.

Numerous studies have underscored a significant prevalence of sleep issues (51%) among medical students [6]. Additionally, the sleep patterns of medical students frequently feature delayed onset of sleep and inadequate sleep duration, both of which have been demonstrated to negatively impact cognitive functions in students.

Numerous studies have established a distinct correlation between sleep quality and psychological well-being [7]. Investigations specifically targeting students have unveiled prevalent psychological issues such as anxiety, stress, irritability, confusion, and depressive symptoms [8,9]. Consistently, quality sleep has been associated with enhanced academic performance [10]. Conversely, students grappling with poor sleep quality often encounter difficulties such as diminished concentration and attention. Moreover, sleep deprivation has been linked to heightened rates of absenteeism.

Medical students are particularly vulnerable to sleep deficiency due to the demanding academic expectations and clinical responsibilities they face [9,11,12]. Additionally, they undergo significant lifestyle changes, such as limited hostel accommodations, financial pressures, and living away from their parents [13]. These factors collectively heighten the risk of sleep deprivation among medical students, thereby impacting their mental and physical capabilities as well as academic performance [14].

Therefore, the objective of the current study was to evaluate the quality of sleep and its implications on the psychological well-being and academic achievements of medical students.

Methodology:

A correlational research approach was utilized to examine the association between

sleep quality and academic performance among medical students. A purposive sampling method was employed to recruit a sample of 200 students, consisting of 100 males and 100 females. Participants were drawn from private medical college.

Data collection took place between March 2022 and May 202 within classroom settings. Prior to data collection, participants were provided with a briefing about the study's objectives and procedures. Written informed consent was obtained from all participants, and assurances were given regarding the confidentiality of their information. Only students without psychiatric or chronic medical conditions were included in the study.

Data collection occurred between March 2022 and May 2022 within classroom settings. Before collecting data, participants received a detailed explanation of the study's objectives and procedures. Written informed consent was obtained from all participants, and assurances were provided regarding the confidentiality of their information. Only students without psychiatric or chronic medical conditions were eligible for inclusion in the study. Participants completed a socio-demographic questionnaire that solicited information regarding their gender, age, and academic year of study. The study employed a self-rated Pittsburgh Sleep Quality Index [15] to evaluate participants' sleep quality over the preceding month. This index comprises 19 items grouped into 7 component scores, namely subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each component is rated on a scale from 0 (indicating no difficulty) to 3 (indicating severe difficulty). The scores from the 7 components are summed to obtain a total score ranging from 0 to 21. A higher PSQI score signifies poorer sleep quality, with a total score exceeding 5 indicating poor sleep quality. The internal consistency of the Pittsburgh Sleep Quality Index, as measured by Cronbach's alpha, was found to be .89. Additionally, previous studies have validated the use of the PSQI among Pakistani students. Participants completed a General Health Questionnaire consisting of 12 questions to assess their general psychological health over the previous month [16]. The GHQ was scored on a scale ranging from 0 to 3, with responses categorized as follows: "more than usual" scored as 0, "same as usual" scored as 1, "less than usual" scored as 2, and "much less than usual" scored as 3. The total score of the GHQ was computed by summing the scores of all 12 items, resulting in a range from 0 to 36. A global score falling between 15 and 19 indicates the presence of psychological problems, while a score exceeding 20 suggests severe psychological issues in the previous month. The internal consistency of the General Health Questionnaire, as measured by Cronbach's alpha, was found to be .87. Moreover, the GHQ has been previously utilized and validated among medical students in various studies.

The academic performance of students was evaluated based on their marks obtained. In their respective colleges, marks below 40% were categorized as grade C, 60% as grade B, and 80% and above as grade A. Marks falling between 40% and 59% were coded as 1, those between 60% and 79% were coded as 2, and marks of 80% and above were coded as 3.

Results

Table 1 depicts that the study comprised 100 male participants (50%) and 100 female participants (50%). The age of the sample ranged from 20 to 24 years, with a mean age of 21.84 ± 1.46 years. A total of 133 participants (66.65%) reported poor sleep

Table 1: Participant's characteristics

Characteristics	Frequency	Percent (%)
Gender		
Male	100	50
Female	100	50
Age in years 20-22	(21.84±1.46)	
	46	23
Year of study		
2nd	62	31
3rd	68	34
4th	70	36
Sleep duration Mean (SD)	5.8 (2.48)	
Bed time routine	23.30 (1.38)	
Sleep quality Mean (SD)	5.95 (3.13)	
Good(Score d" 5)	67	33.5
Poor (score >5)	133	66.65
Academic performance		
Grade A (80% and above)	30	15
Grade B (60% to 79%)	90	45
Grade C (40% to 59%)	80	40
GHQ		
Good health Score d" 15	65	32.5
Poor health Score >15	135	67.5

