

The Relationship Between Social Anxiety and Sleep Quality of Final Year Nursing Students at Gorontalo State University

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ABSTRACT

Social anxiety and poor sleep quality are problems that may be experienced by final-year students as a result of academic demands associated with completing their final projects. This study aimed to analyze the relationship between social anxiety and sleep quality among final-year nursing students at Universitas Negeri Gorontalo. A quantitative correlational study with a cross-sectional approach was conducted in February–March 2026, involving 94 final-year nursing students selected using purposive sampling. Social anxiety was assessed using the Social Anxiety Scale for Adolescents (SAS-A), while sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). The data were analyzed using descriptive statistics and Spearman's rank correlation test. The results showed that the majority of respondents experienced moderate levels of social anxiety (64.9%), while 17.0% experienced high levels and 18.1% experienced low levels of social anxiety. Overall, 85.1% of respondents had poor sleep quality, whereas 14.9% had good sleep quality. The analysis demonstrated a statistically significant positive correlation between social anxiety and sleep quality scores ($r = 0.245$; $p = 0.017$), with a relatively weak correlation strength. The positive correlation indicates that higher social anxiety scores were associated with higher PSQI scores, indicating poorer sleep quality. In conclusion, there was a statistically significant association between social anxiety and sleep quality among final-year nursing students, although the strength of the correlation was relatively weak.



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INTRODUCTION

University students represent the highest level of formal education and are exposed to various academic demands, particularly those associated with completing coursework and other academic responsibilities within prescribed deadlines. These demands tend to become more substantial among final-year students who have completed more than six semesters and entered the thesis or final-project stage as one of the requirements for graduation (Anggarawati et al., 2021). Final-year students are not only required to complete their research but must also manage various academic, social, and psychological pressures that arise throughout the process of completing their final projects (Pratama & Hadi, 2022). These circumstances make final-year students particularly vulnerable to various health problems, including sleep disturbances and psychological disorders. This vulnerability is especially relevant among nursing students because, in addition to academic demands, they are required to undertake learning activities and clinical experiences that require adaptability, concentration, and physical and psychological readiness.

Therefore, understanding the factors that influence the health conditions of final-year students is essential to supporting their academic success and overall well-being.

One health-related aspect that has received considerable attention is sleep quality. According to the National Sleep Foundation, sleep disturbances affect 67% of 1,508 individuals in Southeast Asia, with 7.3% occurring among university students (Foundation, 2018). In Indonesia, the prevalence of sleep disturbances is estimated at approximately 10%, corresponding to around 23 million people of the Indonesian population. Sleep quality is influenced by various factors, including sleep hygiene practices, sleep disturbances, physical conditions, and the use of sleep medication (Muntomimah & Mubarak, 2025). Sleep quality refers to an individual's level of satisfaction with their sleep and is characterized by the absence of complaints such as fatigue, restlessness, excessive daytime sleepiness, and impairment in daily functioning (R. J. Siregar & Yusuf, 2022). In addition to the quantitative dimension of sleep duration, sleep quality encompasses qualitative dimensions such as sleep latency, frequency of nocturnal awakenings, sleep efficiency, and subjective satisfaction with sleep (Tristianingsih & Handayani, 2021).

Good sleep quality plays an important role in supporting cognitive functioning, concentration, and academic performance among university students. Conversely, poor sleep quality may impair short-term memory, reduce concentration, and interfere with students' ability to complete academic tasks optimally (Selian et al., 2025). Furthermore, poor sleep quality may disrupt the sleep-wake cycle, thereby affecting brain functioning and overall health. University students are particularly vulnerable to sleep-quality problems because of intensive academic activities, demands for task completion, and the need to balance social and academic responsibilities. Among nursing students, academic demands and clinical experiences may further increase the burden that must be managed, potentially affecting their sleep patterns and sleep quality. Therefore, effective time-management skills are necessary to enable students to organize their daily activities without compromising their sleep quality (Hutagalung et al., 2022).

The consequences of poor sleep quality are not limited to physical health but are also associated with various psychological problems. Poor sleep quality may disrupt physiological and psychological balance. Psychological consequences may include stress, depression, anxiety, difficulties with concentration, and ineffective coping (Kadir et al., 2025). According to (Azizz, 2026), anxiety is a subjective experience characterized by feelings of discomfort arising from uncertainty and is often triggered by unfamiliar situations (Irawan et al., 2023). Persistent anxiety may negatively affect quality of life and academic performance, particularly during the final-project period, which is often characterized by considerable pressure. Among final-year students, anxiety related to social evaluation warrants particular attention because the process of completing a final project involves various interpersonal situations, including consultations with academic supervisors, seminars, presentations, and interactions with peers and other members of the academic community.

