

## Exploring The Correlation Between Sleep Quality And Mental Well–Being Among Nursing Students in Peshawar, Pakistan

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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 quantitative 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 means of Pittsburgh sleep index and Warwick mental well-being scale. Statistically 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 of participants are in good quality of sleep. Based upon the results, 31.4 percent of participants are clinically depressed its mean is 2.15 and its standard deviation is 0.87. 21.4 percent of participants 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 show 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.

**Key Words:** Quality Sleep, Mental Health, Nursing Students, Depress, Mild Depress

### 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 have 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 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.

## Objectives

- 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 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 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 Setting

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 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 was harmed physically or otherwise.
- All information was kept confidential.
- Data were anonymous, using study ID numbers instead of names or personal details.

We 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)

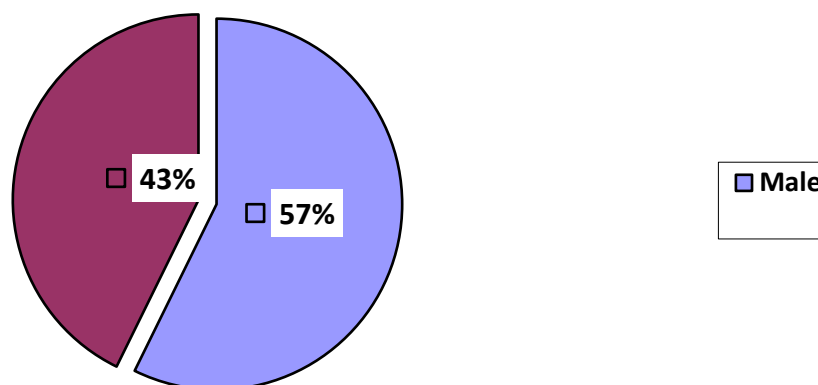
The Ethics Committee or regulatory bodies could access the data for monitoring and auditing purposes. The original data was kept for five years.

## Results

	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
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 shows 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 were only 4 (1.8%) participants whose age was above 26 years.

	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
<b>Male</b>	126	57.3	1.42	0.49
<b>Female</b>	94	42.7		
<b>Total</b>	220	100.0		



<b>Table 3. Semester Enrolled</b>				
	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
<b>Semester-5</b>	137	62.3	2.05	1.40
<b>Semester-8</b>	73	33.2		
<b>Total</b>	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%) attending. 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%).

<b>Table 4. Institution Belonged</b>				
	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
<b>RCN</b>	70	31.8	2.44	1.18
<b>PGCN</b>	39	17.7		
<b>KPINS</b>	56	25.5		
<b>NIC</b>	55	25.0		
<b>Total</b>	220	100.0		

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

<b>Table 5. Mental Status of the participants</b>					
		<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
	<b>Clinical Depressed</b>	69	31.4	2.15	0.87
	<b>Mild Depresses</b>	47	21.4		
	<b>Good Mental Health</b>	104	47.3		
	<b>Total</b>	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.

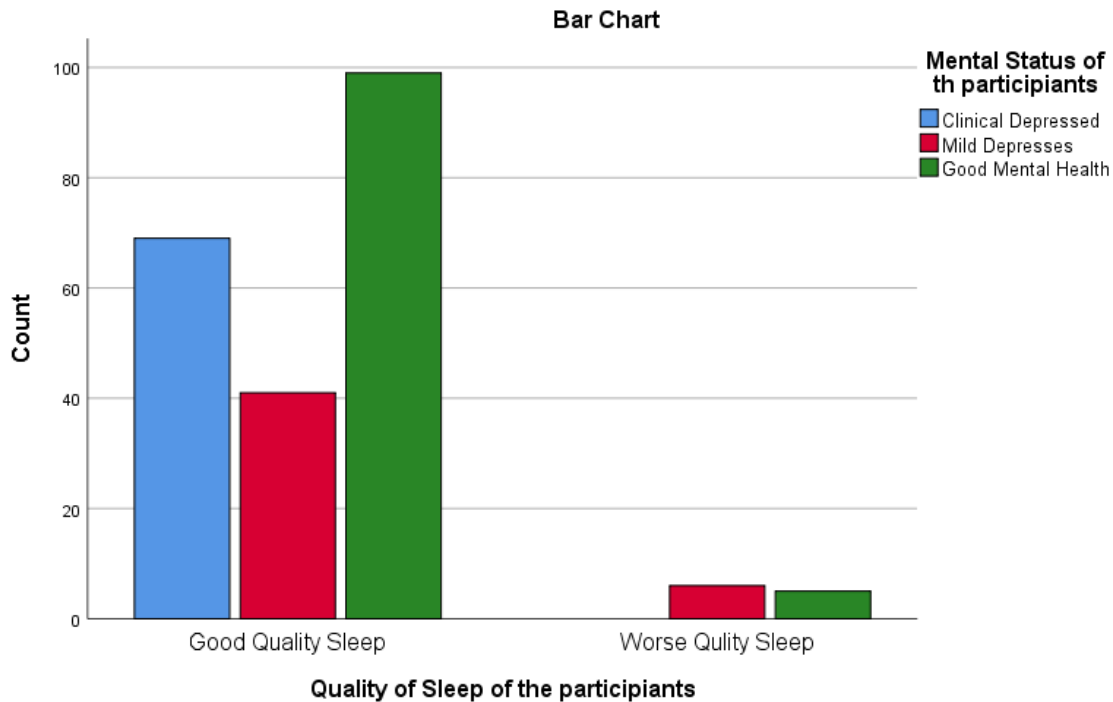
<b>Table 6. Quality of Sleep of the participants</b>					
		<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>S.D</b>
	<b>Good Quality Sleep</b>	209	95	1.06	0.29
	<b>Worse Quality Sleep</b>	11	5.0		
	<b>Total</b>	220	100.0		

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

<b>Table 7. Correlation between Quality of Sleep of the participants and Mental Status of the participants Crosstabulation</b>							
		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		

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.



