Uykuya Dair Bir Bakış Açısı: Hemşirelik Öğrencilerinin Uyku Kalitesi Üzerine Nitel Bir Çalışma

A perspective on sleep: A qualitative study on the sleep quality of nursing students

Birsel Molu[1], Funda Özpulat[2], Melike Taşdelen Baş[3]

Öz

Amaç: Bu nitel çalışma, hemşirelik öğrencilerinin uyku kalitesini ve deneyimlerini araştırarak, uyku düzenlerini etkileyen fizyolojik, psikolojik ve çevresel faktörleri incelemeyi amaçlamaktadır.

Materyal ve Metot: Araştırma, 7 Ocak–7 Şubat 2025 tarihleri arasında Türkiye'de bir Sağlık Yüksekokulu'nda öğrenim gören Hemşirelik Bölümü öğrencileriyle yürütülmüştür. Katılımcılar maksimum çeşitlilik ve ölçüt örnekleme yöntemleriyle seçilmiştir. Veriler, yarı yapılandırılmış bireysel ve odak grup görüşmeleri yoluyla, araştırmacılar tarafından geliştirilen 9 maddelik sosyodemografik form ve 5 soruluk görüşme formu kullanılarak toplanmıştır. Verilerin analizinde MAXQDA yazılımı aracılığıyla tematik içerik analizi ve metafor analizi bir arada kullanılmıştır.

Bulgular: Çalışmaya katılan 39 hemşirelik öğrencisinin %61,5'i kadın, %38,5'i erkektir. Analiz sonucunda 3 ana tema, 11 alt tema ve 76 kod belirlenmiştir. Bulgular, hemşirelik öğrencilerinin uyku deneyimlerinin fizyolojik, psikolojik ve çevresel faktörlerden etkilendiğini ortaya koymuştur. Yorgunluk, stres, akademik baskılar ve olumsuz çevre koşulları uyku kalitesini düşürürken; fiziksel rahatlık, ruhsal dinginlik ve uygun ortam koşulları uykuyu kolaylaştırmaktadır.

Sonuç: Bu temalar arasında en fazla kodun yer aldığı psikolojik faktörler teması, öğrencilerin uyku düzenlerinin büyük ölçüde zihinsel ve duygusal durumlarından etkilendiğini; özellikle stres, kaygı ve akademik baskının uyku kalitesini olumsuz yönde etkilediğini göstermektedir.

Anahtar Kelimeler: Akademik stres, hemşirelik öğrencileri, nitel çalışma, uyku hijyeni, uyku kalitesi

Abstract

Aim: This qualitative study aims to explore nursing students' sleep quality and experiences, examining the physiological, psychological, and environmental factors that influence their sleep patterns.

Material and Method: The research was conducted with nursing students enrolled at a School of Health in Turkey between January 7–February 7, 2025. Participants were selected using maximum variation and criterion sampling methods. Data were collected through semi-structured individual and focus group interviews, using a 9-item sociodemographic form and a 5-question interview form developed by the researchers. The data were analyzed using thematic content analysis and metaphor analysis with MAXQDA software.

Results: Among the 39 nursing students who participated, 61.5% were female and 38.5% were male. The analysis identified 3 main themes, 11 sub-themes, and 76 codes. The findings revealed that nursing students' sleep experiences were influenced by physiological, psychological, and environmental factors. Fatigue, stress, academic pressures, and unfavorable environmental conditions decreased sleep quality, while physical comfort, mental relaxation, and suitable environmental conditions facilitated sleep.

[1]**Correspondence Author,** Assistant Professor Doctor, Selcuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye, brslml@hotmail.com, ORCID: 0000-0001-5144-286X
[2]Associate Professor, Selcuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye, funda-ozpulat@hotmail.com, ORCID: 0000-0003-1209-3665
[3]Assistant Professor Doctor, Selcuk University Akşehir Kadir Yallagöz Health School, Konya, Türkiye, meliket@gmail.com, ORCID: 0000-0002-2389-7696

Conclusion: Among these themes, the psychological factor's theme, which had the highest number of codes, indicates that students' sleep patterns are largely affected by their mental and emotional states. Specifically, stress, anxiety, and academic pressure negatively impact sleep quality.

Key Words: Academic stress, nursing students, sleep hygiene, sleep quality, qualitative study

Summary Statement

What is known about this topic?

-The sleep quality of nursing students is influenced by various factors such as academic stress, clinical internships, and environmental conditions. Disruptions in sleep patterns can negatively affect academic performance and overall well-being.

