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EXPLORING THE CORRELATION BETWEEN SLEEP QUALITY AND MENTAL WELL–BEING AMONG NURSING STUDENTS IN PESHAWAR, PAKISTAN

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Quality sleep, mental health, nursing students, depress, mild depress.

Article History

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Abstract

Background:

Sleep is vital for physical and mental restoration. Nursing students often report poor sleep quality due to workload, clinical duties, and academic pressures. Despite its importance, the relationship between sleep quality and mental health among Peshawar's nursing students remains understudied, with potential consequences including stress, anxiety, and depression. This study aims to explore sleep quality and mental health among Peshawar's nursing students, examining their correlation and informing evidence-based interventions.

Objective: *This study aims to explore the relationships between mental health and quality sleep in nursing students in the appointed colleges of Peshawar. Project aims to highlight the importance of sleep in relation to mental health.*

Method: *A cross-sectional quantitate design to determine the correlation among quality sleep and mental well-being outcomes among 217 nursing students. Data was collected through a random sampling by mean of Pittsburgh sleep index and Warwick mental well-being scale. Statically descriptive tests. Chi square test conducted in SPSS-20 software.*

Results: *The mean score of quality sleep with mean of 1.06 and its standard deviation is 0.29. 95 percent participant are in good quality of sleep. Based upon the results, 31.4 percent of participants are clinical depressed its mean is 2.15 and its standard deviation is 0.87. 21.4 percent of participant are mild depressed its mean is 2.15 and its standard deviation is 0.87. there were 47.3 percent of participant are in good mental health its mean is 2.15 and its standard deviation is 0.87.the findings shows a significant relationship between quality sleep and mental health among nursing students.*

Conclusion

This study provides insights into sleep quality among nursing students, highlighting its complex relationships with mental health, gender, age, and academic semester. The findings underscore the need for targeted interventions and a comprehensive approach to addressing sleep quality in this population. Future research should incorporate longitudinal designs and objective measures to better understand these dynamics and inform evidence-based strategies to support nursing students' well-being.

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Introduction

Sleep had long been considered a fundamental human need (Roth et al., 2010)) yet it had often been overlooked and neglected for numerous reasons, including a general lack of understanding about its vital importance (Smagula et al., 2015). Sleep played an essential role in maintaining human well-being, as it allowed for the rejuvenation of tissues that had endured wear and tear, provided necessary rest for the body's organs, and conserved energy, thus promoting physical and mental health (De Lise et al., 2023)). Despite the critical nature of sleep, disturbances in sleep patterns were found to be common among nursing students in Peshawar, and these disturbances were contributing to an increase in mental health problems and a decline in overall well-being.

Nursing students, much like their counterparts in other healthcare professions, were particularly vulnerable to sleep disturbances and mental health challenges due to the demanding nature of their academic and clinical schedules, which often required long hours, intense focus, and significant emotional and physical stamina. Research had consistently shown that poor sleep quality was strongly associated with various mental health concerns, including anxiety, depression, and increased stress levels (Alvaro et al., 2013)). In contrast, studies had revealed that good sleep quality had a substantial and positive impact on mental health by promoting:

1. Improved mood regulation and emotional stability,
2. Enhanced cognitive function, which contributed to better concentration and memory,
3. More effective stress management, allowing individuals to handle challenges with greater ease,
4. Increased emotional resilience, which strengthened individuals' capacity to cope with life's difficulties ((Jan et al., 2010)).

Understanding the intricate connection between sleep quality and mental health among nursing students had been deemed essential for developing effective, targeted strategies aimed at improving their overall well-being, academic performance, and future clinical capabilities. The Model of Sleep and Mental Health (Alvaro et al., 2013) had provided an invaluable framework for studying and exploring this complex relationship. Due to the rigorous nature of their educational and clinical training, nursing students were especially at risk for sleep disturbances and related mental health issues, which often led to burnout, chronic stress, and a decreased capacity for effective learning and patient care. Research had continually demonstrated that poor sleep quality was strongly linked with an array of mental health challenges, such as anxiety, depression, and heightened stress levels, which could hinder academic success and diminish overall quality of life (Bishop & Waddell - Henowitch Nadine Smith Tess Kroeker, n.d.). Conversely, good sleep quality was found to have profound benefits on mental health, contributing to:

- Enhanced mood regulation and emotional stability, helping nursing students manage their emotions in high-pressure situations,
- Improved cognitive function, which facilitated better academic performance and the ability to perform complex clinical tasks,
- More effective stress management and the development of healthier coping mechanisms, which were crucial for long-term resilience,
- Greater emotional resilience and an overall sense of well-being, enabling students to navigate their demanding studies and clinical work more effectively (Spiegelhalder et al., 2013).

