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CORRELATION BETWEEN SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG NURSING STUDENTS: A QUANTITATIVE ANALYTICAL CROSS-SECTIONAL STUDY

Arif Khan[*1], Zain Ullah[2], Muhammad Fahad Khan[3], Muhammad Yousaf[4], Muhammad Imtiaz[5], Murad Ali Khan[6], Muhammad Zahoor[7], Dr. Manzoor Ahmad[8], Numan Khan[9],

*[*1, 9]Lecturer, Amal Nursing College, Peshawar*
[2,4]Nursing Intern, Lady Reading Hospital, Peshawar
[3,7]Nursing Intern, Northwest General Hospital and Research Center Peshawar
[5]Lecturer, Emirates Nursing Institute Kohat
[6]Lecturer, ICMS Health Science's Peshawar
[8,] Associate Professor, (Al-Shahama Medical Institute & College of Nursing)

[*1]arifayub288@gmail.com

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Arif Khan

Abstract

Background: *Sleep quality plays a vital role in student's cognitive performance, learning ability, and overall academic success. Poor sleep among nursing students has become a growing concern due to academic workload, clinical duties, and stress, which can lead to impaired concentration and decreased academic achievement.*

Aim: *To determine the relationship between sleep quality and academic performance among undergraduate nursing students at Al-Shahama Institute of Nursing, Peshawar.*

Methodology: *An analytical cross-sectional study was conducted among 120 undergraduate nursing students selected through convenient sampling. Data were collected using a structured questionnaire based on the Pittsburgh Sleep Quality Index (PSQI) and self-reported Grade Point Average (GPA). Statistical analysis, including Pearson correlation, was performed using SPSS to assess the association between sleep quality and academic performance.*

Results: *The study revealed that most participants were male (93.3%) and under 25 years of age (74.2%), with many reporting poor sleep qualities. A large portion (67.5%) took over 30 minutes to fall asleep, and most slept only 6–7 hours per night. Academically, 59.1% maintained a GPA above 3.0. A very strong positive correlation ($r = 0.968$, $p = 0.000$) was found between total sleep duration and GPA, indicating that better sleep significantly improved academic performance.*

Conclusion: *The study concludes that good sleep quality is a critical factor influencing academic performance among nursing students. Poor sleep leads to reduced focus, learning ability, and overall academic achievement. Institutions should promote sleep hygiene awareness, stress management, and balanced academic workloads to enhance students' well-being and academic success.*

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1. INTRODUCTION

1.1. BACKGROUND

Sleep plays a vital role in maintaining cognitive functions, emotional stability, and physical health, all of which are essential for optimal academic performance among nursing students (1). Adequate sleep enhances concentration, memory, and decision-making, all vital for nursing students' academic success. However, heavy workloads, irregular study hours, and clinical duties often disturb their sleep, leading to poor sleep quality and lower academic performance). Similar findings were reported by a scholor, who observed that poor sleep quality had a negative correlation with students' academic achievement and classroom engagement (2). Consistent with these results, Jabeen also emphasized that maintaining healthy sleep habits can significantly improve academic efficiency and overall mental well-being among undergraduate nursing students (3).

Academic performance reflects students' ability to acquire, retain, and apply theoretical knowledge effectively within their nursing education . A study identified that factors such as consistent attendance, proper time management, and self-discipline significantly contribute to higher academic success among nursing students (4). Similarly, Kayaba et al. found that irregular sleep–wake rhythms and unhealthy lifestyle habits adversely impact academic performance and overall health-related quality of life (5). In addition, Alsaraireh et al. reported that stress and disturbed sleep patterns reduce concentration, motivation, and learning capacity, ultimately lowering academic outcomes among nursing students (6). These findings collectively highlight that maintaining regular sleep routines, managing stress effectively, and promoting healthy behaviors are key components in improving academic achievement within nursing programs.

Sleep quality and academic performance demonstrate a strong interdependent relationship among nursing students. Irregular sleep habits, reduced sleep duration, and late-night study routines have been shown to significantly lower academic grades and increase daytime sleepiness. Students who maintain better sleep hygiene often achieve higher academic performance, with improved concentration, motivation, and alertness during lectures and clinical practice. Maintaining consistent sleep schedules and obtaining sufficient rest positively influence learning efficiency, memory retention, and overall academic success (7).