The conclusions of this article

-The study found that academic stress, anxiety, caffeine consumption, and environmental factors significantly impact the sleep quality of nursing students. Strategies such as regular exercise, relaxation techniques, and maintaining an appropriate sleep environment were found to be effective in improving sleep quality.

The contributions of this article

-This research provides a qualitative perspective on nursing students' sleep experiences and highlights the necessity of educational interventions to improve sleep quality. The findings suggest the need for sleep hygiene education and stress management programs to support students' academic success and psychological well-being.

Introduction

Sleep quality significantly influences individuals' physical and mental health, and due to intense workloads and irregular shift schedules, sleep disorders are particularly prevalent among nursing students and healthcare workers, negatively impacting their quality of life and productivity.[1] Poor sleep quality in university students has been linked to lower academic performance.[2] Furthermore, sleep quality is associated with body image, self-esteem, depression, anxiety, stress, and physical activity levels.[3] Factors such as smoking, screen addiction, psychological issues, anxiety, exam-related stress, concerns about the future, social relationships, nutritional disorders, and excessive caffeine consumption have been identified as contributors to poor sleep quality in students pursuing health-related education.[4] These findings underscore the importance of improving sleep quality to enhance students' overall health and academic performance.

Nursing students are expected to adapt to the physical and mental demands of their academic programs, as well as the intense pace of clinical internships; therefore, it is crucial to explore the factors influencing their sleep quality, as poor sleep can adversely affect their academic performance, clinical decision-making skills, and overall quality of life. Research has shown that nursing students often experience poor sleep quality, which is associated with

suboptimal academic performance.[2,5] Factors such as smoking, eating before bedtime, and the year of study are among the contributors to poor sleep quality.[5] For practicing nurses, sleep disorders are particularly common among shift workers, negatively impacting job performance and quality of life.[1] Job satisfaction, less than five years of total work experience, and participation in professional conferences have been found to positively influence nurses' sleep quality.[6]

Existing research emphasizes the importance of addressing sleep issues in nursing education and practice. Interventions such as counseling services for students[2] and improvements in nurses' work schedules[1] have been recommended. Qualitative studies offer valuable insights into students' sleep habits and personal experiences, providing a deeper understanding of the factors influencing these processes.

This study aims to explore nursing students' perceptions of sleep quality, changes in sleep patterns during stressful periods, and the strategies they employ to cope with these challenges. Specifically, the study examined how demanding academic schedules impacted sleep patterns, which factors most significantly influenced students' sleep habits, and the broader implications for overall sleep quality. Collecting qualitative data on students' sleep experiences will contribute to a deeper understanding of their perceptions and the factors shaping their sleep quality.

Methods

Study Design

This study was conducted using a phenomenological research design, employing qualitative methods to explore nursing students' experiences with sleep, changes in their sleep patterns, and their perceptions of these processes in depth. Phenomenology is a suitable approach for this research, as it focuses on understanding the meanings and lived experiences individuals associate with a particular phenomenon. [7] Phenomenology allows researchers to gain insights into individuals' perceptions and emotional responses regarding their lived experiences, making it an ideal method for exploring sleep experiences.[7]

To enhance the richness of the data analysis, both metaphor analysis and content analysis were employed in tandem. Metaphor analysis was utilized to uncover the symbolic meanings that nursing students attributed to their sleep experiences, revealing deeper insights into their perceptions and emotional responses. According to Lakoff and Johnson (1980), metaphors play a significant role in expressing complex thoughts and emotions, thus offering valuable data about subjective experiences. [8] Content analysis, on the other hand, was applied to systematically categorize and interpret verbal data, identifying key themes and patterns in

students' narratives.[9] The combination of these methods ensured both the depth of individual meaning (through metaphors) and the breadth of common themes (through content analysis) were captured.

This integrated approach allowed for a comprehensive understanding of how nursing students perceive their sleep experiences and how these perceptions evolve over time, ensuring a nuanced and holistic perspective on this complex phenomenon.

Study Group

Data were collected between January 7, 2025, and February 7, 2025, from students enrolled in the Nursing Department of a School of Health in Türkiye. Maximum variation sampling and criterion sampling methods were used to select participants. Maximum variation sampling was employed by considering demographic factors such as gender, age, and clinical internship experience. Criterion sampling was applied by setting specific eligibility criteria, particularly clinical internship experience, to ensure participants had sufficient exposure to the demands of the nursing program.[10]

Although the inclusion criteria required clinical internship experience, first-year students were excluded from the study as they had not yet participated in clinical internships, which was a necessary criterion for understanding the impact of clinical responsibilities on sleep patterns. This should be considered when interpreting the results, as the sample does not include first-year students.