One form of anxiety that is particularly relevant to university students is social anxiety. Based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association), social anxiety is a type of anxiety disorder characterized by excessive fear of social situations and the possibility of receiving negative evaluation from others (Yudianfi, 2022). Social anxiety may occur in various situations, including public speaking, interacting with authority figures, communicating with unfamiliar individuals, and demonstrating one's abilities in front of others (Yudianfi, 2022). Individuals experiencing social anxiety tend to experience excessive fear, worry, and discomfort in social environments because they perceive a possibility of being negatively evaluated by others. This condition differs from general anxiety because it is specifically associated with social situations, negative evaluation, and a tendency to avoid or experience significant distress during social interactions. These characteristics are important to investigate among university students because academic demands involve not only academic achievement but also participation in communication, presentations, discussions, consultations, and interpersonal interactions. Consequently, social anxiety may affect not only an individual's

ability to engage in social interactions but also various aspects of daily life, including sleep quality (Sugiharno, 2022).

Social anxiety among university students has become an important concern given the high prevalence of anxiety disorders globally and nationally. Data from the World Health Organization indicate that approximately 4.4% of the global population experiences anxiety disorders, and in 2021, an estimated 359 million people were affected by anxiety disorders, making them among the most common mental disorders worldwide (Organization, 2025). In Indonesia, the 2023 Indonesian Health Survey reported that the prevalence of emotional mental disorders among individuals aged 15 years and older was approximately 2.0%. Meanwhile, in Gorontalo Province, the prevalence of emotional mental disorders was estimated at 17.7% among individuals aged 15 years and older (Soeli et al., 2023). These figures indicate that mental health problems, including social anxiety, remain issues requiring particular attention within higher-education settings. However, the prevalence of anxiety disorders in general does not directly reflect the specific condition of social anxiety. Therefore, a more specific assessment is necessary to examine anxiety characteristics associated with social situations and negative evaluation.

Social anxiety among university students may manifest in various behavioral patterns, including fear of negative evaluation, avoidance of unfamiliar social situations, and a general tendency to avoid social interactions (Kholisa et al., 2024). Students experiencing social anxiety may feel tense when expressing their opinions, fear making mistakes in front of others, experience difficulties establishing social relationships, and feel uncomfortable in various academic and non-academic situations. Theoretically, social anxiety may be associated with sleep quality through increased worry, repetitive thinking or rumination, and activation of the stress response, all of which may make it difficult for individuals to achieve a relaxed state before sleep. Research among university students has indicated that social anxiety may represent one pathway linking stress to poor sleep quality, while other studies have demonstrated an association between social anxiety and sleep quality and suggested that social anxiety may contribute to psychological mechanisms affecting sleep (Zhang et al., 2024). Thus, social anxiety represents an important psychological factor to investigate in relation to sleep quality among final-year university students.

Previous studies have demonstrated an association between anxiety and sleep quality among university students. Alwhaibi & Al Aloola, (2023) reported that, among 701 health sciences students, 80.3% experienced poor sleep quality and 52.9% experienced anxiety. Another study by Tanan & Sitorus, (2024) found that nearly half of the respondents experienced moderate anxiety (44.9%), while the majority had poor sleep quality (56.1%). The study also identified a significant association between anxiety and sleep quality among students at Institut Kesehatan Immanuel. Nevertheless, these studies have primarily focused on anxiety in general and have not specifically examined the relationship between social anxiety and sleep quality among final-year nursing students. Research examining social anxiety and sleep quality among university students has also indicated that the two variables may be associated; however, population characteristics, academic contexts, and educational demands may differ across student groups (Xiong et al., 2023). Accordingly, a research gap remains concerning studies that specifically examine the relationship between social anxiety and sleep quality among final-year nursing students, particularly within the context of nursing education in Indonesia. This gap warrants further investigation because final-year nursing students face academic and professional demands that may differ from those experienced by students in other academic disciplines.

A similar condition has been observed among final-year nursing students in the Department of Nursing at Universitas Negeri Gorontalo. Preliminary observations conducted in August 2025 indicated a tendency toward social anxiety and poor sleep quality among final-year students. Interviews with five students revealed that most participants reported feeling anxious when asked to present material in front of the class, accompanied by symptoms such as cold sweating, trembling hands, palpitations, and difficulty concentrating. In addition, students reported feeling nervous when interacting with lecturers or peers whom they perceived as academically superior.

