Original Research

# Sleep Quality and Stress Levels Among Second-Year Nursing Students

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**ABSTRACT**

*Background: Nursing students experience stress in various forms and levels, which can negatively affect their well-being if not managed properly. The accumulation of stress can lead to significant consequences if unresolved. This study analyzes the relationship between stress levels and sleep quality among second-year nursing students.*

*Methods: This cross-sectional study used simple random sampling to select 59 nursing students. Stress levels were assessed using the Depression Anxiety and Stress Scale (DASS), while sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Data ware analyzed using the Kendall tau_b correlation test.*

*Results: Stress level is associated with sleep quality in second year nursing students (p value 0.005). The strength of the relationship in the category is quite strong (r = 0.344). The lighter the stress level, the better the sleep quality of second-year nursing students.*

*Conclusion: Stress levels are significantly related to sleep quality in second-year nursing students. Preventive measures and stress management strategies, such as counseling, are recommended to improve sleep quality.*

## INTRODUCTION

Stress is inseparable from every aspect of life. Stress can be experienced by nursing students in different forms and levels, and in different time periods. Stress in nursing students can have negative implications if it accumulates in individual lives without the right solution. The accumulation of stress is the result of an individual's inability to cope with and control stress. Stress occurs due to the body's experience of adjusting to a constantly changing environment. Stress has physical, emotional, and can have both positive and negative effects. Positive influences of stress include aiding decisions to act. Other influences are negative influences such as causing feelings of pressure, rejection, anger, and depression, which will eventually lead to health problems (AbuAnzeh, 2020; Bodys-Cupak et al., 2022).

Research by Lavoie-Tremblay et al. (2022), stated that nursing students experience severe pressure during the study process. Students as campus communities are seen as

intellectuals and geniuses, so they are required to undergo all things responsibly and according to their portions. In the first and second years, nursing students will experience an adjustment process entering college. Environmental changes and different learning methods that will often cause psychological problems. This adjustment process is a way for individuals to try to cope with stress, conflict, tension and fulfil their needs. Nursing students often complain of disturbed sleep patterns, resulting in several problems related to stress and prolonged sleep disturbances (Gunes Aktan et al., 2020).

Stress is one of the causes of sleep disorders. Nursing students with psychological problems have symptoms of anxiety, stress, and depression. In research conducted by Le Bon (2021)showed that the level of academic stress in the first year of lectures in nursing students, the majority experienced severe stress. Increases in the hormones epinephrine, norepinephrine, and cortisol caused by stress can affect the central nervous system and cause a state of alertness of the central nervous system. These hormonal changes also affect the Non-Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) sleep cycles, so that sleepers often wake up at night and have nightmares (Le Bon, 2021).

The prevalence of students in the world who experience stress ranges from 38-71%, and 39.6-61.3% in Asia. Meanwhile, the prevalence of students experiencing stress in Indonesia alone was found to be 36.7-71.6% (Haryati et al., 2020). Research by Sulana et al. (2020) stated that the level of stress in college students today has increased to five times higher than the incidence of stress in adolescents. Research by (Kementerian Kesehatan RI, 2021) shows that the number of Indonesians aged more than 15 years has increased mental emotional disorders and became 7% in 2018. The prevalence of emotional disorders at the age of more than 15 years has also increased in Surakarta City by 1,056 people. Data from the Central Java Provincial Social Welfare Office in 2020 recorded 704,000 people experiencing mental disorders, 608,000 people experiencing stress, and 96,000 diagnosed with mental disorders (Dinas Kesehatan Provinsi Jawa Tengah, 2023).

Research by Crivello et al. (2019) stated that the prevalence of sleep pattern disorders according to the Centers for Disease Control and Prevention (CDC). Sleep pattern disorders include 35.2% of adults (aged ≥18 years) having a short sleep duration (<7 hours). The International Sleep Disorder shows prevalence data on the causes of sleep disorders are restlessness (5 to 15%), alcohol dependence (10%), late sleep (10%), schedule changes (2 to 5%), illness (<1%) and stress (65%). The description of the phenomenon above is the basis for conducting research entitled "The Relationship Stress Level with Sleep Quality in Second Year Nursing Students ".