Students enrolled in the nursing program at the university where the research was conducted were contacted by the researchers and invited to participate in focus group discussions. The two female researchers involved in the study have received training in qualitative research methods and are experienced academics in their respective fields. Both researchers specialize in qualitative research topics and have conducted and published various qualitative studies. Therefore, the reliability and validity of the research are high, and all steps of the research process were carried out with scientific rigor. A total of 39 students participated in six focus group sessions, with each session consisting of 6-7 students. Data collection continued until data saturation was achieved (Table 1). Data saturation was defined as the point at which no new themes or patterns emerged from the data, indicating that a comprehensive understanding of the phenomenon had been achieved.[11]

Inclusion Criteria

Enrollment in the Nursing Department: Participants must be second-, third-, or fourth-year students in the Nursing Department of the university where the study was conducted. First-year students were excluded due to the lack of clinical internship experience.

Voluntary Participation: Participants must agree to participate voluntarily and provide written informed consent.

Clinical Internship Experience: Participants must have clinical internship experience as part of their nursing education. This experience was considered essential for evaluating the impact of clinical responsibilities on sleep patterns.

Willingness to Participate in the Data Collection Process: Participants were expected to actively engage in the interview process, respond to questions, and consent to audio recordings of the interviews.

Exclusion Criteria

Diagnosis of Chronic Sleep Disorder: Participants diagnosed with chronic sleep disorders (e.g., sleep apnea, chronic insomnia) by a physician or those using medications related to sleep were excluded from the study. This criterion ensured that subjective evaluations of sleep quality and patterns were not influenced by pre-existing conditions, which could distort the results.

Data Collection

Data were collected using two instruments: a 9-item sociodemographic data form and a 5-item interview form. These tools were designed to identify factors influencing and facilitating sleep quality. The interview form was created based on a review of the literature on sleep quality and academic stress.[4-6] Prior to the study, the interview questions were evaluated for suitability and clarity by three experts in the field, who provided feedback and suggestions. This process helped ensure the relevance and clarity of the interview questions.[10]

Focus Group and Individual Interviews

To gain a deeper understanding of nursing students' sleep experiences, semi-structured in-depth individual interviews were conducted in addition to focus group discussions. Focus groups were used to capture collective experiences and perceptions, while individual interviews provided an opportunity to explore personal, subjective experiences in more detail.[12]

Interviews were conducted face-to-face in a quiet and private environment to ensure participants felt comfortable discussing their sleep experiences openly. The interviews lasted approximately 30-45 minutes, and audio recordings were taken with participants' consent for later transcription and analysis. The interview questions focused on various aspects of students' sleep patterns, sleep habits during stressful periods, the impact of academic programs on sleep, and coping strategies. The main interview questions were:

1. How do you evaluate your sleep habits and sleep quality?

2. What factors or conditions influence your sleep?

3. What changes do you experience in your sleep habits during stressful periods, and how do these changes affect your sleep quality?

4. How do you balance sleep, academic responsibilities, and social life?

5. What significance do sleep experiences hold for you, and how do these experiences reflect in your personal life?

Validity and Reliability

To ensure the rigor of the study, triangulation was used by combining different data collection methods (focus groups and individual interviews) and analyzing the data using both metaphor analysis and content analysis. This multi-method approach increased the credibility of the findings.[10] Additionally, member checking was employed to ensure the accuracy of the interpretations by having participants review the findings and provide feedback.

Data Analysis

Each interview recording was individually transcribed and analyzed using MAXQDA qualitative data analysis software (Version MX24; VERBI Software, Berlin, Germany). The collected data were analyzed using the content analysis method. Audio recordings were transcribed into written text and coded through thematic analysis. The data were categorized according to the identified themes, enabling an in-depth analysis of students' sleep experiences, perceptions of sleep quality, and coping strategies. To enhance reliability during the analysis process, the raw data were provided to three PhD-qualified nurse educators with expertise in qualitative research. These experts independently developed codes and themes. The researcher then compared the similarities and differences among the themes to finalize the analysis. Additionally, SPSS Statistics Version 22 (IBM Corporation, Armonk, NY, USA) was used to calculate frequencies and percentages of participants, while a word cloud was generated using MAXQDA qualitative data analysis software.