Poor sleep quality has been identified as a major factor influencing academic performance and psychological well-being among university student. Findings revealed that a large proportion of medical and nursing undergraduates experienced poor sleep patterns, which were significantly associated with lower academic achievement and reduced classroom attentiveness. Irregular sleep routines, nighttime disturbances, and extended screen time were found to worsen concentration and memory retention, directly affecting learning outcomes (8). The study concluded that maintaining adequate sleep duration and regular sleep habits plays a crucial role in enhancing academic success and reducing stress-related academic decline.

In a broader investigation of sleep habits among nursing students in Spain, it was found that a short sleep pattern, bad sleep habits and younger age were independently associated with a higher risk of poor academic performance. Specifically, students with shorter sleep duration and evening chronotypes were more likely to show lower academic results (9). These findings suggest that beyond just quantity of sleep, the timing and pattern of sleep habits play a pivotal role in academic success.

Global prevalence research has estimated that poor sleep quality affects over half of health sciences students, and even higher in nursing populations — the prevalence being as high as 60% in some regions (10). This high prevalence underscores not only a personal health issue but an academic risk, as the compounding effects of fatigue, daytime dysfunction, and reduced cognitive alertness translate into poorer academic outcomes, delayed progression and increased risk of academic failure.

Another study focusing on undergraduate nursing students reported a moderate to strong positive correlation between better sleep quality (measured via PSQI) and higher GPA scores ($r \approx 0.50$, $p < 0.05$) (11). This quantifiable relationship reinforces that sleep quality is not

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just a peripheral factor, but one deeply embedded in the academic performance framework. When nursing students sleep poorly, the likelihood of missing classes, underperforming in assessments, or lacking clinical alertness increases markedly.

Sleep deprivation and irregular sleep patterns further compromise clinical performance, which in turn may negatively feed back into academic performance. In a Saudi Arabian sample, students with poor sleep and lower psychological well-being scored lower in both academic tests and clinical skill assessments (12). These findings indicate that sleep quality has multidimensional consequences: it influences theoretical learning, practical skills, and the transition from classroom to clinical environments.

Lifestyle factors and their interplay with sleep and academic performance have also been examined. For example, a Peruvian study found that insufficient knowledge of sleep hygiene and low physical activity accounted for approximately 17.9% of variance in sleep quality among nursing and medical students; lower sleep quality in turn predicted poorer academic performance (13). Such evidence highlights that behaviour modification (improvement in sleep hygiene, promotion of physical activity) may serve as an intervention route to enhance academic outcomes.

Moreover, research among nursing students has identified that insomnia symptoms, daytime sleepiness, and burnout are significantly associated with perceived low academic achievement (14). These findings suggest that mental health, sleep quality and academic performance form a triad: disruptions in one area ripple into the others. Hence, disturbances in sleep quality become both a cause and a marker of broader academic risk.In the emerging literature, a recent meta-analysis of sleep problems among university students across Africa found a pooled prevalence of poor sleep quality at ~63% and showed that being stressed, having poor sleep hygiene, and using electronic devices before bed were significant predictors (15). Although this study isn't limited to nursing students, the high prevalence and identified predictors are relevant to nursing education given the demanding academic and clinical load of such programmes.

Given the above evidence, it is clear that poor sleep quality is not only common among nursing students but also significantly associated with lower academic performance, reduced cognitive function, increased daytime dysfunction, and compromised clinical competency. This provides a strong rationale for focusing on sleep quality in nursing education as a modifiable factor to support academic success, enhance learning outcomes, and improve overall student well-being.

1.2 RATIONALE

The study is grounded in the growing concern regarding the decline in sleep quality and its impact on academic performance among nursing students. Nursing education is academically and clinically demanding, requiring sustained attention, critical thinking, and emotional stability all of which are closely linked to adequate and restorative sleep. However, irregular study schedules, prolonged clinical duties, and increased academic pressure often lead to sleep deprivation and poor sleep hygiene among nursing students. Such disturbances in sleep patterns can impair cognitive functioning, reduce concentration, and negatively influence learning outcomes. Although previous studies have highlighted the prevalence of poor sleep and its effects on students' academic success in various countries, there remains limited research in local contexts where cultural, environmental, and institutional factors may further influence sleep behaviors (44) Therefore, this study aims to examine the relationship between sleep quality and academic performance among nursing students, providing evidence-based insights that can guide educational policies and promote interventions to improve students' health and academic outcomes.

