RJNMSR
Review Journal of Neurological & Medical Sciences Review

Volume 3, Issue 8, 2025

RELATIONSHIP BETWEEN NOCTURNAL SLEEP QUALITY AND ACADEMIC ATTAINMENT AMONG UNIVERSITY STUDENTS

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DOI: https://doi.org/

Received	Accepted	Published
11 October 2025	23 November 2025	26 December 2025

ABSTRACT

Sleep is a natural component of human lives and health, which is vital to the process of learning, practicing, and physical and mental health. It affects personal learning capabilities, scholastic performance, and neural-behavioral performance. The purpose of the research was to establish the connection of the quality of sleep and academic performance among the undergraduates at Mardan university. In total, the sample size was 100 participants, who were aged 18-23 and chosen with the help of convenient (purposive) sampling. In addition, the quality of sleep was determined/measured by the use of Pittsburgh Sleep Quality Index (PSQI), and academic performance was determined by the use of students Grade Point Averages (GPA) in the preceding semester. The research found out that there is a strong association between sleep quality and academic performance i.e. poor sleep hygiene students are likely to achieve low academic performance. Moreover, there were also significant gender variations in both the quality of sleep and academic performance. These results emphasize the significance of good sleeping

patterns in enhancing performance at school. In addition, the outcomes of the studies indicate that there should be awareness campaigns that encourage good sleep and therefore good life.

***Keywords**: Sleep Quality, Academic Performance, Students, Mental Health, PSQI, GPA*

INTRODUCTION

Sleep is an essential biological process that allows maintaining cognitive effectiveness, emotional stability, and academic performance (Alotaibi et al., 2020). This has raised an alarm in the recent years, as there has been more concern over the dwindling sleep habits within the university students, who are particularly prone to sleep disturbance because of the school pressure, lifestyle choices and psychological pressures (Abdulghani, 2012). Mental and physical health is not the only factor that is linked to sleep quality, but sleep quality is also a significant predictor of learning, memory consolidation, and overall academic success (Altun, 2016). A study conducted by Eliasson (2010) revealed that lack of sleep may result in a reduced focus, academic performance and decision-making skills. Nevertheless, students usually do not appreciate the importance of sleep in their day-to-day operations. There is little empirical evidence on this burning problem within Pakistani context especially in semi urban areas such as Mardan. This research aims to fill this gap by exploring the relationship between the quality of sleep and academic performance of university students in Mardan by administering standardized measures to bring clarity empirically. Besides, Sleep is an essential element of human health and wellbeing (Jalali et al., 2020). College life presents students with contemporary challenges like unused social interaction and competition among students that can have both positive and negative effects on students' wellbeing. social participation, psychiatric and physical health, as well as their physiological makeup. The recommended amount of sleep at night for both young and older people is 7 to 9 hours (Kline, 2013). Similarly, learning and memory are significantly influenced by restful and effective sleep. To function effectively in academics, students need get enough sleep (Maheshwari & Shauqat, 2019). Another study has shown that daytime sleepiness and deprived sleep have a significant bearing on university students' academic performance. 24 percent of college students reported difficulty falling asleep, less than 7-hours sleep each night, and 45 percent reported difficulty waking up (Lemma et al., 2014). Additionally, Ahmed and his colleagues (2020) claimed that the essential component of both physical and mental health is sleep. Moreover, they suggested that good sleep is essential for psychomotor functioning and is correlated for performing extremely important functions like

development and repair, energy restoration, and memory fusion. Furthermore, another study has shown that academic performance has been linked to sleep quality. It has been reported that deprived or low sleep quality and daytime tiredness is related to poor academic performance (Wang, 2016). Poor sleep is linked to difficulty to focus and function during the day, which has an impact on academic achievement. Children who don't get enough sleep become agitated and unfocused, which affects their academic performance. Success is a metric or a sign of how much a student gains from a course or academic programmed. Sleep is a crucial component of physical development and improves academic achievement (Ferreira, 2014). Sleep studies show that one-third of adults have sleep issues. Academic stress causes students to sleep less than the overall population. Students in higher education are particularly vulnerable to these rising pressures on their sleep (Mirghani, Muhammed, Almurtadha & Ahamad 2015). According to Schleider and Günter's research (2019), 54.1% of German university students cited poor sleep hygiene and sleep deprivation as the root of their academic and professional difficulties. Poor academic performers often spend more time reading at night and frequently skip sleep in an effort to raise their grades. Studies have indicated that girls are more prone or susceptible to sleep disturbances and stress. Further studies have reported that a person's capacity to study, do well in school, and maintain healthy neurobehavioral processes are all impacted by staying up late and waking up early, having poor sleep i.e. sleeping less that 7-hours or frequently experiencing sleep disturbance (Phillips, 2017).