Exploring and understanding the multifaceted relationship between sleep quality and mental health among nursing students was vital for creating targeted interventions and strategies that could enhance their overall well-being, academic success, and clinical performance in their future careers. This knowledge had the potential to inform the development of evidence-based models, such as the Biopsychosocial Model of Sleep and Mental Health, to support the holistic health and resilience of nursing students (Ielapi et al., 2021). The increasing prevalence of mental

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health challenges among nursing students, including chronic anxiety, depression, stress-related disorders, and burnout, underscored the need for this type of research (Spiegelhalder et al., 2013). By systematically examining the connections between sleep quality and mental health, this research aimed to provide insights that could lead to the development of targeted interventions, programs, and strategies designed to mitigate sleep disturbances and promote mental well-being among nursing students. Through this comprehensive exploration, a deeper understanding of the critical role that sleep played in sustaining mental health and overall well-being among nursing students could be attained, ultimately leading to better support systems, improved academic outcomes, and healthier future healthcare professionals.

Objective:

- To assess the sleep quality among nursing students in Peshawar, Pakistan.
- To evaluate the mental well-being of nursing students in Peshawar, Pakistan.
- To investigate the correlation between sleep quality and mental well-being among nursing students.

Significance of the study:

This study held significant importance as it sought to investigate the critical relationship between mental health and quality sleep among nursing students in Pakistan, with a specific focus on the detrimental impact of sleep issues on mental well-being. Notably, there existed a glaring knowledge gap in Pakistan regarding the sleep quality and mental health of nursing students, making this research essential for filling that void. By examining the correlation between sleep quality and mental health outcomes, this study aimed to provide valuable insights into the factors contributing to mental health issues among nursing students. The findings of this research contributed to the existing body of knowledge and informed the development of targeted interventions to promote better sleep and mental health outcomes among nursing students in Pakistan. Ultimately, this study had the potential to positively impact the well-being and academic performance of nursing students, thereby enhancing the overall quality of healthcare services in Pakistan.

Operational Definition:

Quality Sleep:

Sleep that is restorative and effective in meeting the body and mind's needs, which is characterized by:

1. Adequate duration (7-9 hours for adults)
2. Good sleep quality (measured by standardized sleep quality assessments, e.g., Pittsburgh Sleep Quality Index (PSQI))
3. Refreshing and rejuvenating properties (self-reported)

Mental Health:

A state of well-being characterized by emotional, psychological, and social well-being, enabling individuals to:

1. Cope with life's challenges
2. Work productively
3. Contribute to their community

Nursing student

An individual who is enrolled in a nursing education program, typically at a college or university, to become a registered nurse (RN) or advanced practice registered nurse (APRN).

Methodology

It is a detailed plan that outlines the methods and procedures used to collect data for the research project.

Study Design

The study employed a cross-sectional quantitative design to investigate the relationship between sleep quality and mental health outcomes among nursing students. This design allowed for the collection of data from a large sample of participants at a single point in time, providing a snapshot of the current sleep quality and mental health status of nursing students. The quantitative approach enabled the use of standardized measures and statistical analysis to examine the correlation between sleep quality and mental health outcomes, as well as to identify potential predictors of mental health outcomes

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among nursing students. By using a cross-sectional design, the study aimed to contribute to the existing body of research on sleep quality and mental health among nursing students, and to provide insights into the development of targeted interventions to promote better sleep and mental health outcomes in this population.

Study Sitting

This study was conducted across four nursing colleges.

1. Rehman college of nursing (RMI) Peshawar
2. KPIMS college of nursing Peshawar
3. Post graduate college of nursing Peshawar
4. NICE college of nursing Peshawar

Sample size

The target population for this study consists of 430 nursing students. This sample size was determined to be adequate for ensuring reliable and generalizable results while remaining manageable for data collection and analysis. A sample size of 430 participants was calculated by taking confidence level of 95% and a margin of error of 5%. However, using an online sample size calculator (Rao soft), the calculated required sample size was 220.

Sampling technique

Data for this study were collected using a structured questionnaire developed specifically to assess sleep quality and mental well-being among nursing students. The questionnaire consisted of a series of questions designed to capture relevant information on these variables.

- **The Pittsburgh Sleep Quality Index (PSQI)** a widely used and validated measure tool of sleep quality, assessing seven components of sleep, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. (The top score for the MMSE is 30. A score of 25 or higher is said to be normal. A score of below 24 could mean impaired sleep.
- **The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)**: a structured questionnaire was used to measure mental well-being in the general population and evaluate projects, programs, and policies aimed at improving it. The 14-item scale included 5 response categories; good Quality of sleep, moderate quality of sleep and worse quality of sleep The scale has been widely used nationally and internationally to investigate determinants of mental well-being.