1.3 SIGNIFICANCE

The significance of this study lies in its potential to deepen understanding of how sleep quality directly influences academic performance among nursing students. Previous research shows that up to 71.5% of female and 66% of male nursing students report poor sleep quality.[1] Poor sleep among these students is significantly linked with insomnia, which in turn correlates with worse academic outcomes,

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especially in female students (45). In a local context, a study in Swat found that nearly 50% of nursing students sleep only 6–7 hours per night, with about 45% taking 31–60 minutes to fall asleep; importantly, there was a moderate to strong positive correlation ($r = 0.508$, $p < 0.05$) between better sleep quality (lower PSQI score) and higher academic performance.(46)

Moreover, in a study from Lahore, 95.1% of nursing students reported tiredness during duty hours, and 87.8% believed 12-hour shifts adversely affected their concentration in class, while 82.9% felt they needed more sleep to maintain academic performance.(47) These high percentages underscore just how pervasive poor sleep is in nursing education and how directly students themselves perceive its impact on learning.

By identifying the relationship between sleep quality and academic achievement, this study provides valuable insights for educators, administrators, and policymakers to design supportive strategies that promote better sleep hygiene and academic success. Given that poor sleep can compromise concentration, memory retention, and decision-making skills essential for both theoretical and clinical training interventions like flexible scheduling, stress management programs, and sleep awareness campaigns could be crucial. Ultimately, improving sleep quality among nursing students may lead to better learning outcomes, improved clinical performance, and the preparation of safer, more competent healthcare professionals.

1.4 PROBLEM STATEMENT

Nursing students often face demanding academic schedules, night shifts during clinical rotations, and high levels of stress, all of which contribute to poor sleep quality. Insufficient and disturbed sleep can negatively affect attention, memory, and cognitive performance, ultimately leading to a decline in academic achievement. Despite increasing global evidence linking poor sleep with reduced academic performance, limited research has explored this relationship among nursing students within the local context. Understanding how sleep quality impacts their learning outcomes is essential for developing effective educational and wellness interventions. Therefore, this study aims to assess the relationship between sleep quality and academic performance among nursing students to identify the extent to which sleep disturbances influence their academic success.

1.5 RESEARCH OBJECTIVES

- To assess the relationship between sleep quality and academic performance among nursing students.

1.6 RESEARCH QUESTION

- Is there any relationship between sleep quality and academic performance among nursing students?

1.7. OPERATIONAL DEFINATIONS

- **Sleep Quality:** In this study, sleep quality refers to the individual's objective assessment through close ended question of how well they sleep, including the duration, depth and continuity.
- **Academic Performance:** Academic performance refers to the level of achievement demonstrated by students in their academic coursework and assessments.

2. LITERATURE REVIEW

Sleep is an essential biological function that supports physical health, emotional well-being, and cognitive performance. For nursing students, who face long study hours, night shifts, and stressful clinical duties, maintaining good sleep quality is often difficult. Many studies have found that poor sleep has a negative impact on learning, memory, and academic performance. Over the past few years, research has increasingly focused on how sleep quality affects academic outcomes among nursing students in different countries.

A study conducted in China by Wang (16) found that about 64% of nursing students experienced poor sleep quality, and those students had significantly lower GPAs than their peers who slept well. The study also noted that frequent late-night studying and excessive smartphone use were major causes of poor sleep. Similarly, in Australia, O'Brien and Field (17) discovered that nursing students with poor scores on the Pittsburgh Sleep Quality Index (PSQI) also performed worse academically. Interviews revealed that constant worry about

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clinical assessments and workload made it difficult for students to sleep properly. These findings emphasize that lifestyle habits and emotional pressures both play key roles in how sleep quality influences academic performance.

In India, Patel et al. (18) studied nursing students and found that 72% reported poor sleep. Those with irregular sleep schedules performed worse than students who maintained consistent bedtimes. The researchers identified social media use and caffeine consumption as the main contributors to disturbed sleep patterns. In Spain, Moreno-Gómez et al. (19) found that students who slept either too little or too much had lower grades. The best performance was observed among those who slept between seven and eight hours per night. Emotional exhaustion was also found to connect poor sleep with weaker academic results, suggesting that maintaining a balanced sleep routine is key for effective learning.

Several studies have focused on the role of stress and anxiety. Singh et al. (20) found that nursing students with moderate to high stress levels were twice as likely to experience poor sleep compared to those with low stress. The study recommended incorporating mindfulness and relaxation training into nursing programs to help students manage their stress. Similarly, in Turkey, Çelik et al. (21) observed that high stress and anxiety were associated with both poorer sleep and lower satisfaction with academic performance. The research concluded that poor sleep acts as a bridge between stress and weak academic results, showing that emotional well-being is deeply linked with sleep quality.