These conditions were accompanied by sleep disturbances, including difficulty achieving restful sleep, frequent nocturnal awakenings, and fatigue upon waking. These preliminary findings indicate that social anxiety and sleep quality constitute tangible concerns among final-year nursing students who are undertaking their final projects. These findings further support the relevance of selecting final-year nursing students as the study population because they are at an educational stage characterized by the demands of completing a final project while simultaneously preparing to meet professional responsibilities as future nursing professionals.

Based on the foregoing discussion, the novelty of this study lies in its specific examination of the relationship between social anxiety and sleep quality among final-year nursing students rather than anxiety in general. The study further contributes to the literature by assessing social anxiety through three dimensions: Fear of Negative Evaluation (FNE), Social Avoidance and Distress in New Situations (SAD-New), and Social Avoidance and Distress in General Situations (SAD-General), while simultaneously assessing sleep quality among final-year students in the Department of Nursing at Universitas Negeri Gorontalo. The study also provides a theoretical contribution by examining the relationship between anxiety oriented toward social evaluation and interpersonal interaction and sleep quality. Conceptually, this relationship may be explained through concerns about negative evaluation, social avoidance, rumination, and heightened stress responses, which may interfere with the sleep process. Therefore, this study aims to analyze the relationship between social anxiety and sleep quality among final-year students in the Department of Nursing at Universitas Negeri Gorontalo. The findings are expected to contribute to the scientific literature on student mental health and provide a basis for developing intervention strategies aimed at improving students' sleep quality and psychological well-being.

METHODS

Research Design and Setting

This study employed a quantitative research design using a descriptive correlational approach and a cross-sectional design. A descriptive correlational design was used to identify the relationship or association between two or more variables without manipulating the variables under investigation (Hasbi, 2023). It should be explicitly acknowledged that the cross-sectional design used in this study can only identify associations between the variables examined and cannot establish causal relationships. The cross-sectional approach involved measuring the independent and dependent variables at the same point in time, thereby allowing the associations between variables to be analyzed simultaneously (Abduh et al., 2023). The study was conducted in the Nursing Science Study Program, Universitas Negeri Gorontalo, from February 24 to March 30, 2026.

Population and Sample

The study population consisted of all active final-year undergraduate nursing students from the 2021 and 2022 regular cohorts in the Department of Nursing, Faculty of Sports and Health, Universitas Negeri Gorontalo, comprising a total of 123 students (Subhaktiyasa, 2024). The sample size was determined using Slovin's formula with a 5% margin of error, resulting in a sample of 94 respondents. This sample size was considered adequate to provide sufficient statistical power to detect the expected correlation in this study. Participants were recruited using purposive sampling based on predetermined eligibility criteria (Abas & Tarigan, 2023). This sampling technique was selected to ensure that the participants represented the target group experiencing the demands associated with thesis completion, although the potential for selection bias was acknowledged, which may limit the generalizability of the findings.

The inclusion criteria were active final-year students who were currently preparing their undergraduate thesis, attending classes, and willing to participate in the study by providing

written informed consent. These criteria were established because this population is specifically exposed to academic demands and potential social anxiety. The exclusion criteria were students who were currently taking sleeping medication or antidepressants. These medications were excluded because their pharmacological effects may influence sleep patterns and potentially confound the measurement of the study variables.

Study Variables and Operational Definitions

The independent variable in this study was social anxiety, while the dependent variable was sleep quality (Susianti, 2024). Social anxiety was operationally defined as feelings of fear, anxiety, and discomfort in social situations arising from concerns about negative evaluation by others. It comprised three dimensions: Fear of Negative Evaluation (FNE), Social Avoidance and Distress in New Situations (SAD-New), and Social Avoidance and Distress in General Situations (SAD-General).

Sleep quality was defined as the level of satisfaction with and effectiveness of sleep during the preceding month. It comprised subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction.

Data Collection

Primary data were obtained directly from respondents through the completion of a respondent-characteristics questionnaire, the Social Anxiety Scale for Adolescents (SAS-A), and the Pittsburgh Sleep Quality Index (PSQI). Secondary data were obtained from academic records maintained by the Department of Nursing, Universitas Negeri Gorontalo (Arviyanda et al., 2023). Data collection was conducted after research permission had been obtained from the Nursing Science Study Program, Universitas Negeri Gorontalo. Questionnaires were administered directly in an offline format using paper-based forms to respondents who met the predetermined eligibility criteria.