Prior studies have demonstrated a connection between poor academic performance in both children and adults and the following factors: insufficient sleep, delayed or incorrect sleep, waking up too late, particularly on the weekends, and daytime drowsiness. Students are especially vulnerable to sleep disturbances, which have a detrimental impact on their academic performance across the board (Maheshwari & Shaukat, 2019). Similarly, studies have shown that inherent need for sleep is one of the most significant facets of humanoid existence. One's mental, emotional, and physical health is all impacted by how well we sleep. In addition to making people feel drowsy during the day, sleep deprivation may increase the risk of developing Alzheimer's disease (Corbo et al., 2023). Sleep is an active, repeated, and reversible behaviour that serves a variety of purposes, including restorative processes, learning or memory consolidation, repair and growth, and learning. Good academic performance has always been a priority for both parents and students because it is closely tied to good scores on various entrance examinations and job chances. Quality education, family's socioeconomic status, parental education level, and a child's IQ all have an impact on how well a student performs in school (Hysing, 2016). Including

aspects of sleep initiation, maintenance, amount, and replenishment upon awakening, Phoebe (2023) defined sleep quality as being content with the sleep experience. Doctors and researchers consider sleep quality to be an important factor because of the high prevalence of insomnia and disturbed sleep, as well as the clear link between optimal health and performance and enough sleep. Furthermore, various people may have different ideas on what "sleep quality" means (Nelson, 2022). For someone who struggles to fall asleep, the sleep onset time may be the most important indicator of the quality of their sleep. However, for someone whose sleep is disrupted and filled with frequent awakenings, the relative difficulty of falling asleep may not mean much. Lack of sleep has a significant impact on how well the brain functions on daily tasks. Adults require eight hours of sleep on average each night, although the actual number of hours is mostly determined by how much sleep is required to prevent daytime drowsiness (Lauren, 2022).

According to Mehta (2022) academic performance is positively correlated with motivation and the family environment, whereas sleep affects both the learning process and academic achievement. Students are constantly under a lot of strain academically. To help with learning and memory processing, as well as to recharge every day, they require adequate sleep (MacDonald & Cote, 2019). Additionally, they contended that sleep issues are common among students and have a detrimental effect on their academic performance (Morales, 2023). Students and their instructors should be aware of the negative effects that sleep deprivation has on academic performance, and appropriate measures should be made to improve the quality of students' sleep. Academic Performance has been defined and discussed by various authors. Academic performance, according to Narad and Abdullah (2016), is the information gained that is assessed by a teacher using grades and/or educational objectives that students and instructors establish to be achieved within a given time frame. According to kumar and Agarwal (2021), academic achievement also serves as a proxy for educational success. They underlined that it shows and measures how well a school, its teachers, and its pupils have achieved their learning goals. Husaini and Yusuf (2016), asserted that it is possible to gauge and track a student's academic progress over time. According to them, it consists of a student's evaluations from tests, midterms, mock examinations, final examinations, and class assignments. Paul (2024) has discussed that a student's academic achievement is shown by how well they do on tests, examinations, and coursework. Because it is crucial in defining occupational status and graduate employment, academic performance is significant (Richardson et al., 2012). According to Richardson and his colleagues (2012), a student's overall GPA, which is the mean of weighted courses, is typically used

to gauge their cumulative academic success. The most widely utilized indicator of academic performance is GPA (Richardson et al., 2012). Academic performance, according to Monica (2021), is described as observable behaviour on a standardized test. Furthermore, academic accomplishment is also a performance outcome that evaluates an individual's performance in respect to specific goals that were the focus of activities in the educational setting, especially in school, college, and university. Carter (2016) suggests that academic achievement is a complex concept in that it involves a range of disciplines of learning.

RATIONALE OF PRESENT STUDY

The primary objective of this study is to identify how the quality of sleep is intricately related to academic performance on the one hand, and how there are gender differences in this relationship, on the other hand. Although the role of sleep in cognitive performance and academic achievement is increasingly gaining acceptance, limited empirical research has been conducted regarding these issues in the context of Mardan which makes it a field of interest and concern. According to the psychological and neurocognitive literature, sleep is one of the foundations of mental well-being, emotion management, and cognitive functioning (Xiang et al, 2024). Nevertheless, students tend to put healthy sleep habits aside when faced with more challenging academic programs and social commitments. This negligence may lead to poor grades and low general wellbeing. It is hoped that this study will create awareness of importance of sleep hygiene and stimulate adaptive behavioural shifts that can lead to academic performance and psychosocial wellbeing by illuminating on sleep patterns of university students in Mardan.