Differences in personal sleep patterns, known as chronotypes, also affect academic outcomes. Huang et al. (22) found that students who preferred staying up late performed worse academically than those who were early risers. Late-night habits, irregular routines, and exposure to screens before bedtime were found to disrupt sleep quality and morning alertness. Similarly, Santos et al. (23) reported that inconsistent sleep-wake patterns among Brazilian nursing students reduced attention and memory during clinical evaluations. This evidence suggests that stable sleep habits are essential for concentration and learning.

Technology and lifestyle also play important roles in sleep quality. Liang and Xu (24) studied 480 Chinese nursing students and found that heavy smartphone users especially those using their devices at night slept poorly and had lower grades. The blue light from phone screens and late-night social media use delayed sleep and caused morning fatigue. In Sweden, Andersson et al. (25) used wearable trackers to measure actual sleep efficiency and found that students who spent less than 85% of their time in bed asleep performed worse in exams, even when they studied for the same number of hours as others. These findings show that both sleep duration and quality are critical for academic success.

Poor sleep does not only affect classroom learning but also clinical performance. Nkomazana et al. (26) found that 54% of South African nursing students experienced daytime sleepiness caused by poor nighttime sleep, leading to more mistakes during patient care and lower focus during clinical sessions. Likewise, El-Sayed et al. (27) showed that students with poor sleep were less confident and performed worse in practical assessments. These studies highlight the need for nursing schools to provide wellness programs that include education about sleep hygiene to promote better performance and patient safety.

Gender and socioeconomic differences also influence sleep quality and academic performance. Kim and Lee (2019) found that female nursing students in South Korea tended to have poorer sleep quality due to higher emotional stress and longer study hours, even though male students reported fewer sleep hours. Despite these differences, both groups showed a clear connection between poor sleep and lower academic outcomes. In Nigeria, Okafor et al. (28) found that financial stress and living arrangements played major roles in determining sleep quality. Students living off-campus or working part-time jobs to support themselves were more likely to have irregular sleep patterns and poorer grades. These findings indicate that social and economic pressures can contribute to both sleep problems and weaker academic performance.

To address these issues, several studies have tested interventions designed to improve sleep and academic outcomes. Thomas et al. (29)

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conducted a four-week sleep hygiene education program for nursing students, teaching them about the importance of consistent sleep schedules, limiting caffeine, and avoiding screens before bed. After the intervention, students' PSQI scores improved significantly, and their average GPA increased. González-Blasco et al. (30) introduced mindfulness-based stress reduction (MBSR) sessions for nursing students, and participants reported better sleep quality, reduced anxiety, and higher test performance. These studies suggest that promoting awareness about healthy sleep habits can improve both physical well-being and academic outcomes.

Across all recent studies, several patterns emerge. Poor sleep quality consistently correlates with lower academic performance. Stress and anxiety often act as mediators, meaning that students who are more stressed sleep worse, and as a result, perform worse academically. Lifestyle factors like irregular schedules, late-night screen time, and heavy phone use also contribute significantly to poor sleep. On the other hand, interventions focusing on sleep hygiene and mindfulness training have been shown to improve sleep and academic results.

Rahman et al. (31) conducted a meta-analysis of 29 studies involving over 10,000 nursing students and found a clear negative correlation between poor sleep and academic performance. The effect was stronger among female students and those from Asian countries, possibly due to higher stress and workload. Another systematic review by Santos and Alvarado (32) concluded that nursing students generally have worse sleep quality than students in other disciplines, which not only affects their academic success but also reduces empathy and increases burnout risk. This evidence underlines the importance of including sleep-related health education in nursing curricula.

Although most of the reviewed studies confirm that sleep quality affects academic performance, several research gaps remain. Many of the studies are cross-sectional, meaning they collect data at a single point in time and cannot fully explain cause-and-effect relationships. Longitudinal studies that track students' sleep habits and academic progress over months or years are needed to understand how changes in sleep affect learning outcomes over time. Another limitation is the reliance on self-reported sleep data, which may not always be accurate. Few studies have used objective methods such as actigraphy to measure actual sleep patterns. Future research should also explore how culture, gender, and socioeconomic conditions interact to influence sleep and academic success.