Measurement Instruments

Social anxiety was assessed using the Social Anxiety Scale for Adolescents (SAS-A), developed by La Greca and Lopez. Although the instrument was originally developed for adolescent populations, its use among university students is considered conceptually and empirically relevant because final-year students remain in a developmental transition toward early adulthood and may be particularly exposed to evaluative situations and social pressures within the university environment. The instrument was translated into Indonesian and culturally adapted using procedures intended to ensure semantic equivalence and appropriateness for the cultural context of students in the study setting (Hayya & Surini, 2023).

The SAS-A consists of 20 items rated on a 5-point Likert scale, covering three domains: Fear of Negative Evaluation (6 items), Social Avoidance and Distress in New Situations (5 items), and Social Avoidance and Distress in General Situations (9 items). Total scores range from 20 to 100 and are categorized as low social anxiety (<51), moderate social anxiety (51–82), and high social anxiety (>82). Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), which comprises seven components and 18 questions. The total score ranges from 0 to 21, with scores of ≤5 indicating good sleep quality and scores >5 indicating poor sleep quality (Silitonga, 2023).

Validity and Reliability

The validity of the SAS-A was assessed among 30 nursing students at Universitas Muhammadiyah Gorontalo. The results showed that the calculated correlation coefficients (*r*) ranged from 0.587 to 0.786, exceeding the critical *r* value of 0.361 at the 5% significance level. Therefore, all SAS-A items were considered valid. The reliability analysis yielded a Cronbach's alpha coefficient of 0.905, indicating excellent internal consistency.

The PSQI was not revalidated in the present study because its validity and reliability had previously been established in a study involving university students with academic-pressure characteristics and demographic contexts considered sufficiently comparable to those of the present study (Silitonga, 2023). In the previous study, the calculated r values ranged from 0.296 to 0.556, exceeding the critical r value of 0.261, while the Cronbach's alpha coefficient was 0.649 (Silitonga, 2023). This reliability coefficient was considered to meet the minimum acceptable criterion for the reliability of a screening instrument in behavioral and psychological research and was therefore considered adequate for measurement purposes.

Data Processing and Statistical Analysis

The collected data underwent several stages of processing, including editing, coding, and tabulation (Senjaya et al., 2022). Editing was performed to ensure the completeness and consistency of respondents' answers. Subsequently, coding was conducted by converting categorical responses into numerical codes to facilitate statistical analysis. The coded data were then entered into a master table and processed using the Statistical Package for the Social Sciences (SPSS).

Data analysis consisted of univariate and bivariate analyses. Univariate analysis was used to describe respondent characteristics, levels of social anxiety, and sleep quality using frequency distributions and percentages (Senjaya et al., 2022). Bivariate analysis was conducted to examine the association between social anxiety and sleep quality using Spearman's rank correlation test. This statistical test was selected based on the methodological assumption that the variables were measured at an ordinal level and that the analysis focused on a monotonic association.

Before the correlation analysis, cumulative scores were calculated for each variable based on the respondents' questionnaire responses and subsequently converted into rank data. An association was considered statistically significant when the p -value was <0.05 . In addition to the p -value, the direction and strength of the association were reported using the correlation coefficient (r), accompanied by a confidence interval where feasible. Statistical significance and the strength of an association were interpreted as distinct concepts; statistical significance (p -value) does not necessarily indicate a strong correlation. Accordingly, the findings of this study were interpreted strictly in terms of associations between variables and were not used to infer that social anxiety causally contributes to poor sleep quality.

Ethical Considerations

This study adhered to research-ethics principles, including justice, beneficence, non-maleficence, respect for persons, anonymity, and confidentiality of respondent data (Haryani & Setyobroto, 2022). All respondents received an explanation of the study objectives, potential benefits, procedures, and their right to decline participation or withdraw from the study at any time. Written informed consent was obtained from all participants before data collection.

RESULTS

The study involved 94 final-year nursing students. The findings are presented in terms of the respondents' characteristics, the distribution of the study variables, and the results of the analysis examining the association between social anxiety and sleep quality

Respondent Characteristics

Table 1. Distribution of Respondents by Age

Age (years)	Frequency (n)	Percentage (%)
20	5	5,3
21	40	42,6

**The Relationship Between Social Anxiety and Sleep Quality of Final Year Nursing Students
at Gorontalo State University**

Laginta et al

Jurnal Kesehatan Metro Sai Wawai, Vol 19 No 1, December 2026, 1-15. E-ISSN 2657-1390 I P-SSN 19779-469X

Age (years)	Frequency (n)	Percentage (%)
22	37	39,4
23	12	12,8
Total	94	100

Source: *Primary Data, 2026*

Based on Table 1, the largest proportion of respondents were 21 years old (40 respondents; 42.6%), whereas the smallest proportion were 20 years old (5 respondents; 5.3%).