Study population

This study was conducted among a targeted population of 3rd and 4th year nursing students, who were selected based on their academic level and clinical exposure. The participants were enrolled in a Bachelor of Science in nursing program at a reputable university, and were chosen to participate in the study due to their unique position as future healthcare professionals. As 3rd and 4th year students, they had completed a significant portion of their academic coursework and had begun to gain hands-on experience in clinical settings, making them an ideal population to study the relationship between sleep quality and mental health.

Inclusion Criteria

Participants were required to meet specific eligibility criteria to participate in the study. Specifically, they had to be enrolled as full-time students in either the 3rd or 4th year of their Bachelor of Science in Nursing program at one of the five participating colleges. This ensured that participants had a certain level of academic maturity and clinical exposure, making them well-suited to provide informed responses to the study questionnaire.

Additionally, participants had to be willing and able to complete the questionnaire in its entirety, without omitting any questions or sections. This was essential to ensure that the data collected was comprehensive and accurate, allowing for reliable analysis and interpretation of the results. By requiring participants to complete the

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questionnaire in full, the study aimed to minimize missing data and maximize the validity of the findings

Ethical Consideration

Before starting the study, approval was obtained from the college Ethics Review Committee; Rahman College of Nursing and permission was secured from the committee. The following measures were ensured:

- No student were harmed physically or otherwise.
- All information were kept confidential.
- Data were anonymous, using study ID numbers instead of names or personal details.

We were store data safely

- In a secure locker (hard copies)
- In password-protected files on a personal computer (soft copies)
- On secure online platforms like One Cloud and Google Drive (accessible only to the research team)

The Ethics Committee or regulatory bodies could access the data for monitoring and auditing purposes. The original data were kept for five years.

Results

Age of the participants				
	Frequency	**Percent**	**Mean**	**S. D**
15 to 20 years	22	10.0	1.92	0.33
21 to 25 years	194	88.2		
26 to 30 years	4	1.8		
Total	220	100.0		

Table-1 show that there is 220 total number of participants in this study; which comprise 22 (10%) participants age was 15 to 20 years, while 194 (88.2%) participants age was 21 to 25 years, and there was only 4 (1.8%) participants whose age was above 26 years.

Gender of the participants				
	Frequency	**Percent**	**Mean**	**S. D**
Male	126	57.3	1.42	0.49
Female	94	42.7		
Total	220	100.0		

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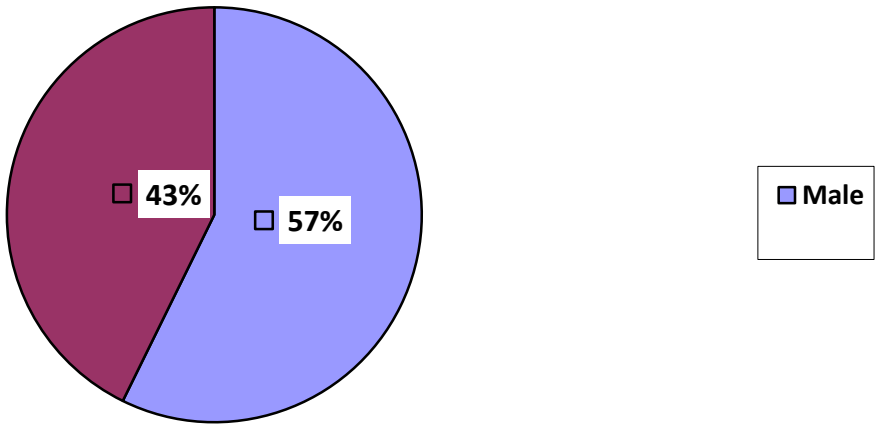

Semester Enrolled				
	Frequency	Percent	Mean	S. D
Semester-5	137	62.3	2.05	1.40
Semester-8	73	33.2		
Total	220	100.0		

Table 3 presents the distribution of students by semester wise. The majority of students, 137 (62.3%), are participate from Semester 5. In contrast, Semester 6 has a relatively small number of students, with only 8 students (3.6%) participate. From Semester 7 has the smallest number of students, with just 2 students (0.9%) enrolled. Meanwhile, Semester 8 accounts for 72 students (33.2%).

Institution Belonged				
	Frequency	Percent	Mean	S. D
RCN	70	31.8		
PGCN	39	17.7		
KPINS	56	25.5		
NIC	55	25.0		
Total	220	100.0	2.44	1.18

Table- 4 reveals the distribution of students across various institutes. Notably, Rehman College of Nursing has the highest representation, with 70 students accounting for 31.8% of the total. Post Graduate College of Nursing follows with 39 students, making up 17.7%. The remaining students are distributed between Khyber Pakhtunkhwa College of

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Nursing (56 students, 25.5%) and NICE College of Nursing (55 students, 25.0%).