**MATERIALS AND METHOD**

This research design is a quantitative analytical study that aims to test hypotheses and conduct a more in-depth interpretation of the relationship between stress levels and sleep quality in second year nursing students. This type of research uses *cross sectional*, which is a phenomenon that is only observed at one specific point in time. In this study, each research subject was only observed once and measurements were made of the character status or subject variables at the same time (Dahlan, 2021).

The research data collection was conducted from November to December 2023. The research was conducted at one of the Health Polytechnics in Surakarta City. The sample is part of the population that can be reached and has the same characteristics as the population being sampled. The research inclusion criteria include second-year nursing students in the odd semester of 2022 who are still actively studying. The research

exclusion criteria include odd semester second year nursing students who are not willing to be subjects in the study. The sampling technique in this study was a *simple random sampling* technique with a *margin of error of* 10%, so that the sample size was 59 students (Hardani et al., 2020) as follows:

$$n = \frac{N}{1 + Ne^2}$$

Description:
n = number of samples
N = total population
e = significant level (0.1)

The independent variable in this study is the level of stress in second-year nursing students, while the dependent variable is the quality of sleep of second-year nursing students. Stress levels were measured by the *Depression Anxiety and Stress Scale* (DASS) 42 questionnaire consisting of 14 items. The assessment indicators on this questionnaire are 0 = not or never at all, 1 = according to what is experienced to a certain degree, or sometimes, 2 = often, 3 = very according to what is experienced, or almost all the time. The minimum score on this questionnaire was 0, and the maximum score was 42. The stress level was divided into 4 categories including mild stress score 0-10, moderate score 11-20, severe score 21-31, and very severe score 32-42. The validity test of the questionnaire is valid with a value range of 0.57-0.84; while the reliability test is 0.94 more than 0.60. questionnaire has a high level of validity and reliability (Bodys-Cupak et al., 2022).

Sleep quality was measured through the *Pittsburgh Sleep Quality Index* (PSQI) questionnaire. PSQI is an internationally accepted standardised test. The PSQI examines 6 dimensions in sleep quality with13 questions. These dimensions include sleep habit efficiency, sleep latency, sleep duration, problems during sleep, use of sleeping pills, daytime sleep dysfunction, and subjective sleep quality. The scoring indicators on this questionnaire were 0 = not at all, 1 = 1 time a week, 2 = 1-2 times a week, 3 = 3 times a week. The results of the minimum value of 0 and the maximum value of 39 are classified into 4 including good sleep patterns values 0-9, sufficient values 10-19, poor values 20-29, and very poor values 30-39. The PSQI has an internal consistency and reliability coefficient with a *Cronbach's Alpha* value of 0.753 (Ho et al., 2021; Scialpi et al., 2022; Zitser et al., 2022).

Bivariate analysis is an analysis used to determine the interaction between two variables in the form of comparative, associative, or correlative. The test is *Kendall's tau-b* to find the relationship between two or more variables with ordinal or ranked data. This study has passed the ethical clearance of the Health Research Ethics Commission of Dr. Moewardi Hospital Number 22/I/HREC/2023 dated 2 February 2023.

## RESULTS

Table 1. Characteristics of students By Gender and Class (n = 59 Students)

| Characteristics of Pregnant Women | n | % |
|---|---|---|
| **Gender** | | |
| Male | 11 | 18.6 |
| Female | 48 | 81.4 |
| **Total** | **59** | **100** |

| Characteristics of Pregnant Women | n | % |
|---|---|---|
| **Class** | | |
| A | 27 | 45.7 |
| B | 12 | 20.4 |
| C | 20 | 33.9 |
| **Total** | **59** | **100** |

Note: n = number; % = percentage

Table 1. describes the characteristics of sophomore nursing students based on gender and class. The results of the analysis showed that the gender of nursing students was female at 81.4%. More nursing students come from Class A, 45.7%