Table 2. Distribution of Respondents by Sex

Sex	Frequency (n)	Percentage (%)
Male	15	16,0
Female	79	84,0
Total	94	100

Source: *Primary Data, 2026*

As shown in Table 2, the majority of respondents were female (79 respondents; 84.0%), whereas male respondents accounted for 15 participants (16.0%).

Table 3. Distribution of Respondents' Characteristics by Semester

Semester	Frequency (n)	Percentage (%)
VIII	86	91,5
X	8	8,5
Total	94	100

Source: *Primary Data, 2026*

As shown in Table 3, the majority of respondents were in Semester VIII, comprising 86 respondents (91.5%). Meanwhile, 8 respondents (8.5%) were in Semester X.

Distribution of the Study Variables

Table 4. Distribution of Social Anxiety Among Final-Year Nursing Students

Social Anxiety Category	Frequency (n)	Percentage (%)
Low	17	18,1
Moderate	61	64,9
High	16	17,0
Total	94	100

Source: *Primary Data, 2026*

As shown in Table 4, the majority of respondents had a moderate level of social anxiety, comprising 61 respondents (64.9%). A total of 16 respondents (17.0%) had high levels of social anxiety, while 17 respondents (18.1%) had low levels of social anxiety.

Table 5. Distribution of Sleep Quality Among Final-Year Nursing Students

Sleep Quality	Frequency (n)	Percentage (%)
Good	14	14,9
Poor	80	85,1
Total	94	100

Source: *Primary Data, 2026*

As shown in Table 5, the majority of respondents reported poor sleep quality, comprising 80 respondents (85.1%). In contrast, 14 respondents (14.9%) reported good sleep quality

Hypothesis Testing Results

The association between social anxiety and sleep quality was analyzed using Spearman's rank-order correlation test because both study variables were measured on an ordinal scale.

Table 6. Results of Correlation Analysis between Social Anxiety and Sleep Quality.

Variables	Correlation Coefficient (r)	Sig. (2-tailed)	Interpretation
Social Anxiety - Sleep Quality	0,245	0,017	Significant

Source: *Primary Data, 2026*

As shown in Table 6, Spearman's rank-order correlation analysis revealed a statistically significant association between social anxiety and sleep quality among final-year nursing students ($r = 0.245$, $p = 0.017$, $n = 94$). The p-value of 0.017 was below the predefined significance level of $\alpha = 0.05$; therefore, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted. The correlation coefficient of 0.245 indicates a weak positive association between the two variables. The positive direction indicates that higher levels of social anxiety were associated with poorer sleep quality among the respondents. However, this finding indicates an association between social anxiety and sleep quality and does not imply a causal relationship.

DISCUSSION

Social Anxiety among Final-Year Nursing Students

Academic assessment may trigger concerns about how they are perceived and evaluated by others. Therefore, social anxiety in this study should not be viewed solely as a response to the demands of completing a final academic project, but also as a response to the interpersonal demands accompanying the completion of higher education. These findings are consistent with those of Rengkung et al., (2025), who reported that students in the process of completing their undergraduate theses tended to experience moderate to high levels of anxiety due to the academic pressures they encountered.

Similar findings were reported by Sugiharno, (2022), who identified academic demands during the completion of a final academic project as one of the factors contributing to anxiety among university students. The consistency of these findings suggests that the final-stage academic process represents a period of heightened vulnerability to psychological distress among students. However, the predominance of moderate social anxiety in the present study also indicates that similar academic pressures do not necessarily result in comparable levels of social anxiety among all students. Such differences may be associated with individual differences in adjustment capacity, emotional regulation, coping mechanisms, and access to social support.

With regard to the dimensions used to assess social anxiety, the findings indicate that students' anxiety was associated with fear of negative evaluation, avoidance of unfamiliar social situations, and general discomfort during social interactions. These findings are consistent with the conceptualization of social anxiety described by Kurniawan et al., (2024), who identified three dimensions of social anxiety: Fear of Negative Evaluation (FNE), Social Avoidance and Distress in New Situations (SAD-New), and Social Avoidance and Distress in General Situations (SAD-General). These dimensions reflect individuals' tendencies to fear negative evaluation, avoid certain social interactions, and experience discomfort across a range of social situations. In the context of nursing students, these dimensions are particularly relevant because nursing education requires not only academic achievement but also effective communication skills, interactions with

lecturers and peers, presentation skills, and active engagement in educational and healthcare settings.