## 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 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.

### References

- Altena, E. (2021). *Emotion coping strategies and dysfunctional sleep-related beliefs are associated with objective sleep problems in young adults with insomnia*.
- Alvaro, P. K., Roberts, R. M., & Harris, J. K. (2013). A systematic review assessing bidirectionality between sleep disturbances, anxiety, and depression. In *Sleep* (Vol. 36, Issue 7, pp. 1059–1068). <https://doi.org/10.5665/sleep.2810>
- Bishop, B., & Waddell -Henowitch Nadine Smith Tess Kroeker, C. (n.d.). *FACULTY EXPERIENCES SUPPORTING MENTAL HEALTH NEEDS OF NURSING STUDENTS IN A PSYCHIATRIC NURSING SETTING Faculty Experiences Supporting Mental Health Needs of Nursing Students in a Psychiatric Nursing Setting: An Interpretive Description Qualitative Study*.
- Bowers, J. S., Malhotra, G., Dujmović, M., Llera Montero, M., Tsvetkov, C., Biscione, V., Puebla, G., Adolphi, F., Hummel, J. E., Heaton, R. F., Evans, B. D., Mitchell, J., & Blything, R. (2023). Deep problems with neural network models of human vision. *Behavioral and Brain Sciences*, 46. <https://doi.org/10.1017/S0140525X22002813>
- De Lise, F., Bacaro, V., & Crocetti, E. (2023). The Social Side of Sleep: A Systematic Review of the Longitudinal Associations between Peer Relationships and Sleep Quality. In *International Journal of Environmental Research and Public Health* (Vol. 20, Issue 3). MDPI. <https://doi.org/10.3390/ijerph20032017>
- Dong, H., Zhang, Q., Sun, Z., Sang, F., & Xu, Y. (2017). Sleep problems among Chinese clinical

- nurses working in general hospitals. *Occupational Medicine*, 67(7), 534–539. <https://doi.org/10.1093/occmed/kqx124>
- Hafycz, J. M., & Naidoo, N. N. (2019). Sleep, aging, and cellular health: Aged-related changes in sleep and protein homeostasis converge in neurodegenerative diseases. In *Frontiers in Aging Neuroscience* (Vol. 11, Issue JUN). Frontiers Media S.A. <https://doi.org/10.3389/fnagi.2019.00140>
- Haimov, I., & Shatil, E. (2013). Cognitive Training Improves Sleep Quality and Cognitive Function among Older Adults with Insomnia. *PLoS ONE*, 8(4). <https://doi.org/10.1371/journal.pone.0061390>
- Ielapi, N., Andreucci, M., Bracale, U. M., Costa, D., Bevacqua, E., Bitonti, A., Mellace, S., Buffone, G., Candido, S., Provenzano, M., & Serra, R. (2021). Insomnia prevalence among Italian night-shift nurses. *Nursing Reports*, 11(3), 530–535. <https://doi.org/10.3390/nursrep11030050>
- Jan, J. E., Reiter, R. J., Bax, M. C. O., Ribary, U., Freeman, R. D., & Wasdell, M. B. (2010). Long-term sleep disturbances in children: A cause of neuronal loss. In *European Journal of Paediatric Neurology* (Vol. 14, Issue 5, pp. 380–390). <https://doi.org/10.1016/j.ejpn.2010.05.001>
- Roth, T. C., Rattenborg, N. C., & Pravosudov, V. V. (2010). The ecological relevance of sleep: The trade-off between sleep, memory and energy conservation. In *Philosophical Transactions of the Royal Society B: Biological Sciences* (Vol. 365, Issue 1542, pp. 945–959). Royal Society. <https://doi.org/10.1098/rstb.2009.0209>
- Smagula, S. F., Reynolds, C. F., Ancoli-Israel, S., Barrett-Connor, E., Dam, T. T., Hughes-Austin, J. M., Paudel, M., Redline, S., Stone, K. L., & Cauley, J. A. (2015). Sleep architecture and mental health among community-dwelling older men. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 70(5), 673–681. <https://doi.org/10.1093/geronb/gbt125>
- Spiegelhalter, K., Regen, W., Nanovska, S., Baglioni, C., & Riemann, D. (2013). Comorbid sleep disorders in neuropsychiatric disorders across the life cycle. *Current Psychiatry Reports*, 15(6). <https://doi.org/10.1007/s11920-013-0364-5>
- Tousignant, O. H., Hopkins, S. W., Stark, A. M., & Fireman, G. D. (2022). Psychological wellbeing, worry, and resilience-based coping during covid-19 in relation to sleep quality. *International Journal of Environmental Research and Public Health*, 19(1). <https://doi.org/10.3390/ijerph19010050>
- Wakefield, M. K., Williams, D. R., Menestrel, S. Le, & Flaubert, J. L. (Eds.). (2021). *The Future of Nursing 2020-2030*. National Academies Press. <https://doi.org/10.17226/25982>