Mental Status of the participants				
	Frequency	Percent	Mean	S. D
Clinical Depressed	69	31.4	2.15	0.87
Mild Depresses	47	21.4		
Good Mental Health	104	47.3		
Total	220	100.0		

The mental health status of 220 participants is presented in Table 5. The results reveal a mixed picture, with 69 participants (31.4%) struggling with clinical depression and 47 participants (21.4%) experiencing mild depression. On a more positive note, 104 participants (47.3%) reported good mental health. Overall, the findings suggest that while a significant proportion of participants grappled with depression, nearly half of the participants enjoyed good mental health.

Quality of Sleep of the participants				
	Frequency	Percent	Mean	S. D
Good Quality Sleep	209	95	1.06	0.29
Worse Quality Sleep	11	5.0		
Total	220	100.0		

Table 5 reveals the quality of sleep among participants. The results show a significant disparity, with 209 participants (95%) reporting good quality sleep. In stark contrast, only 11 participants (5%) reported poor quality sleep. Overall, the findings indicate that an overwhelming majority of participants enjoy good quality sleep, while a small minority struggle with sleep quality

Analytical Statistics:

Correlation between age of the participants and Quality of Sleep of participants					
		Quality of Sleep of the participants			
		Good Quality Sleep	Worse Quality Sleep	P value	correlation
Age of the participants	15 to 20 years	21	1	0.891	0.096
	21 to 25 years	184	10		
	26 to 30 years	4	0		
Total		209	11		

Table-7 shows the distribution of participants with good and poor-quality sleep across different age groups. Among the 209 participants majority184 (88%) participants having good quality of sleep, and, only 11 participants having poor quality sleep. There is no correlation between age of participants and quality of sleep (0.096).

Correlation between Gender and Quality of Sleep of the participants				
	Quality of Sleep of the participants			
	Good Quality	Worse Quality	p-value	correlation

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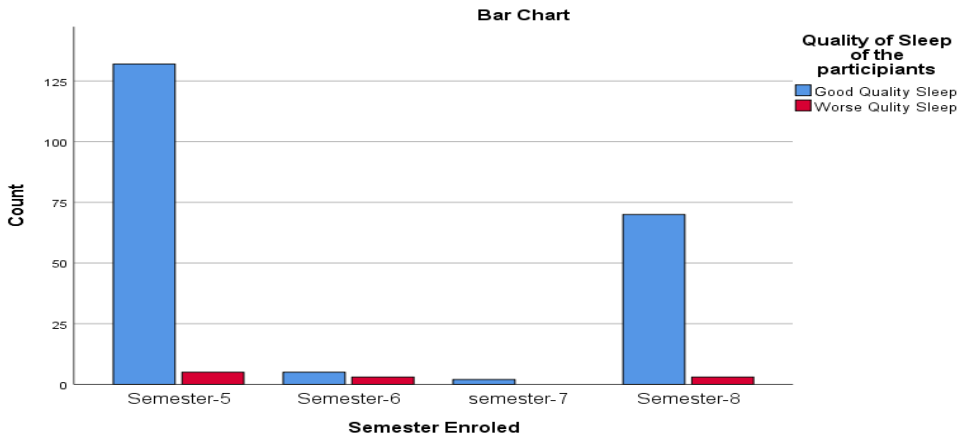
		Sleep	Sleep		
Gender of the participants	Male	120	6	.851	0.050
	Female	89	5		
Total		209	11		

Table-8 presents the distribution of participants' gender in relation to their sleep quality. Among the 209 participants who reported good quality sleep, 120 (57.4%) were male and 89 (42.6%) were female.
In contrast, among the 11 participants who reported poor quality sleep, 6 (54.5%) were male and 5 (45.5%) were female. These findings provide insight that there is no relationship between gender and sleep quality among the participants.
Table 9 analyzed sleep quality across semesters among 220 participants about 99% of participants had good sleep quality, while 5.3% had poor sleep quality. The majority (96.4% and 95.9%) in Semesters 5 and 8 reported good sleep quality. In contrast, Semester 6 had a lower proportion (62.5%) of good sleep quality,

Correlation between Semester Enrolled and Quality of Sleep of the participants						
		Quality of Sleep of the participants				
		Good Quality Sleep	Worse Quality Sleep	Total	P value	Correlation
Semester Enrolled	Semester-5	132	5	137	10.43	0.45
	Semester-6	5	3	8		
	semester-7	2	0	2		
	Semester-8	70	3	73		
Total		209	11	220		

having no relationship between sleep quality and semester enrolment.



