



The Relationship Between Stress and Sleep Quality Among Undergraduate Students In The Applied Nursing Program At Poltekkes Kemenkes Palu

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ABSTRACT

Background: Students in health-related study programs frequently experience academic demands, clinical preparation, and organizational responsibilities that may contribute to psychological stress. Stress is known to potentially affect sleep quality and overall well-being. This study aimed to examine the association between perceived stress and sleep quality among undergraduate students in the Applied Nursing Program at Poltekkes Kemenkes Palu.

Method: This quantitative analytic study used a cross-sectional design. A total of 77 students were selected from a population of 335 using simple random sampling. Stress levels were measured using the **Perceived Stress Scale-10 (PSS-10)**, while sleep quality was assessed using the **Pittsburgh Sleep Quality Index (PSQI)**. Stress was categorized into mild and moderate levels, while sleep quality was categorized as good or poor based on standard PSQI scoring. Data were analyzed using the chi-square test with a significance level of $p < 0.05$.

Results: Most respondents experienced moderate stress (53 students; 68.8%), while 24 students (31.2%) had mild stress. In terms of sleep quality, 65 students (84.4%) reported poor sleep quality, and 12 students (15.6%) reported good sleep quality. Among students with moderate stress, 94.3% experienced poor sleep quality. The chi-square test showed a significant association between stress level and sleep quality ($p = 0.001$). The effect size (OR/PR) and 95% confidence interval were not calculated in this analysis.

Conclusion: There is a statistically significant association between perceived stress and sleep quality among undergraduate nursing students at Poltekkes Kemenkes Palu. The findings suggest the importance of stress management interventions to support better sleep quality among students.



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INTRODUCTION

College students are individuals pursuing higher education to acquire knowledge, skills, and a diploma or degree in their field of study. They are also required to complete academic assignments by the deadlines. Conversely, students are expected to participate in activities outside of their academic studies. They must engage in community activities and campus organizations. This impacts students' ability to manage their time effectively. While pursuing their education, students are often involved in a variety of demanding activities both on and off campus, which can potentially cause stress or problems for them. One of the most common problems experienced by students is stress ([Hakim et al, 2024](#)).

Stress is an adverse physical and emotional state that occurs when a person tries to cope with a situation they perceive as threatening. If they are unable to cope with the threat, it can disrupt or jeopardize their daily activities ([Sahadan, Paturusi, and Pongoh, 2024](#)). Therefore, the stress experienced by students can affect various aspects of their lives, including their physical and emotional well-being, their cognitive processes, and their social relationships. Students may become unmotivated and find it difficult to concentrate, making it hard for them to complete assignments on time ([Deng et al., 2022](#)). There are two factors that cause stress in students: external and internal factors. Internal factors include the students' own abilities and intelligence. External factors include pressure from the campus environment such as the burden of assignments and exams as well as family expectations regarding their children's achievements and future, including economic issues like tuition costs, daily necessities, and anxiety about the family's future financial situation ([Zurrahmi and Ncusri, 2021](#)).

According to data from the World Health Organization (WHO), the number of stress cases worldwide is relatively high, affecting an estimated 350 million people. Furthermore, stress ranks fourth among global health issues. The percentage of students experiencing stress worldwide ranges from 38% to 71%, while in Asia it ranges from 39.6% to 61.3% ([Piao, Xie, & Managi, 2024](#)). According to data on international sleep disorders, the primary causes of sleep disturbances are anxiety (5–15%), alcohol dependence (10%), going to bed too late (10%), schedule changes (2–5%), illness (<1%), and stress (65%) ([Sibarani, Widayati, and Mutiasari, 2023](#)). According to data from the 2023 Indonesian Health Survey (SKI), the prevalence of depression in the past two weeks among Indonesians aged 15 and older was 1.4%. This prevalence of depression varies across provinces. The provinces with the highest prevalence of depression are West Java (3.3%), East Kalimantan (2.2%), Banten and South Sulawesi (1.7%), Jakarta and Yogyakarta, as well as Central Sulawesi (1.5%). Meanwhile, the provinces with the lowest prevalence are Jambi, the Bangka Belitung Islands, and Central Kalimantan (0.3%), and Bali (0.2%) ([SKI, 2023](#)).

The researchers conducted preliminary interviews on January 17, 2025, with 10 randomly selected students in the Applied Nursing Bachelor's Program at the Palu Public Health Polytechnic of them reported feeling easily irritable over the past month, even over trivial matters, and frequently experiencing dizziness due to anxiety about whether they could graduate on time; they also often suffered from headaches, had difficulty concentrating, and could not fall asleep until 1:00 AM WITA. Three of them reported feeling confused about adapting to the campus environment and unsure about concepts they hadn't yet grasped, as well as frequently feeling exhausted from balancing academic activities with organizational commitments. The other two students mentioned poor time management when completing assignments, experiencing sleep difficulties due to worrying about unfinished tasks that needed to be submitted soon, and a decrease in appetite.