Ethical Approval

The study has been approved by the Selçuk University Local Ethics Committee (decision no: 2024/636). Throughout the research process, the confidentiality and privacy of participants have been carefully maintained. The purpose of the study, its methodology, and the voluntary nature of participation were clearly explained to the participants. Additionally, it was emphasized that voice recordings would be used solely for research purposes and that no personal information would be shared with third parties. Informed consent was obtained from participants before their involvement in the study.

Limitations

The findings of this study are limited to nursing students from a specific university, which restricts the generalizability of the results. Furthermore, as a qualitative study, the responses given by participants are based on individual experiences and perceptions, which may be influenced by personal interpretations.

Table 1. Research process overview

Phase	Details
Research design	❖ Define the objectives of the study ❖ Specify the purpose of the focus group Develop a list of key questions: ❖ Sleep habits/sleep quality? ❖ Factors/conditions affecting sleep? ❖ Changes in sleep during stressful periods? ❖ Balancing academics, sleep, and social life? ❖ Personal significance of sleep experiences?
Data collection	❖ Researchers used an 9-item sociodemographic data form and a 5-item interview guide to identify factors influencing or facilitating sleep quality. ❖ A total of 39 students participated in six sessions, each with 6–7 participants. Data were collected until saturation was achieved (30–45 minutes)
Analysis	❖ Listing/raking ❖ Coding (key ideas, themes) ❖ Content analysis ❖ Discourse analysis ❖ Conversation analysis
Results and Reporting	Organized under three main themes: ❖ Physiological factors ❖ Psychological factors ❖ Environmental factors

Results

Upon examining the demographic and lifestyle characteristics of the 39 students who participated in the study, it was found that 61.5% (n=24) were female and 38.5% (n=15) were male. Regarding family structure, the majority of participants lived in nuclear families (76.9%, n=30), while 20.5% (n=8) lived in extended families, and 2.6% (n=1) lived in broken families. 76.9% (n=30) of the participants had chosen the nursing profession willingly, whereas 23.1% (n=9) had chosen it unwillingly. The percentage of participants who had a family member working in shift-based professions was 17.9% (n=7), while 82.1% (n=32) did

not have such a family member. In terms of regular exercise, 94.9% (n=37) of participants reported not engaging in regular exercise, while only 5.1% (n=2) exercised regularly. The mean age of the participants was 21.12±1.83 years, the average daily study time was 2.30±2.00 hours, and the average number of meals consumed per day was 2.69±0.69. The average daily consumption of caffeinated beverages was 1.53±1.84 cups (200 ml) (Table 1).

Table 2. Sociodemographic data for nursing students

Variable	Value (n = 39)
Gender	
Woman	24 (61.5)
Male	15 (38.5)
Family Structure	
Nuclear family	30 (76.9)
Extended family	8 (20.5)
Broken family	1 (2.6)
The situation of choosing the nursing profession willingly	
Yes	30 (76.9)
No	9 (23.1)
The situation of an individual with a profession who keeps watch in the family	
Yes	7 (17.9)
No	32 (82.1)
Regular exercise status	
Yes	2 (5.1)
No	37 (94.9)
Variable	Value (Mean ± SD)
Age	21.12 ± 1.83
Daily study hours	2.30 ± 2.00
Daily meal plan	2.69 ± 0.69
Amount of caffeine consumed daily (200ml glass)	1.53 ± 1.84

Metaphor Analysis of Sleep Experiences and Perceptions of Nursing Students

In this study, a metaphor-based analysis was conducted to describe the sleep experiences and perceptions of nursing students. The findings revealed that students referred to a wide variety of objects and concepts when discussing sleep. Participants generally defined their sleep experiences based on inspiration from nature, daily life, or personal feelings. Among the students, sleep was expressed as both a basic need and an energy-replenishing element, using metaphors such as "water," "book," "battery," and "koala." These metaphors emphasize the importance of sleep in the physical and mental recovery process. In particular, the repeated use of the "water" metaphor suggests that sleep is perceived as an indispensable life necessity. Additionally, some participants described sleep with negative metaphors such as "spoiled food," "torn book," and "a frightened bird." These metaphors indicate that nursing students find their sleep irregular and insufficient due to the heavy academic and clinical workload. Moreover, metaphors like "television antenna" or "antenna losing signal in the wind"