Overall, the evidence clearly shows that sleep quality plays a vital role in determining academic performance among nursing students. Students who sleep poorly struggle with concentration, memory, and motivation, leading to lower grades and more clinical mistakes. Factors such as stress, irregular schedules, and excessive technology use worsen sleep problems, while mindfulness training and education on sleep hygiene have shown promise in improving both sleep and learning outcomes. Since nursing education demands both mental focus and physical stamina, ensuring that students get adequate, high-quality sleep should be a key part of academic and clinical training programs. Improving sleep quality can not only enhance learning and reduce errors but also support the long-term health and well-being of future nurses.

3. METHODOLOGY

3.1 RESEARCH DESIGN

An analytical cross sectional study design was used to assess the relationship between sleep quality and academic performance among nursing students.

3.2 STUDY SETTING

The study was conducted in the academic setting of Al Shahama Medical institute Peshawar.

3.3 POPULATION & SAMPLING

One hundred and seventy three nursing students of Alshahama Institute of nursing was the total Population. Sample size calculated through Raosoft with a 95% confidence interval and 5% margin of error. The calculated sample size is 120.

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3.4 INCLUSION AND EXCLUSION CRITERIA

3.4.1 INCLUSION CRITERIA

✓ All Nursing students currently enrolled for BSN in Al Shahama Medical Institute.

✓ Willing to participate and provide informed consent

3.4.2 EXCLUSION CRITERIA

✓ Those who or not willing to participate in the study.

✓ Nursing students who are absent on the day or time of data collection.

3.5 DATA COLLECTION PROCEDURE

Ethical approval was obtained from Institute's ethical committee, adhering to human rights and ensuring informed consent. All data was handled confidentially, with responses coded and stored securely to protect participants' privacy. Before filling out the questionnaire, informed consent was obtained from each participant and was ensure their anonymity, confidentiality and right to withdraw from the study. An analytical cross-sectional study was conducted at Al-Shahama Institute of Nursing, Peshawar, to find correlation between sleep quality and academic performance among nursing students. Data was collected through a structured, and adopted questionnaire originally developed by Al-Kandari JR (34), which has been widely used in research on sleep quality and academic performance relationship . The tool was consist of three sections: demographic information, Sleep quality Index, and academic performance Each item of PSQI was scored on a four-point Likert scale (0–3), where a higher score indicated poorer sleep quality. The total PSQI score was calculated by summing the five items, yielding a global score ranging from 0 to 15. Based on the total score, respondents were categorized as having good sleep quality (0–4 points), moderate sleep quality (5–10 points), or poor sleep quality (>10 points).

Academic performance was assessed in Part III, which included two items: the student's most recent Grade Point Average (GPA) and self-perceived effect of sleep on academic performance. GPA scores were categorized as Excellent (≥3.5 / ≥70%), Good (3.0–3.4 / 60–69%), Fair (2.0–2.9 / 50–59%), and Poor (<2.0 / <50%). Responses to perceived impact were rated on a five-point Likert scale (0–4), ranging from Never to Always. The relationship between sleep quality categories and academic performance was then analyzed statistically using correlation and comparison tests.

3.6 DATA ANALYSIS

The data was analyzed using SPSS version 27. The collected data on correlation between sleep quality and academic performance will be analyzed using descriptive statistics and inferential statistics by applying correlation test.

4. RESULTS

Section A: Sociodemographic Information

The results demonstrated that a large proportion of the participants were male. Among the total 120 respondents, 112 (93.3%) were male and only 8 (6.7%) were female. This indicates a significant gender imbalance, with males representing the vast majority of the sample population in the study.

Table 4.1: Gender wise distribution of the Participants

Gender of the Participants					
			Percent	Valid Percent	Cumulative Percent
Valid	Male	112	93.3	93.3	93.3
	Female	8	6.7	6.7	100.0
	Total	120	100.0	100.0	

The findings of the study indicated that the majority of the participants were less than 25 years of age. Out of a total of 120 participants, 89 (74.2%) were below 25 years, while 31 participants (25.8%) were above 25 years. This shows that most of the study respondents belonged to the younger age group, reflecting the typical age range of nursing students in academic institutions.