Based on the above phenomena, the objective of this study is to determine the relationship between stress and sleep quality among students in the Applied Nursing Undergraduate Program at Poltekkes Kemenkes Palu.

METHODS

Study Design

This study employed a quantitative analytic design with a cross-sectional approach. This design was used to examine the association between perceived stress and sleep quality among undergraduate students in the Applied Nursing Program at Poltekkes Kemenkes Palu. In this study, the independent variable was perceived stress, while the dependent variable was sleep quality. Both variables were measured once at the same point in time using structured questionnaires.

Study Setting and Period

The study was conducted at the Applied Nursing Program, Poltekkes Kemenkes Palu, Central Sulawesi, Indonesia. Data collection was carried out from March 5 to March 7, 2025.

Study Population and Sampling

The study population consisted of all active students enrolled in the Applied Nursing Program at Poltekkes Kemenkes Palu from the 2021, 2022, 2023, and 2024 cohorts, with a total population of 335 students. The sample size was calculated using the Slovin formula where n is the sample size, N is the total population, and e is the margin of error. Using a population of 335 students and a margin of error of 10% ($e = 0.10$), the minimum sample size was 77.01, which was rounded to 77 respondents. Proportional allocation was applied to ensure representation from each cohort. The sample consisted of 17 students from the 2021 cohort/level 4, 16 students from the 2022 cohort/level 3, 24 students from the 2023 cohort/level 2, and 20 students from the 2024 cohort/level 1. Participants were selected using simple random sampling. The sampling frame was prepared from the list of eligible students in each cohort. The names of students were written on paper according to their cohort, and the selection was conducted using a lottery technique outside the data collection period. Students whose names were drawn were invited to participate in the study.

The inclusion criteria were active students of the Applied Nursing Program from the 2021–2024 cohorts, willing to participate, and providing written informed consent. Students who were absent during data collection, declined participation, or submitted incomplete questionnaires were excluded from the study. If a selected student did not meet the criteria or declined to participate, another student from the same cohort was selected using the same random procedure.

Variables and Measurements

The independent variable in this study was perceived stress. Stress was measured using the Perceived Stress Scale-10 (PSS-10), which consists of 10 items assessing the degree to which respondents perceived situations in their life as unpredictable, uncontrollable, and stressful during the previous month. The total score ranges from 0 to 40. Stress scores were categorized as follows: mild stress = 0–13, moderate stress = 14–26, and severe stress = 27–40.

The dependent variable was sleep quality. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), which consists of 19 items covering seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction. Each component is scored from 0 to 3, and the total global score ranges from 0 to 21. A score of 0–5 indicates good sleep quality, while a score of 6–21 indicates poor sleep quality. Both stress and sleep quality were measured on an ordinal scale and were analyzed as categorical variables.

Data Collection Procedures

Before data collection, the researcher obtained research permission and ethical approval. Eligible respondents were selected through simple random sampling based on the list of students in each cohort. The researcher then approached the selected students, explained the study objectives, procedures, benefits, potential risks, confidentiality, and participants' rights.

Students who agreed to participate signed the informed consent form before completing the questionnaires. Data were collected using self-administered questionnaires consisting of respondent characteristics, the PSS-10 questionnaire for perceived stress, and the PSQI questionnaire for sleep quality. Respondents completed the questionnaires independently, and the researcher checked the returned forms for completeness before data entry.

Data Quality Assurance

Data quality was maintained through several procedures. The study used structured questionnaires that had been used and tested in previous studies. The PSS-10 instrument was used to measure perceived stress, while the PSQI was used to measure sleep quality. Prior to

analysis, all completed questionnaires were checked through editing to ensure completeness and consistency of responses. The data were then coded, scored according to the scoring guidelines of each instrument, tabulated, and entered into statistical software. Data entry was checked to minimize errors. Respondents' identities were replaced with codes to maintain anonymity and confidentiality.

Statistical Analysis

Data were analyzed using univariate and bivariate analysis. Univariate analysis was used to describe respondents' characteristics, stress levels, and sleep quality using frequencies and percentages. Bivariate analysis was conducted to examine the association between perceived stress and sleep quality. The chi-square test was used because both variables were categorical. When the expected cell count was less than 5, Fisher's exact test or continuity correction was considered. The significance level was set at $\alpha = 0.05$ with a 95% confidence level. A p-value ≤ 0.05 was considered statistically significant. To strengthen the interpretation of the association, an effect size such as the prevalence ratio or odds ratio with a 95% confidence interval can be reported in addition to the p-value.