The findings also indicate that some students experienced higher levels of social anxiety than their peers. This variation may be explained by the findings of Mar'atussolihah et al., (2024), who reported that fear of negative evaluation is a major factor contributing to social anxiety. In addition, Kholisa et al., (2024) found that lower self-concept was associated with higher levels of social anxiety among university students. Thus, individuals' perceptions of their own abilities and concerns about evaluation by their social environment appear to be important factors influencing the severity of social anxiety among students. For final-year nursing students, these concerns may be particularly salient because they are expected to demonstrate both academic and professional competence, whether in classroom activities or in situations requiring interpersonal communication.

Conversely, some students demonstrated lower levels of social anxiety. This finding suggests that these students may possess greater adaptive capacity when dealing with academic demands and social situations. This result is consistent with the findings of Cahyaningtyas & Mahanani, (2026), who reported that effective emotional regulation and adaptive coping mechanisms contributed to lower levels of anxiety among university students. Similarly, Sanger & Sepang, (2021) found that social support and a conducive environment could help students manage psychological stress more effectively. Therefore, students facing relatively similar academic demands may nevertheless exhibit different levels of social anxiety because psychological responses to stress are not uniform across individuals. Emotional regulation abilities, previous experiences in social situations, support from peers and family, and the coping strategies employed may serve as protective factors that enable some students to maintain adaptive functioning despite academic and interpersonal pressures.

Sleep Quality among Final-Year Nursing Students

The findings of this study indicate that the sleep quality of final-year nursing students tended to fall within the poor category. This finding suggests that a substantial proportion of students did not achieve optimal sleep patterns while completing their final academic projects. Based on the findings reported in the present study, students with poor sleep quality tended to stay up late because of academic assignments, thesis preparation, gadget use, and persistent concerns about academic and social issues. Some respondents also reported frequent nocturnal awakenings and difficulty returning to sleep. These conditions indicate that impaired sleep quality among university students is not solely related to sleep duration but may also involve sleep latency, sleep disturbances, sleep efficiency, and daytime dysfunction.

The findings of this study are consistent with those reported by Salsabila et al., (2024) and Hutagalung et al., (2022), who found that final-year university students tended to experience poor sleep quality due to academic pressure, fatigue, and the demands associated with completing their final academic projects. The consistency of these findings suggests that sleep quality is an important aspect of health that is particularly vulnerable to disruption when students are exposed to substantial academic demands. Nevertheless, the high proportion of students with poor sleep quality in the present study should also be interpreted in light of the specific characteristics of nursing students, who face diverse academic and professional demands. Nursing students are required not only to complete academic assignments and undergraduate theses but also to fulfill learning requirements related to professional competencies and engage in interpersonal interactions within educational and healthcare settings.

From a theoretical perspective, sleep quality refers to a condition reflecting an individual's ability to obtain adequate sleep in terms of both quantity and quality (Foundation, 2018). According to Azwar, (2022), sleep quality is determined not only by sleep duration but also by subjective aspects, such as sleep depth and the feeling of refreshment upon awakening. Therefore, poor sleep quality may occur even when individuals obtain a relatively adequate amount of sleep

if their sleep does not provide sufficient physical and psychological restoration. In the context of the present study, the demands associated with completing a final academic project may lead students to engage in academic activities until late at night or continue to experience academic concerns immediately before bedtime, thereby disrupting both the duration and quality of their rest.

The findings further indicate that students frequently engage in various academic activities that may reduce the time available for rest. Such conditions may increase their vulnerability to fatigue, impaired concentration, and reduced academic performance. This finding is consistent with Salikunna et al., (2022), who reported that poor sleep quality may adversely affect cognitive functioning, memory, and concentration. Conversely, individuals with good sleep quality tend to exhibit more optimal physical and psychological functioning. Nevertheless, not all students exposed to similar academic demands experience poor sleep quality. These differences may be associated with time-management skills, lifestyle patterns, gadget-use habits, daily activities, social support, and the ability to manage academic stress. Thus, sleep quality among final-year nursing students should be understood as a multifactorial condition rather than merely a consequence of completing a final academic project.