OBJECTIVES

1. To examine the relationship between sleep quality and academic performance among university students.
2. To examine gender differences in sleep quality and academic performance among university students.

HYPOTHESES

H_1. Significant negative relationship will be observed between academic performance and sleep quality among university students.

H_2. Significant gender-based differences will be observed in sleep quality among university students.

H_3. University students' academic achievement will differ significantly by gender.

METHODOLOGY

Nature of Study

It is a correlational study based on cross-sectional survey-based research design. Moreover, data is analyzed through quantitative method.

POPULATION AND SAMPLE

The population of current study included

students from Abdul Wali Khan university and Women university of Khyber Pakhtunkhwa with their age ranging from 18-30. Moreover, sample size for the present study was 100 (50 males; 50 females). Convenient (purposive) sampling technique was used to collect data from the participants.

INSTRUMENTS

Two instruments were utilized to collect data from the study participants i.e. the academic performance measure and the Pittsburgh Sleep Quality Index (PSQI).

Pittsburgh Sleep Quality Index

The PSQI, also known as the Pittsburgh Sleep Quality Index, was created by D.J. Buysse in 1989. It is an effective instrument for evaluating the regularity and quality of sleep experienced by senior citizens. In order to differentiate between "bad" and "excellent" sleep, it assesses seven areas such as subjective sleep hygiene, sleep latency, duration, regular ability to sleep, problems with sleep, use of sleeping pills, and daytime impairment during the preceding month. The client rates each of these seven sleep-related factors on its own. The answers are scored on a Likert scale from 0 to 3, where 3 is the complete opposite of positive. The PSQI has a reliability coefficient (Cronbach's alpha) of 0.83 and an internal consistency score of 0.83 for each of its seven domains.

Academic Performance Measure

Grades and GPA are essentially the only metrics used to evaluate academic success. Historically, standardized examinations, academic grades, and GPA (Grade Point Average) have been used to assess students' academic success (Finn and Rock, 1997). Therefore, in the present study semester's GPA was used. In the demographic sheet, their GPA was questioned.

DEMOGRAPHIC PERFORMA

A variety of demographic factors, including age, gender, GPA, hours of sleep, were chosen for this study.

PROCEDURE

Formal informed consent was obtained first from university administration and then from research participants. Participants were made sure about the privacy of their data and were informed about their right to withdraw from the study any time they want. Moreover, they were about the purpose of the study and how its significance. Instructions were given about the instruments being used then data was obtained in a group setting. It took almost 30 minutes to complete data collection procedure. At the end participants were appreciated for their time and availability. Moreover, at the end debriefing was done.

Results

Details of the results are discussed in the following tables

Table 1: Sample Characteristics Frequencies and percentages of sample (N=100)

Characteristics	Domains	f	%
Gender	Female	50	50%
	Male	50	50%

According to Table 1, 50% of the 100 sample participants were men i.e. n=50 and 50 (50%) were women.

TABLE 2: PSYCHOMETRIC PROPERTIES OF SCALES

Scale	Items	a
PSQI	9	.78

Note: PSQI=Pittsburgh Sleep Quality Index

Above tables shows that a-reliability for the Pittsburgh Sleep Quality Index is.78 thus it is suitable for further study.

Table 3 Skewness and Kurtosis of research-variables

Scale	No. of Items	M	SD	S	K
PSQI	9	13.1800	4.439	3.55158	-.441

PSQI=Pittsburgh Sleep Quality Index.

Table 3 indicates the Mean, Standard Deviation, Skewness and Kurtosis of the variables. Skewness and kurtosis ranged from -.44 to -.041. Values of skewness shows that data is negatively skewed.

Table 4: Correlation Between Sleep Quality and Academic Performance (N=100)

Variable	I	II
PSQI	1	-.327**
GPA	-.327**	1

**Correlation is significant at level of .001 Note: PSQI=Pittsburgh sleep quality index

Above table revealed that there exists significant negative relationship between Sleep Quality and Academic Performance (-.327**) which means that low Sleep Quality has the negative relationship with academic performance.