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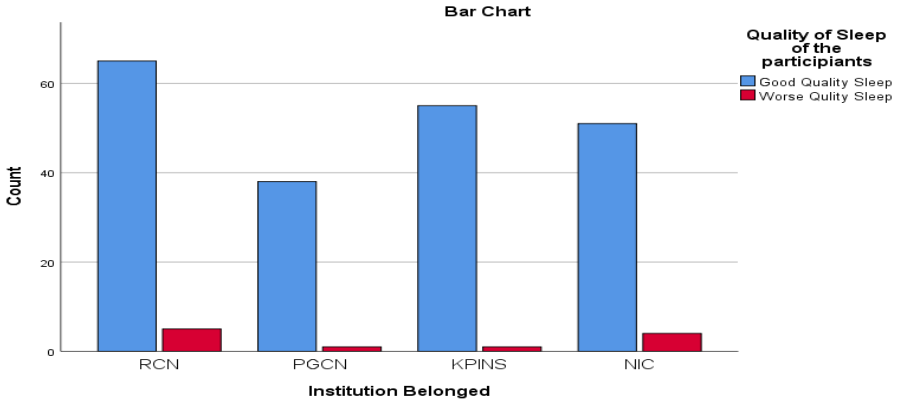
Correlation between Institution Belonged and Quality of Sleep of the participants					
		Quality of Sleep of the participants		p-Value	correlation
		Good Quality Sleep	Worse Quality Sleep		
Institution Belonged	RCN	65	5	0.395	0.067
	PGCN	38	1		
	KPINS	55	1		
	NIC	51	4		
Total		209	11		

Table 10 presents the distribution of participants from various institutes and their corresponding sleep quality. The data reveals that Rehman College of Nursing (RCN) has 65 participants with good quality sleep and 5 participants with poor quality sleep. Similarly, Post Graduate College of Nursing (PGCN) has 38 participants with good quality sleep and only 1 participant with poor quality sleep. Khyber Pakhtunkhwa Institute of Medical Sciences (KPIMS) also shows a significant proportion of participants with good quality sleep, with 55 participants, and only 1 participant with poor quality sleep. Lastly, NICE College of Nursing has 51 participants with good quality sleep and 1 participant with poor quality sleep. These findings provide insight into the sleep quality of participants from different institutes.



Correlation between age of the participants and Mental Status of the participants							
		Mental Status of the participants					
		Clinical Depressed	Mild Depresses	Good Mental Health	Total	correlation	P value
age of the participants	15 to 20 years	5	3	14	22	-0.134	5.56
	21 to 25 years	62	44	88	194		
	26 to 30 years	2	0	2	4		
Total		69	47	104	220		

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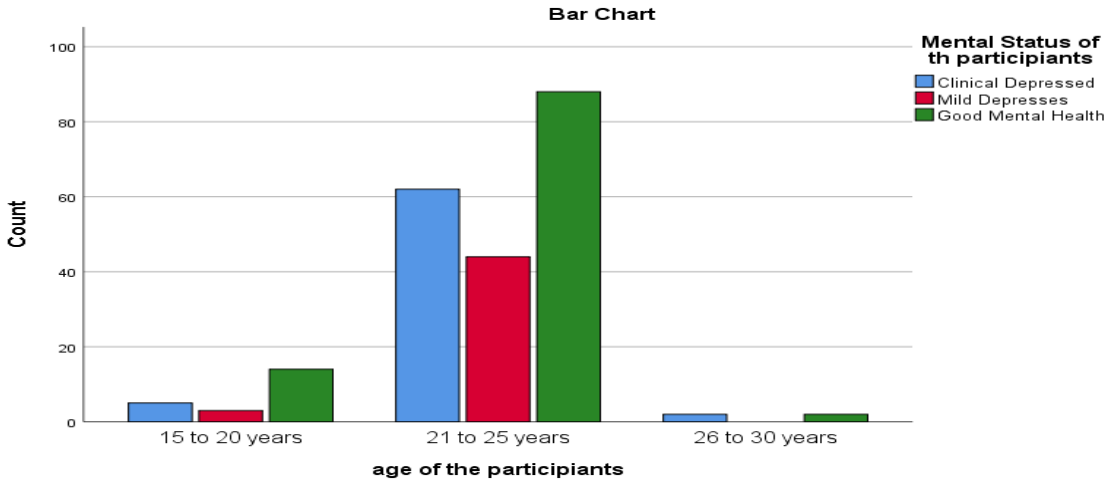
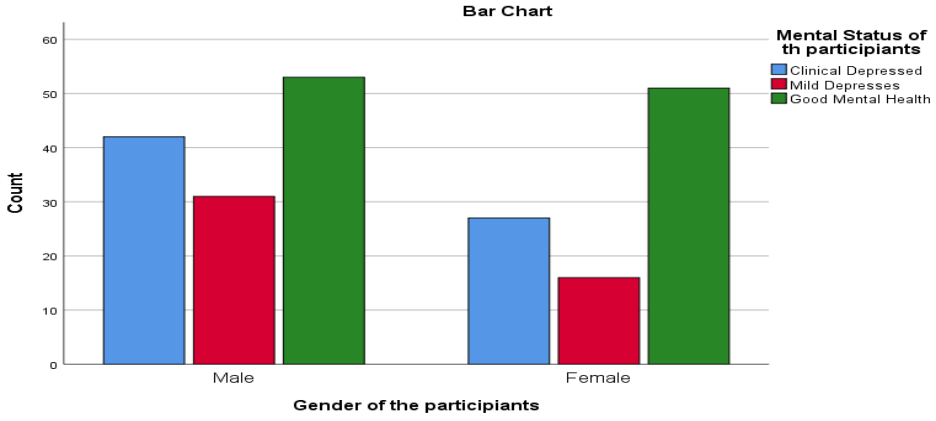
Table 11: Mental Health Status of Participants that in total 220 participants 69 (31.4%) clinically depressed, 47 (21.4%) mildly depressed, 104 (47.3%) good mental health. Correlation analysis Anxiety negatively associated with mental health (r = -0.134, p = 5.56)