The Relationship between Social Anxiety and Sleep Quality

The findings of this study demonstrated a statistically significant association between social anxiety and sleep quality among final-year nursing students. Based on the Spearman rank correlation test conducted among 94 respondents, the analysis yielded a p-value of 0.017 and a correlation coefficient (r) of 0.245. The p-value below the 0.05 significance threshold indicates that the association was statistically significant. The correlation coefficient of 0.245 indicates a positive association of weak magnitude. Thus, higher levels of social anxiety were associated with poorer sleep quality among the students. However, the weak strength of the association indicates that social anxiety is unlikely to be the sole factor associated with variations in students' sleep quality.

These findings are consistent with Stuart's theory (Delima, 2026), which suggests that anxiety may affect sleep quality through increased sympathetic nervous system activity and cortisol release, resulting in a state of hyperarousal. This condition may make it more difficult for individuals to initiate sleep and maintain restorative sleep. Consequently, individuals may be more susceptible to sleep disturbances, nocturnal awakenings, and feelings of insufficient refreshment upon waking. From a theoretical perspective, this mechanism may help explain the association between social anxiety and sleep quality. When students experience concerns about negative evaluation, social interactions, or academic assessment, thoughts about potential mistakes or how they may be judged by others may remain active as bedtime approaches. Such cognitive arousal may interfere with relaxation and sustain a state of heightened alertness, thereby compromising the sleep process.

The findings of this study are also consistent with those of Mar'atussolihah et al., (2024), who reported that social anxiety was associated with poor sleep quality. Individuals experiencing social anxiety tend to have higher levels of psychological distress, which may adversely affect sleep comfort and restorative sleep. Thus, psychological factors may play an important role in determining sleep quality. Similarly, Ma et al., (2024) reported a positive association between social anxiety and sleep quality among 440 adolescents with depression. In their study, the standardized direct effect of social anxiety on sleep quality was 0.48 ($p < 0.001$), whereas the present study yielded a Spearman correlation coefficient of 0.245. These two effect estimates should not be directly compared because Ma et al. employed structural modeling and reported a standardized direct effect, whereas the present study used Spearman rank correlation. Nevertheless, the substantive direction of the association was consistent across the two studies, indicating that higher social anxiety was associated with poorer sleep quality.

In the context of final-year university students, social anxiety may arise from academic demands involving evaluation and social interaction, such as proposal seminars, research presentations, thesis examinations, and consultations with academic supervisors. According to Purnama, (2024), social anxiety among university students is frequently characterized by fear of negative evaluation, concerns about making mistakes, and a tendency to avoid certain social situations. These conditions may increase pre-sleep cognitive activity, making it more difficult for students to achieve the state of relaxation required for restorative sleep. Among nursing students, these demands may be particularly complex because nursing education also requires effective communication skills, interaction with lecturers and peers, and readiness to assume professional responsibilities. Therefore, academic and interpersonal pressures may provide a context that strengthens the association between social anxiety and sleep quality.

Nevertheless, the relatively weak strength of the association observed in this study indicates that variation in students' sleep quality cannot be fully explained by social anxiety alone. Siregar & Rengkuan, (2025) reported that students' sleep quality may also be influenced by academic stress, physical activity, social support, lifestyle patterns, and environmental conditions. These factors may potentially act as confounders because they may be associated with both social anxiety and sleep quality. For example, academic stress may increase students' concerns about academic demands while simultaneously disrupting their sleep patterns. Similarly, gadget use, daily activities, late-night habits, living conditions, and social support may independently influence sleep quality regardless of the level of social anxiety. Because these factors were not measured or controlled for in the present study, their contribution to the observed association between social anxiety and sleep quality cannot be determined.

Therefore, the weak association identified in this study should not be interpreted as indicating that social anxiety is unimportant; rather, it suggests that sleep quality is a multifactorial phenomenon. The findings of Ma et al., (2024) further illustrate that the relationship between social anxiety and sleep quality may involve additional factors. In their study, internet addiction was found to partially mediate the association between social anxiety and sleep quality, with a mediation effect accounting for 16.1% of the total effect. This finding suggests that the relationship between psychological factors and sleep quality may involve more complex mechanisms than a simple direct association. However, because internet addiction and other potential mediating variables were not assessed in the present study, such mechanisms cannot be assumed to apply to the population examined in this research.

Theoretically, the findings of this study reinforce the understanding that mental health and sleep quality are interrelated aspects of student well-being. However, given the cross-sectional design of the study, the observed association represents a relationship at a single point in time and cannot establish that social anxiety causes poor sleep quality. The observed association may also be influenced by other unmeasured factors. From a practical perspective, these findings highlight the importance of considering social anxiety as one potential target in efforts to improve students' sleep quality. Nevertheless, interventions should not focus exclusively on social anxiety. Management of academic stress, effective time management, social support, lifestyle patterns, and healthy sleep habits should also be considered as components of a more comprehensive approach to promoting better sleep quality among final-year nursing students.