Table 5: Gender Difference On Sleep Quality (N=100)

	Male N = 15		Female N = 15				CI 95%	
Variable	M	SD	M	SD	T	P	LL	UL
Sleep Quality	11.00	3.1756	15.3600	2.3884	1.236	.000	4.36000	.56189

M=Mean, SD= Standard Deviation, CI= Confidence Interval, LL= Lower Limit, UL=Upper limit

As the above table demonstrates, male and female students differ significantly, t= 1.236, p=.000 which means female have higher scores on sleep quality than men. Result further suggests that female exhibited higher score on PSQI (M=15.3600, SD=2.38841) than Male (M=11.0000, SD=3.1756) which accepted the hypothesis 2(female will score higher on sleep quality).

DISCUSSION

The present study attempted to investigate the impact of sleep quality on the academic performance among university students of Mardan. Furthermore, this study also intended to observe gender differences based on sleep quality and academic performance. Data was collected through questionnaires from 100 sample participants (50 males, 50 females). Study was conducted in two stages i.e. pilot study in first phase and main study in second phase. Moreover, data obtained was analyzed using SPSS, results were used to verify study hypotheses. Research has indicated that poor sleep quality has detrimental effect on students' academic performance (Farrell, 2024). Psychometric properties of the scale employed in the study were calculated. So, scale used has shown acceptable internal reliability i.e. .78.

On the same note, Pearson Correlation Coefficient was also used to examine the relationship between academic performances and sleep quality. Thus, the study results confirmed the first hypothesis of the study that stated that there should be a negative correlation between quality of sleep and academic performance of the person. Previous research has shown that the quality of sleep can affect the academic performance of students. As an example, in the research conducted among 491 Saudi Arabian medical students which demonstrated high correlation between academic performance and good sleep (Saad et al, 2012). In their study, Sajadi, Farsi and Rajai (2014) found that 64.4 percent of the students in their study had poor sleep quality. Although there was no substantial correlation between academic performance and sleep quality based on the Pearson correlation, there was a substantial correlation between the increasing weariness and poor sleep quality based on the spearman correlation, which implies that there are indirect influences on academic functioning. Equally, a research conducted by Lemma and her associates (2014) in a sample of Ethiopian university students found that Students who slept well

performed better academically (p =. 001), which supports the notion that sleep quality is one of the factors that affect academic success. On the same note, Datta and his colleagues (2018) conduct another study to investigate the prevalence of sleep disorders among medical students and their association with academic performance. The results showed that the rate of sleep disruption was high in all the levels of performance with 66.3 percent of students who had average-level performances citing the most sleep disturbances and 53.5 percent and 50 percent respectively in both high and low performances respectively.

The researchers came to the conclusion that sleep disorders were very common in medical students and significantly influenced their academic performance, which indicated that sleep disturbances could impair their academic performance.

The authors of Mashewari and Shukat (2019) examined the possibility to find a correlation between the poor quality of sleep and underachievement of poor students at the university. Their findings indicated that students who had low GPAs (between 2.0 and 2.7) had several sleeping problems: 28.2% had very poor sleep quality, 29.05% had delayed sleep onset (16- 30minutes), 27.8% had reduced sleep, 29.4% had short REM sleep (5-7 hours), and 37.7% had frequent malfunction during the day. These results indicate that the quality of sleep is one of the major causes of academic problems among Pakistani university students. In addition, Mirghani, Mohammed, Almurtadha, and Ahmed (2015) discovered that there is a relationship between low sleep quality and low academic performance. Poor sleep hygiene and daytime drowsiness have been cited to be the causes of low academic performance. Poor sleep is associated with an inability to concentrate and perform in the daytime, which affect the academic performance. Hence, it is evident that inadequate sleep quality affects the performance in a negative way. Also, the study findings confirmed the hypothesis that gender differences would lead to high variation in the quality of sleep and academic performance. A study of medical students in Umm Al-Qura University revealed that the quality of sleep was low among female students compared to male students (Hassan et al, 2021).

A study by Nepalese medical students revealed that female students had low sleep hygiene (Shrestha, 2021). Equally, a research indicated that gender differences in sleep behaviors and academic achievement may be explained by such biological and psychosocial factors as hormonal fluctuations, emotional regulation variations, coping strategies and attitudes towards academic stress (Suh et al., 2014). Female pupils, in particular, are much more likely to internalize educational burden, which results in rumination and insomnia, which, in turn, deteriorate the level of cognitive performance (Sinha et al., 2013). In addition, cultural norms and academic stress can have a disproportionately high impact on female students in South Asian cultures, which may increase sleep problems and academic outcomes (Brian, 2020).

These results support the significance of the analysis of gender as a moderating variable in the relationship between academic performance and the quality of your sleep. Through the analysis of such disparities in local setting/context of Mardan, the given research not only seals the gap in research in the region but also adds to a larger perspective of gender-related vulnerabilities in academic achievement.

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