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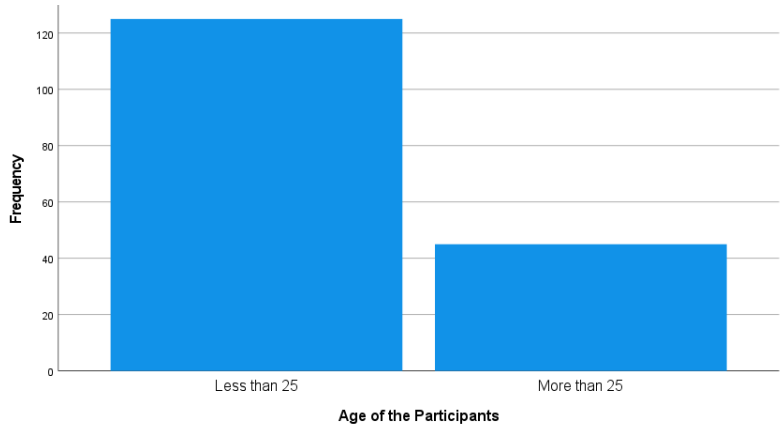


Figure 4.1: Age of the Participants

Regarding the academic year distribution, 40 participants (33.3%) were enrolled in the first year, 40 Participants (32.3%) in the second year, 25 participants (20.8%) in the third year, and 15 participants (12.5%) in the fourth year. These results reveal that the largest proportion of respondents were from the second year, followed by the third year, while the smallest proportion were final-year students.

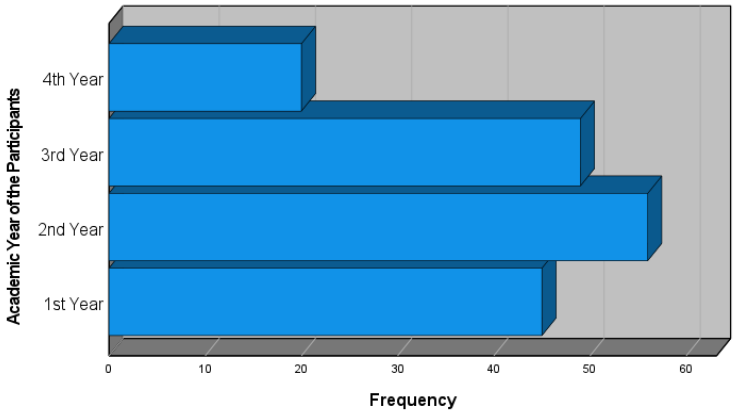


Figure 4.2: Academic Year of the Participants

Section B: Sleep Quality

The results showed that the majority of participants rated their overall sleep quality as unsatisfactory. Out of 120 respondents, 43 (35.8%) reported having very bad sleep quality, followed by 37 (30.8%) who described it as fairly bad. In contrast, only 9 (7.5%) rated their sleep as very good, and 31 (25.8%) as fairly good. These findings suggest that a large proportion of the nursing students were experiencing poor sleep quality, which could potentially affect their concentration and academic performance.

When assessing sleep latency, 42 participants (35.0%) reported taking between 31–60 minutes to fall asleep, and 39 (32.5%) took more than 60 minutes. Meanwhile, 30 respondents (25.0%) required 16–30 minutes, and only 9 (7.5%) fell asleep within 15 minutes. Regarding total sleep duration, most respondents, 45 (37.5%), reported sleeping for 6–7 hours per night, while 34 (28.3%) slept for 5–6 hours, and 33 (27.5%) managed more than 7 to 8 hours of sleep. A small number, 8 (6.7%), slept less than 5 hours per night, indicating that insufficient sleep duration is prevalent among participants.

In terms of daytime functioning, 41 participants (34.2%) reported having trouble staying awake twice a week during activities like

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studying or socializing, and 35 (29.2%) experienced such issues more than twice weekly. Only 9 (7.5%) claimed they never encountered this problem. Furthermore, when asked about sleep disturbances such as bad dreams, noise, or other factors, 41 respondents (34.2%) experienced these disturbances twice a week, while 37 (30.8%) reported them more than twice a week. These findings reveal frequent disruptions to both sleep continuity and daytime alertness among nursing students.

4.2 Frequency Distribution of Participants' Sleep Quality and Sleep-Related characteristics

Variable	Categories	Frequency (f)	Percent (%)
Overall sleep quality	Very good	9	7.5
	Fairly good	31	25.8
	Fairly bad	37	30.8
	Very bad	43	35.8
Time taken to fall asleep (minutes)	Less than 15	9	7.5
	16–30	30	25.0
	31–60	42	35.0
	More than 60	39	32.5
Average sleep duration (hours)	Less than 5	8	6.7
	5–6	34	28.3
	6–7	45	37.5
	7-8	33	27.5
Trouble staying awake during activities	Never	9	7.5
	Once a week	35	29.2
	Twice a week	41	34.2
	More than twice a week	35	29.2
Trouble sleeping due to bad dreams/noise/disturbance	Never	10	8.3
	Once a week	33	27.5
	Twice a week	41	34.2
	More than twice a week	36	30.0

Section B: Academic Performance

The findings related to participants' academic performance revealed that the majority of nursing students obtained a GPA of 3.0 - 3.5 in their last semester, as reported by 37 respondents (30.8%). Additionally, 34 participants (28.3%) achieved a GPA higher than 3.5, while 33 (27.5%) had a GPA ranging between 2.0 and 2.9. Only 16 participants (13.3%) reported a GPA below 2.0. These results indicate that most of the students maintained satisfactory to good academic performance, though a smaller proportion demonstrated relatively lower academic outcomes.