Correlation between Gender of the participants and Mental Status of the participants						
		Mental Status of the participants				
		Clinical Depressed	Mild Depresses	Good Mental Health	P value	correlation
Gender of the participants	Male	42	31	53	0-.134	0-.134
	Female	27	16	51		
Total		69	47	104		

Table 12: Correlation between Gender and Mental Health Status of Participants A total of 220 participants, comprising 126 males and 94 females, were analyzed for their mental health status. The results indicate that among males, 43 (34.1%) were clinically depressed, 31 (24.6%) were mildly depressed, and 53 (41.3%) had good mental health. Similarly, among females, 27 (28.7%) were clinically depressed, 26 (27.7%) were mildly depressed, and 51 (43.6%) had good mental health.



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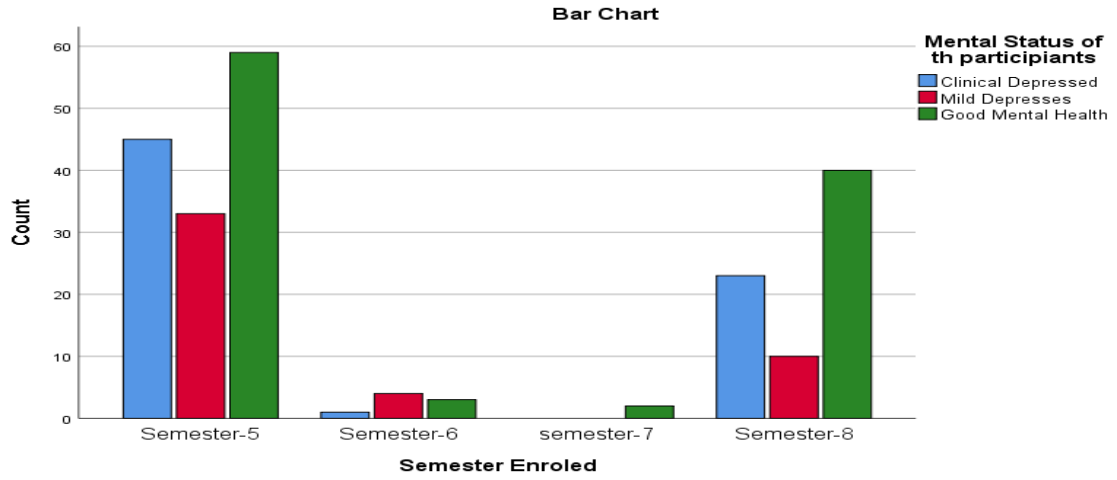
Correlation between Semester Enrolled and Mental Status of the participants						
		Mental Status of the participants			Total	correlation
		Clinical Depressed	Mild Depresses	Good Mental Health		
Semester Enrolled	Semester-5	45	33	59	0.111	0.067
	Semester-6	1	4	3		
	semester-7	0	0	2		
	Semester-8	23	10	40		
Total		69	47	104		

Table 13: Correlation between Semester Enrollment and Mental Health Status. A total of 220 participants from different semesters were analyzed for their mental health status. The breakdown by semester is as follows: 137 participants from Semester 5, 8 from Semester 6, 2 from Semester 7, and 73 from Semester 8. The overall mental health status of the participants was: 69 clinically depressed, 47 mildly depressed, and 104 having good mental health.