Study Limitations

This study employed a cross-sectional design, in which social anxiety and sleep quality were assessed during a single period. Consequently, the findings can only demonstrate an association between the two variables and cannot establish a causal relationship. Specifically, the study cannot determine whether higher levels of social anxiety contribute to poorer sleep quality or whether poor sleep quality may, in turn, contribute to increased social anxiety.

The study used purposive sampling to recruit participants. Although this approach enabled the selection of respondents according to predefined eligibility criteria, the absence of random

sampling introduces the possibility of selection bias. The characteristics of participating respondents may differ from those of eligible final-year nursing students who did not participate in the study. Therefore, the findings should be interpreted within the context of the characteristics of the study sample, and their generalizability should be considered with caution.

In addition, the study relied on self-report instruments. The accuracy of the data therefore depended substantially on participants' honesty, understanding of the questionnaire items, and ability to recall and report their experiences accurately. This approach may introduce response bias, including the possibility that participants provided socially desirable responses or responses that did not fully reflect their actual conditions. Although the researchers provided instructions and assistance during questionnaire completion, the possibility of such bias could not be completely eliminated.

The sample size was also relatively small, comprising 94 respondents from a single institution. This limited sample may affect the precision of the estimated association and restrict the ability of the study to capture more complex relationships between social anxiety, sleep quality, and other potentially relevant factors. Therefore, future studies involving larger samples and multiple institutions are warranted to provide a broader understanding of these relationships.

Another limitation is the potential presence of unmeasured or uncontrolled confounding variables. Based on the findings and discussion, students' sleep quality may be associated with academic stress, gadget use, physical activity, social support, lifestyle patterns, late-night habits, and residential environmental conditions. These factors may influence sleep quality concurrently with social anxiety and, consequently, may affect the magnitude of the observed association. Because these variables were not assessed or included in the analysis, their individual contributions to the relationship between social anxiety and sleep quality could not be determined.

Finally, this study was conducted exclusively among final-year nursing students at Universitas Negeri Gorontalo. Therefore, the findings cannot be readily generalized to nursing students in other institutions or regions, or to students enrolled in academic programs with different educational characteristics. Nursing students may have distinctive academic demands, educational activities, interpersonal interactions, and responsibilities related to the development of professional competencies that differ from those of students in other disciplines. Future research should therefore recruit larger and more diverse samples, employ longitudinal designs or other approaches capable of examining the temporal direction of associations, and assess potential confounding factors, including academic stress, gadget use, physical activity, social support, lifestyle patterns, and environmental conditions.

CONCLUSION

This study demonstrates that final-year nursing students in the Nursing Study Program at Universitas Negeri Gorontalo tend to experience moderate levels of social anxiety and poor sleep quality during the process of completing their final academic assignments. The findings indicate a statistically significant association between social anxiety and sleep quality, characterized by a positive direction and relatively weak correlation strength. These findings suggest that social anxiety is associated with students' sleep quality; however, the observed association does not establish a causal relationship. Therefore, the objective of this study, namely to examine the relationship between social anxiety and sleep quality among final-year nursing students, has been achieved.

The findings highlight the importance of addressing students' mental health and sleep quality in coping with academic demands during the final stage of their undergraduate education. The Nursing Study Program is encouraged to develop multifactorial promotive and preventive

approaches through mental health education, counseling support or services, academic stress management, and education on the implementation of good sleep hygiene practices. For students, efforts to maintain good sleep quality may include establishing healthy sleep patterns, reducing the habit of staying up late, managing academic stress, and strengthening social support. These efforts should be implemented comprehensively, as sleep quality is not solely associated with social anxiety but may also be influenced by various other factors.

This study also indicates that the association between social anxiety and sleep quality is relatively weak, suggesting that other factors may contribute to students' sleep quality. Therefore, future research should examine additional factors, such as academic stress, gadget use, physical activity, social support, lifestyle, and environmental conditions, using larger sample sizes and more diverse research designs. Longitudinal studies or studies incorporating adequate control of potential confounding variables may also be considered to provide a more comprehensive understanding of the relationship between social anxiety and sleep quality among university students.

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Availability of data and materials

All data are available from the authors.

Conflicting interests

The authors declare no conflict of interest.

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