Ethical Considerations

This study obtained ethical approval from the Ethics Committee of Poltekkes Kemenkes Palu with approval number 000507/KEPK POLTEKKES KEMENKES PALU/2025. All participants received an explanation regarding the study objectives, procedures, benefits, potential risks, rights, and obligations through a research information sheet. Participation was voluntary, and written informed consent was obtained from all respondents before data collection. Respondents had the right to refuse or withdraw from the study at any time without any consequences. Confidentiality and anonymity were maintained by using respondent codes instead of personal identifiers. The collected data were used only for research purposes and were stored securely by the researcher.

RESULTS

The characteristics of respondents in this study can be seen in the following table.

Tabel 1. Respondent Characteristic, age, gender and level of class (n=77)

Characteristic	Frekuensi	Presentase (%)
Age		
18-19 Year	34	44,2
20-21 Year	30	39,0
22-23 Year	13	16,8
Gender		
Male	22	28,6
Female	55	71,4
Level of class		
4	17	22,0
3	16	20,8
2	24	31,2
1	20	26,0

Source: Primary data, 2026

Table 1 shows that there were 77 respondents, with a frequency distribution based on respondent characteristics: the largest group was those aged 18–19, with 34 respondents (44.2%), and the majority were female, with 55 respondents (71.4%), while the largest group was those in grade 2, totaling 24 respondents (31.2%).

Tabel 2. Respondent Characteristic, level stress and sleep quality (n=77)

Characteristic	Frekuensi	Presentase (%)
Level stress		
Light	24	31.2
Moderate	53	68.8
Sleep quality		
Good	12	15,6
Bad	65	84,4

Source: Primary data, 2026

Table 2 shows that there were 77 respondents, with the frequency distribution of respondents based on stress levels indicating that more respondents experienced moderate stress (53 respondents, or 68.8%), while fewer experienced mild stress (24 respondents, or 31.2%). Furthermore, based on sleep quality, a larger number of respondents 65 (84.4%) reported poor sleep quality, while a smaller number 12 (15.6%) reported good sleep quality.

Tabel 3. The Relationship Between Stress and Sleep Quality Among College Students (n=77)

Table 3: The Relationship Between Stress and Sleep Quality Among College Students (n = 77)							
Stress	Kualitas Tidur						p-value
	Quality Sleep		Poor Sleep		Total		
	f	%	f	%	f	%	
Light	9	37,5	15	62,5	24	100	0,001
Moderate	3	5,7	50	94,3	53	100	
Total	12	15.6	65	84.4	77	100	

Source: Primary data, 2026

Table 3 presents the results of an analysis of the relationship between stress and sleep quality among 77 students in the Applied Nursing Bachelor's Program at the Palu Public Health Polytechnic (Poltekkes Kemenkes Palu). The analysis revealed that of the 77 respondents, 9 respondents (37.5%) experienced mild stress and had good-quality sleep, while 15 respondents (62.5%) experienced mild stress and had poor-quality sleep. Additionally, 3 respondents (5.7%) experienced moderate stress and had good-quality sleep, while 50 respondents (94.3%) experienced moderate stress and had poor-quality sleep. The results of the chi-square test showed a p-value of 0.001, meaning the p-value was less than the significance level ($\alpha = 0.05$), so the alternative hypothesis (H_a) was accepted and the null hypothesis (H_0) was rejected. This indicates a significant association between stress and sleep quality among students in the Applied Nursing Bachelor's Program at Poltekkes Kemenkes Palu.

DISCUSSION

According to the researchers' analysis, the majority of respondents experienced moderate stress, although many felt confident in their ability to cope with personal problems. This suggests that self-confidence has not yet been fully effective in reducing the stress levels they experience. The demands of responsibilities, as well as academic obligations, laboratory work, and time management, remain external factors that trigger stress. Additionally, poor sleep quality is also commonly experienced by respondents, as evidenced by high levels of daytime disruptions, such as fatigue and decreased concentration. Thus, although stress management skills are fairly good, external factors still exert a significant influence on stress levels and sleep quality among students.

This aligns with the theory that mild stress is a common type of stress experienced by every individual and typically lasts only a few minutes to several hours. Meanwhile, moderate stress tends to last longer than mild stress, with symptoms including excessive anxiety, headaches, loss of appetite, and sleep disturbances ([Handoko, 2022](#)).