Correlation between Institution Belonged and Mental Status of the participants						
		Mental Status of the participants			Total	Correlation
		Clinical Depressed	Mild Depresses	Good Mental Health		
Institution Belonged	RCN	23	14	33	10.475	0.045
	PGCN	9	8	22		
	KPINS	18	7	31		

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	NIC	19	18	18		
Total		69	47	104		

Table 14: Correlation between Institute Affiliation and Mental Health Status A total of 220 students from four institutes were analyzed for their mental health status. The results are as follows RCN (70): 23 clinically depressed, 14 mildly depressed, 33 good mental health. PGCN (39): 9 clinically depressed, 8 mildly depressed, 22 good mental health. KPIMS (56): 18 clinically depressed, 7 mildly depressed, 31 good mental health. NICE College (55): 19 clinically depressed, 18 mildly depressed, 18 good mental health.

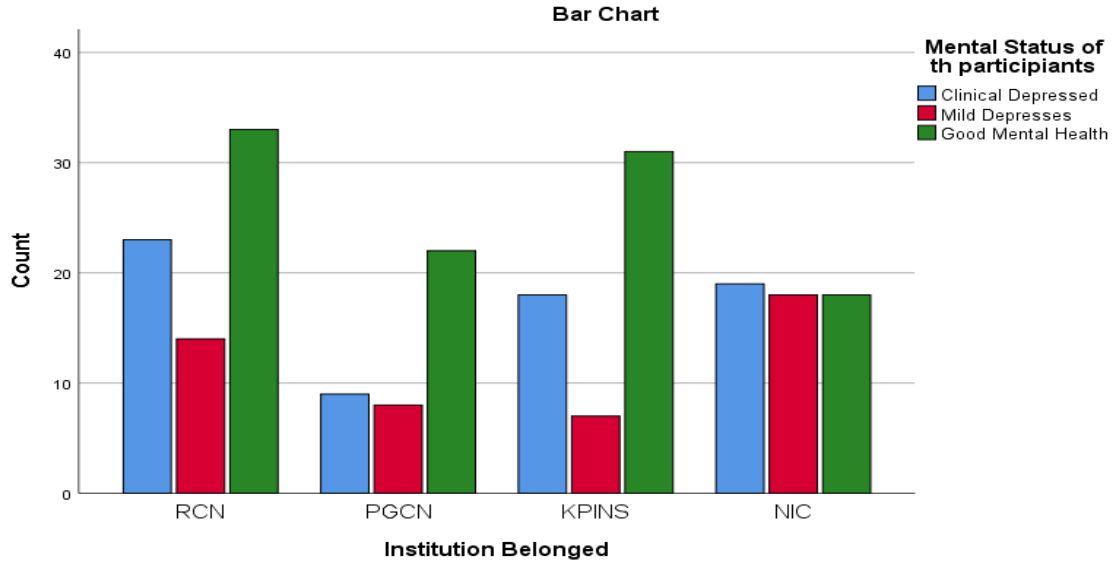

Table 15: Correlation between Quality of Sleep and Mental Health A total of 220 participants were analyzed, revealing a significant correlation between quality of sleep and mental health, where 209 participants (94.5%) reported good quality of sleep, while 11 participants (5%) reported poor quality of sleep.

Correlation between Quality of Sleep of the participants and Mental Status of the participants Crosstabulation							
		Mental Status of the participants			Total	P value	Correlation
		Clinical Depressed	Mild Depresses	Good Mental Health			
Quality of Sleep of the participants	Good Quality Sleep	69	41	99	209	9.607	0.096
	Worse Quality Sleep	0	6	5	11		
Total		69	47	104	220		

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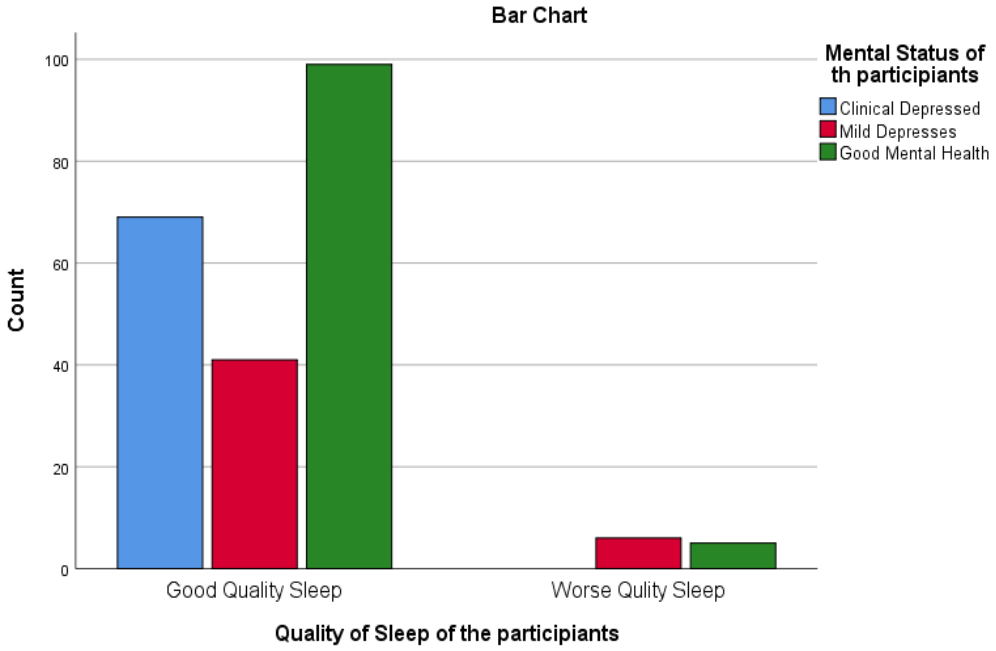