**Table 2.** Relationship between Stress Level and Sleep Quality in Second Year Nursing Students

| Stress Level of Nursing Students | Sleep Quality of Nursing Students | | | | | | Total | | p value* | r** |
|---|---|---|---|---|---|---|---|---|---|---|
| | Good | | Simply | | Bad | | | | | |
| | n | % | n | % | n | % | n | % | | |
| Lightweight | 6 | 8.5 | 6 | 11.9 | 0 | 0 | 12 | 20.3 | 0.005 | 0.344 |
| Medium | 6 | 10.2 | 21 | 35.6 | 2 | 3.4 | 29 | 49.2 | | |
| Weight | 4 | 6.8 | 6 | 10.2 | 6 | 10.2 | 16 | 27.1 | | |
| Very Heavy | 0 | 0 | 0 | 0 | 2 | 3.4 | 2 | 3.4 | | |
| **Total** | 16 | 25.4 | 33 | 57.6 | 10 | 16.9 | 59 | 100 | | |

Note: n = number; % = percentage ; * Kendall's tau-b test; **Correlation coefficient

Table 2. Analysis of the Kendall's tau-b correlation test obtained a significant value or p value of 0.005 (p value <0.05). Stress levels are significantly related to sleep quality in second-year nursing students. The strength of the relationship in the category is quite strong (r = 0.344). The interpretation of the cross distribution table is that the lighter the stress level, the better the sleep quality of second year nursing students.

## DISCUSSION

This study proves that stress levels are related to the quality of sleep of stressed nursing students. The majority of the research subjects were female. This is because women have hormone levels that are more fluactive than men. The results of this study are supported by (Lavoie-Tremblay et al., 2022)which states that the stress response of each student is different. Female students are more susceptible to stressful conditions. This condition is controlled by the hormone's oxytocin, esterogen, and sex hormones as supporting factors which are clearly at different levels in men and women (AbuAnzeh, 2020).

This study found that most nursing students experienced stress at a moderate level. The increased stress is largely attributed to the new responsibilities and expectations they encounter as they prepare to enter clinical practice. These findings are consistent with the research, which also indicated that the majority of nursing students experienced moderate levels of stress (Bodys-Cupak et al., 2022; Gunes Aktan et al., 2020; Lavoie-Tremblay et al., 2022). This suggests that the transition from academic learning to field practice is a significant source of psychological pressure. The stress may stem from concerns about clinical competence, patient safety, and adapting to real-world healthcare environments. Overall, the study highlights that nursing students are vulnerable to stress, particularly

during the transition to practical training. In this study, the majority of nursing students had sufficient sleep quality (Muttaqin et al., 2021). Research by the Centers for Disease Control and Prevention (CDC) shows 35.2% of adults over the age of 18 have a short sleep duration of less than 7 hours. International of Sleep Disorder shows data on the prevalence of causes of sleep disorders are restlessness, alcohol dependence, late sleep, schedule changes, illness, and stress (Crivello et al., 2019).

The results obtained in this study showed a significant relationship between stress levels and the quality of sleep of sophomore students. These results are supported by research that the level of stress most experienced by final year medical students is moderate stress. The stress experienced by students has physical, emotional, cognitive, and interpersonal impacts. Students become discouraged and find it difficult to concentrate during guidance, so they cannot complete their final assignments on time. There are two factors that cause stress in students who are preparing a thesis, namely external and internal factors. Internal factors are in the form of students' abilities and intelligence; while external factors are campus, family, and financial guidance(De Los Santos et al., 2022; Nsengimana et al., 2023).

The study found a significant relationship between stress levels and sleep quality in sophomore students. Stress affected students physically and mentally, causing difficulty in focusing, discouragement, and delays in completing academic tasks. Internal stress factors included personal ability and intelligence, while external factors involved academic pressure, family dynamics, and financial challenges (De Los Santos et al., 2022; Nsengimana et al., 2023). This study is limited by unmeasured confounding variables that may influence sleep quality, such as anxiety and smartphone use. Future studies are recommended to apply multivariate analysis to assess the impact of these factors on the sleep quality of nursing students.

**CONCLUSION**

Stress is related to the sleep quality of second-level nursing students. High levels of stress can lead to sleep disturbances that affect both the physical and mental health of students. Nursing students who are working on their final projects are at greater risk of experiencing higher stress levels compared to other students. Therefore, it is crucial for nursing educational institutions to provide psychological support. One effective support strategy is the provision of counseling services to help students manage stress effectively.

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