Consistent with these findings, the results of this study are also supported by research conducted at Sari Mulia University titled “The Relationship Between Stress and Sleep Quality Among Final-Year Health Science Students,” which found a significant relationship between stress levels and sleep quality, with a strong correlation ($p\text{-value } 0.000 < 0.05$, correlation coefficient 0.646) ([Ruriyanty.R., Mohtar, &., 2023](#)). In addition, similar findings were reported in a study conducted at the Faculty of Medicine, HKBP Nommensen University, titled “The Relationship Between Stress and Sleep Quality Among College Students,” which found a significant association between stress and sleep quality ($p=0.037$) ([Hutahaeen, Sitepu, and Hendra, 2022](#)). A similar study was also conducted at the Bali Institute of Technology and Health, titled “The Relationship Between Academic Stress Levels and Sleep Quality Among Third-Year College Students,” which found a significant relationship between academic stress levels and sleep quality among third-year college students ($p\text{-value } < 0.05$) ([Septianingsih, Negara, and Wulansari, 2024](#)).

Further support for these findings is evident in a study conducted at the Faculty of Nursing, Anvent Indonesia University in Parompong, West Bandung, titled “The Relationship Between Stress Levels and Sleep Quality Among Nursing Students During the Preparation of Scientific Papers,” which found a significant association between stress levels and sleep quality ($r = -0.25$; $p = 0.09$). These results suggest that other factors may have a greater influence on nursing students’ sleep quality, such as stress management education and a healthy lifestyle ([Nainggolan and Rantung, 2025](#)).

Furthermore, a study conducted at Aisiyiah University in Yogyakarta titled “The Relationship Between Stress Levels and Sleep Quality Among 2019 Anesthesiology Nursing Students” found that, based on statistical analysis using Spearman’s rank correlation test, the result was significant at $p = 0.032 < 0.05$, meaning that stress levels are associated with sleep quality. based on the criteria for a significant correlation level with $p = 0.240$, the relationship between stress levels and sleep quality is quite strong ([Beatrice, Yunicha Dwi, 2023](#)). Another relevant study was also conducted at Sari Mulia University in Banjarmasin, titled “The Relationship Between Stress Levels and Sleep Quality Among Final-Year Health Science Students,” which found a significant relationship between stress levels and sleep quality, with a strong correlation ($p\text{-value } 0.000 < 0.05$, correlation coefficient 0.646) ([Ruriyanty.R et al., 2023](#)). Furthermore, a study conducted at STIKES Widya Dharma Husada in Tangerang titled “The Relationship Between Stress and Sleep Quality Among Seventh-Semester Public Health Students” found a relationship between stress and sleep quality; the results of the chi-square test analysis showed a $p\text{-value}$ of 0.030 at $\alpha=0.05$, which means that the alternative hypothesis (H_a) is accepted and the null hypothesis (H_0) is rejected ([Ariyanto, Purnawan, and Romlah, 2022](#)). A similar study was also conducted at the Applied Pharmacy Bachelor’s Program at the Makassar Public Health Polytechnic under the Ministry of Health, titled “The Relationship Between Stress Levels and Sleep Quality Among Students in the Applied Pharmacy Bachelor’s Program,” which found a significant association between stress levels and sleep quality ($p\text{-value: } 0.002 < 0.05$) ([Rahmadhani, Ibrahim, and Adhayanti, 2023](#)).

In addition, the findings of this study are supported by research conducted at Muhammadiyah University of Surakarta titled “The Relationship Between Stress Levels and Emotional Stability and Sleep Quality Among Psychology Students,” which found a significant relationship between stress levels and emotional stability and sleep quality, with a $p\text{-value}$ of $0.025 < 0.05$ ([Ummah, 2024](#)).

CONCLUSION

This study concludes that there is a statistically significant relationship between perceived stress and sleep quality among undergraduate students in the Applied Nursing Program at Poltekkes Kemenkes Palu ($p = 0.001$). Most students experienced moderate stress and poor sleep quality, indicating that higher stress levels are associated with worse sleep outcomes. These findings highlight the importance of implementing effective stress management strategies to

improve students' sleep quality and overall well-being. Therefore, interventions such as counseling services, time management training, and stress reduction programs are recommended for nursing students.

Author's Contribution Statement

All authors contributed substantially to this study. The study conception and design were developed collaboratively by the research team. Data collection was carried out by the primary investigators. Data analysis and interpretation were performed jointly by all authors. All authors participated in drafting and critically revising the manuscript for important intellectual content. The final version of the manuscript was reviewed and approved by all authors prior to submission.

Conflicts of Interest

The authors declare that there are no conflicts of interest related to this study.

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