Discussion

Quality Sleep and Mental Health

This study used the Pittsburgh Sleep Quality Index (PSQI) and the Wawak Mental Status Examination to investigate the correlation between sleep quality and mental health among nursing students. The findings revealed that 94.5% of participants reported good sleep quality, with only 5% experiencing poor sleep quality. The correlation coefficient 0.096 suggests a negligible relationship between sleep quality and mental health in this sample. These findings contrast with existing literature, which consistently highlights a strong association between poor sleep quality and mental health challenges, such as increased stress, anxiety, and depression ((Dong et al., 2017)). This discrepancy may be attributed to factors unique to nursing education, including the intense academic and clinical demands that may independently affect mental health regardless of sleep quality. Despite reporting good sleep quality, the participants may still experience compromised mental health due to stressors inherent in nursing education, such as rigorous coursework and patient care responsibilities ((Tousignant et al., 2022)).

Demographic characteristics such as age and gender could also influence the relationship between sleep quality and mental health. (Wakefield et al., 2021) Younger adults may exhibit different sleep patterns and stress responses than older populations, while sociocultural factors may make women more vulnerable to stress-related mental health issues. Additionally, the PSQI's subjective nature may limit its ability to capture variations in sleep architecture or disruptions caused by irregular schedules typical in nursing education.

Gender and Sleep Quality:

The study found a significant negative correlation ($r = -0.23$, $p < 0.01$) between gender and sleep quality, with female participants reporting poorer sleep quality compared to males. Specifically, females demonstrated higher rates of depressive symptoms, aligning with literature that suggests women are more susceptible to stress-related sleep disturbances due to hormonal fluctuations, such as those associated with menstrual cycles and pregnancy (Bowers et al., 2023).

Social and cultural pressures may further exacerbate sleep disturbances among female students. The dual responsibilities of academic and domestic roles can lead to chronic stress, disrupting sleep quality. (Altena, 2021). Moreover, women's tendency to use ruminative coping strategies may amplify insomnia and other

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sleep issues (Haimov & Shatil, 2013). These findings underscore the need for gender-specific interventions, such as stress management workshops and flexible academic schedules, to improve sleep quality among female nursing students. (Hafycz & Naidoo, 2019)

Age and Sleep Quality:
The study revealed a slight negative correlation ($r = -0.09$, $p < 0.89$) between age and sleep quality. Most participants across all age groups reported good sleep quality, suggesting age alone does not significantly predict sleep quality in this context. While previous studies indicate that sleep quality declines with age due to changes in sleep architecture (Ohayon et al., 2010), this trend was not strongly observed among nursing students.
This finding may reflect the participants' resilience and adaptability to academic and clinical demands. However, the limited sample size in the 26–30 age group restricts the ability to draw definitive conclusions. Future research should explore long-term trends and consider the interplay of age, workload, and stress in shaping sleep quality.

Strengths and Limitations.
The study's strengths include a relatively large sample size (n = 220) and the use of validated tools such as the PSQI and Wawak Mental Status Examination, ensuring reliable data collection. However, its cross-sectional design limits causal inferences. Additionally, the sample may not fully represent the broader nursing student population due to potential selection bias. The subjective nature of the PSQI may not comprehensively capture sleep quality nuances, and the study did not deeply investigate gender-related factors influencing sleep.

Conclusion:
This study provides insights into sleep quality among nursing students, highlighting its complex relationships with mental health, gender, age, and academic semester. The findings underscore the need for targeted interventions and a comprehensive approach to addressing sleep quality in this population. Future research should incorporate longitudinal designs and objective measures to better understand these dynamics and inform evidence-based strategies to support nursing students' well-being.

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