4.3 Last Semester GPA

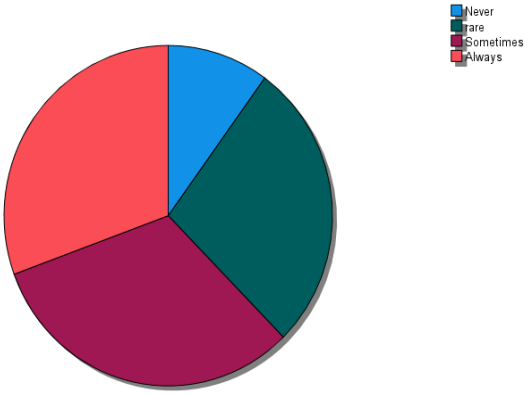
What was your last semester's GPA / percentage?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2.0	16	13.3	13.3	13.3
	2.0-2.9	33	27.5	27.5	40.8
	3.0-3.4	37	30.8	30.8	71.6
	More than 3.5	34	27.3	27.3	100.0
	Total	120	100.0	100.0	

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Sleep Quality Impact on Academic Performance

The findings related to participants' academic performance revealed that the majority of nursing students obtained a GPA of 3.0 - 3.5 in their last semester, as reported by 37 respondents (30.8%). Additionally, 34 participants (28.3%) achieved a GPA higher than 3.5, while 33 (27.5%) had a GPA ranging between 2.0 and 2.9. Only 16 participants (13.3%) reported a GPA below 2.0. These results indicate that most of the students maintained satisfactory to good academic performance, though a smaller proportion demonstrated relatively lower academic outcomes.



4.3: Sleep Quality Impact on Academic Performance

Relationship Between Sleep Quality and Academic performance

The correlation analysis revealed a very strong positive relationship between students' total sleep duration and their academic performance, as indicated by a Pearson correlation coefficient of r = 0.968 with a p-value of 0.000. This highly significant result at the 0.01 level suggests that as the number of hours of sleep increases, students' GPA also tends to improve. In other words, nursing students who reported longer sleep durations achieved better academic outcomes compared to those with shorter sleep periods. The strong positive association implies that adequate sleep may enhance concentration, memory retention, and cognitive efficiency, all of which are essential for academic success. These findings are consistent with existing literature emphasizing the role of sufficient rest in promoting optimal learning and performance. The significance of the correlation further highlights that maintaining healthy sleep habits could be a crucial determinant of academic excellence among nursing students. However, while the relationship is statistically robust, it does not establish causation; other influencing factors, such as study routines, stress levels, and overall mental well-being, may also contribute to this observed association.

4.4: Association Between Sleep Quality and Academic Performance

Correlations			
		What was your last semester's GPA / percentage?	Total sleep
What was your last semester's GPA / percentage?	Pearson Correlation	1	.968**
	Sig. (2-tailed)		.000
	N	120	120
Totalsleep	Pearson Correlation	.968**	1
	Sig. (2-tailed)	.000	
	N	120	120

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**. Correlation is significant at the 0.01 level (2-tailed).

5. DISCUSSION

The present analytical cross-sectional study aimed to examine the relationship between sleep quality and academic performance among undergraduate nursing students. The findings revealed a strong positive correlation ($r = 0.952$, $p < 0.01$) between sleep quality and academic achievement, indicating that students with better sleep quality achieved higher GPAs. These results align with numerous international studies emphasizing the critical role of sleep in academic success and cognitive performance among nursing and medical students.

The demographic composition of the study sample was notably distinct, with 93.3% of participants being male, a distribution that is different from the predominantly female cohorts commonly reported in nursing education research globally [35]. This gender imbalance may have implications for the generalizability of the findings and highlights the need to consider demographic context when interpreting outcomes. In terms of sleep quality, 66.6% of respondents reported fairly bad or very bad sleep. This prevalence is similar to findings reported in a Chinese study where 68% of nursing students experienced poor sleep [35], indicating a degree of alignment across different educational contexts. However, this figure is higher than the 48% reported among Indian nursing students [37], suggesting a regional difference in sleep-related challenges.