Table 2: Mean differences in academic performance and general health based on sleep quality

Variables	Good sleep quality (n=92)	Poor sleep quality
(n=108)	T	Df P
Mean(Grades)	3.03 (1.04)	2.38 (1.18)
3.89	198	.000
Mean (GHQ)	1.28 (0.45)	1.85(0.35) -
9.89	198	.000

Table 3: Relationship between PSQI, GHQ and students' Academic performance (N=100)

	PSQI	GHQ	CGPA
PSQI	-	.57**	-.27**
GHQ	-	-	-.25**
Academic performance	-		

quality, indicated by a PSQI score greater than 5.

Table 2 illustrates that students with good sleep quality exhibited significantly better academic performance compared to those with poor sleep quality ($p < 0.001$). Furthermore, students with poor sleep quality also demonstrated significantly poorer psychological health than those with good sleep quality ($p < 0.001$).

Table 3 outlines the results regarding the relationship between sleep quality and academic performance, as well as psychological health. It was observed that academic performance improved as the PSQI score decreased ($p < 0.01$). Additionally, a strong positive relationship was identified between PSQI scores and GHQ scores ($p < 0.01$).

Discussion

The results of our study indicate a high prevalence of poor sleep quality among medical students, with 66.65% of participants classified as poor sleepers. These findings align with previous research [2,17], suggesting that the sleeping patterns of medical students in Pakistan are suboptimal compared to their counterparts in other countries. A significant portion (70%) of Pakistani medical students reported sleeping after midnight, resulting in an actual sleep duration of less than 6 hours. This insufficient sleep duration has detrimental effects on both the health and academic performance of students. Therefore, there is a pressing need to promote healthy habits, such as establishing an early bedtime routine, among medical students.

In our study, we delved deep into the intricate relationship between sleep quality, psychological well-being, and academic performance among medical students. Our findings underscored a significant correlation between these factors, shedding light on the multifaceted impact of sleep on cognitive functioning and emotional health.

One of the key revelations from our research was the prevalence of poor sleep quality among medical students. Alarmingly, a staggering 66.65% of participants were classified as poor sleepers, indicating a widespread issue that warrants urgent attention. These findings echo those of earlier studies [2,17] and suggest that the sleeping habits of medical students in Pakistan are suboptimal compared to their counterparts in other countries. Particularly concerning was the discovery that a substantial portion (70%) of Pakistani medical students reported sleeping after midnight, resulting in an actual sleep duration of less than 6 hours. This insufficient sleep duration not only compromises physical health but also exerts a profound toll on cognitive functioning and academic performance.

Indeed, our study revealed a clear association between sleep quality and academic achievement. Participants with good sleep quality consistently demonstrated superior academic performance compared to those with poor sleep quality. This finding aligns with prior research [4,18] and highlights the critical role of sleep in facilitating optimal cognitive functioning and learning processes. Additionally, our investigation unveiled a significant relationship between sleep quality and psychological well-being. Students reporting good sleep quality exhibited better psychological health outcomes compared to their counterparts experiencing poor sleep quality, mirroring findings from previous studies [19].

The complex interplay between sleep, cognition, and emotional well-being underscores the importance of prioritizing sleep hygiene and adopting healthier sleep habits among medical students. Not only does adequate sleep facilitate memory consolidation and cognitive functioning, but it also plays a pivotal role in regulating mood and emotional resilience. Recognizing the detrimental effects of poor sleep quality, it is imperative for both individuals and institutions to prioritize sleep health and implement strategies to promote optimal sleep habits.

This study offers valuable insights into the profound impact of sleep quality on the holistic well-being and academic success of medical students. By addressing sleep-related challenges and fostering a culture of sleep wellness, we can empower students to thrive academically and lead healthier, more fulfilling lives.

Conclusion:

High-quality sleep is imperative for students, serving as a foundational element for academic achievement. Our results emphasize the essential role that good sleep quality plays in facilitating optimal academic performance among students. Conversely, individuals experiencing poor sleep quality often encounter various health challenges, underscoring the widespread impact of inadequate sleep on both academic and physical well-being. Therefore, it is crucial for students to prioritize adopting a healthy lifestyle, including cultivating good sleep habits, to enhance their academic success and overall health.

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1. Developed research methodology and framework.
2. Integrated theoretical concepts into discussion.
3. Conducted data analysis using advanced statistical methods.
4. Drafted and refined the manuscript for clarity.
5. Provided critical feedback and revisions for improvement.

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