Sleep latency in the present study was also substantial, with 67.5% of participants requiring more than 30 minutes to fall asleep. This finding aligns with prior research identifying prolonged sleep onset as a common problem among nursing students internationally [36], reinforcing the notion that delayed sleep initiation is a widespread concern. Regarding sleep duration, 37.5% of participants reported sleeping 6–7 hours per night, a finding slightly more favorable than the 45% of students in Saudi Arabia who slept less than 6 hours [40]. While the overall pattern is similar, this small difference may reflect variations in lifestyle, academic demands, or cultural factors affecting sleep.

The most remarkable finding of this study was the exceptionally strong positive correlation between sleep duration and academic performance ($r = 0.968$). This result is considerably different from previous studies, such as one conducted in Spain, which reported a weaker but significant correlation of $r = 0.32$ [38]. While the general agreement across literature supports a relationship between sleep and academic outcomes, the extreme strength of this association in the current cohort suggests that demographic and contextual factors may amplify the impact of sleep on performance. In terms of academic outcomes, 30.8% of students achieved a GPA of 3.0–3.4, a distribution similar to patterns observed in Australian studies [36], indicating that despite poor sleep quality, students may maintain satisfactory academic performance.

Overall, the findings of this study largely agree with global evidence regarding the negative impact of poor sleep on academic performance. Points of difference, however, include the unusually strong correlation observed and the male-dominated sample, highlighting that while sleep is universally important for academic outcomes, the magnitude of its effect may be context-specific. These observations underscore the importance of considering demographic and cultural variables when interpreting the relationship between sleep and academic achievement.

CONCLUSION

The present analytical cross-sectional study concluded that there is a strong positive correlation between sleep quality and academic performance among undergraduate nursing students ($r = 0.952$, $p < 0.01$), indicating that students with better sleep quality achieved higher GPAs. Most participants experienced poor sleep quality, including delayed sleep onset, insufficient sleep duration, and frequent disturbances, which were associated with reduced alertness and lower academic outcomes. These findings align with previous international studies, affirming that good sleep quality is essential for concentration, memory, and learning efficiency. The study underscores

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the importance of promoting sleep hygiene awareness and implementing stress management strategies within nursing education programs to enhance both academic achievement and overall well-being among students.

RECOMMENDATIONS

Based on the study findings, it is recommended that educational institutions and nursing faculties prioritize initiatives to improve students' sleep quality as a key component of academic success. Regular awareness sessions and workshops on sleep hygiene, stress management, and time management should be organized to help students develop healthier sleep habits. Counseling and mental health support services should be strengthened to address factors contributing to poor sleep, such as academic stress and irregular study schedules. Moreover, institutions could consider reviewing class timings and workload distribution to promote balanced rest and study routines. Future research should explore longitudinal and interventional designs to further assess the causal relationship between sleep quality and academic performance and to evaluate the effectiveness of sleep improvement programs in enhancing students' learning outcomes and overall well-being.

Strengths

The studies on sleep quality and academic performance among nursing students demonstrate several strengths. Many used validated tools such as the Pittsburgh Sleep Quality Index (PSQI), ensuring reliable measurement of sleep patterns. Some studies complemented self-reports with objective measures like wearable trackers, enhancing data credibility. Large sample sizes and diverse geographical coverage including China, India, Spain, Saudi Arabia, Sweden, and Africa allowed for meaningful cross-cultural comparisons and identification of global trends. Several studies also implemented interventions, such as sleep hygiene programs and mindfulness-based stress reduction, providing practical insights into improving both sleep and academic outcomes. Additionally, stratification by gender, academic year, or chronotype increased the depth and applicability of the findings.

Limitations

Despite their contributions, these studies have notable limitations. Most relied on cross-sectional designs, which prevent establishing causality between poor sleep and lower academic performance. Self-reported data on sleep and GPA may introduce recall or social desirability bias, while objective measurements were limited. Many samples were homogeneous in terms of age, gender, or institution, reducing generalizability. Cultural, socioeconomic, and psychosocial factors were often underexplored, even though they can significantly influence both sleep and academic outcomes. Finally, most studies focused on short-term outcomes, with limited longitudinal data to understand how sleep affects academic performance over time. These limitations highlight the need for more comprehensive, multi-center, and longitudinal research in this area.

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