highlight the sensitivity and instability of their sleep patterns. Analyzing the metaphors in both emotional and physiological contexts reveals not only the students' need for sleep but also their negative experiences with sleep and the impact of these experiences on their daily lives. These findings emphasize the importance of interventions to improve sleep hygiene among nursing students and suggest that psychological and environmental factors should be considered when developing healthier sleep habits.
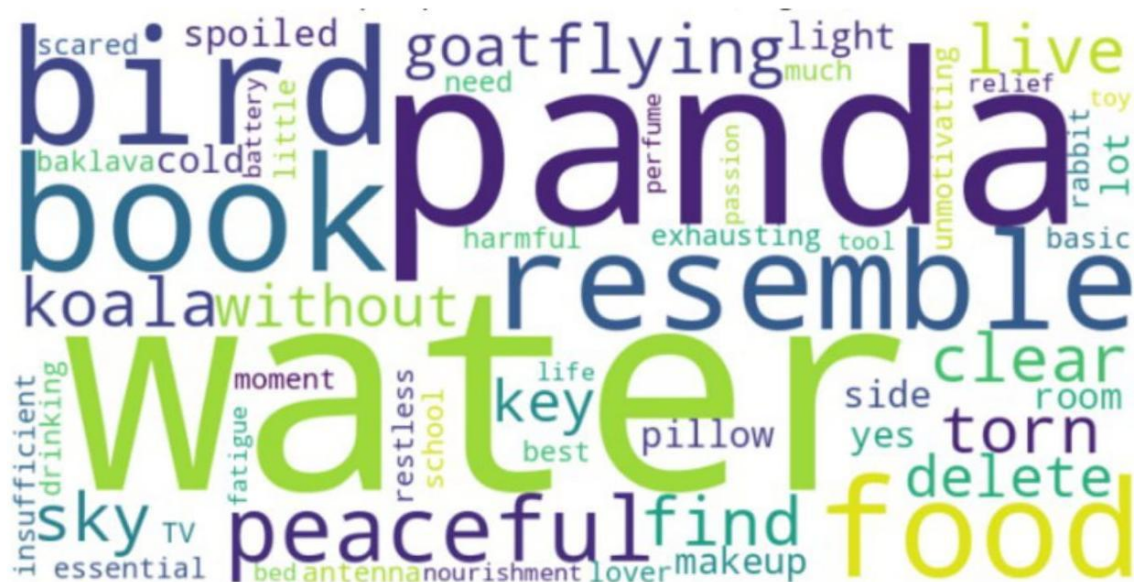

Figure 1. Sleep experience word cloud

Factors Affecting and Facilitating Sleep Quality of Nursing Students

1. Factors Affecting Sleep Quality

The factors affecting students' sleep quality were identified under three main themes: physiological, psychological, and environmental factors.

Theme 1 Physiological Factors

Subtheme 1 Physiological Health of Students

Physiological factors affecting sleep quality among students include fatigue, pain, hormonal changes, and caffeine consumption. Students stated that prolonged wakefulness or excessive physical and mental fatigue made it difficult to fall asleep. They also mentioned that headaches, muscle pain, or other bodily discomforts negatively impacted their sleep quality. Changes in hormone levels, especially during stressful periods, were noted to affect sleep patterns. Caffeine consumption, particularly during exam and stressful periods, was reported to be used to increase alertness, but it made it harder to fall asleep.

"I'm very tired but can't sleep because of my thoughts." (S5)

"Hospital clinical placements can be very exhausting, I get muscle pains, and when I have pain, it's hard to sleep, sometimes I stay awake." (S15)

"When I'm too tired, I fall asleep as soon as I get back from placement. As a result, it becomes even harder to sleep at night. When I force myself not to sleep after placement, I can't rest." (S6)

"During exam periods, especially when they coincide with my menstrual cycle, my hormones change, and this disrupts my sleep schedule." (S22)

"I drink coffee during breaks and late at night, and I have difficulty sleeping." (S11)

Theme 2 Mental and Emotional Factors Affecting Sleep

Psychological factors affecting sleep quality include mental health, academic challenges, personal preferences, and external factors.

Subtheme 1 Mental Health

Students reported that mental health issues such as depression and anxiety caused difficulties in falling asleep.

"Sometimes I can't cope with life's problems, and I withdraw into myself. This leads me to depression, and during these periods, my sleep schedule is severely disrupted." (S2)

"When I have anxiety, I can't sleep, and I keep waking up throughout the night." (S8)

"Depression leads to insomnia, especially during exam periods, it worsens." (S15)

"When I'm stressed, I have a lot of difficulty falling asleep. I fall asleep very late, and I wake up feeling mentally tired." (S39)

Subtheme 2 Academic Challenges

The stress of classes and clinical placements was identified as an important psychological factor affecting students' sleep quality.

"During placement periods, I experience a lot of stress, and because of this, I have difficulty sleeping." (S5)

"Classes and exams are very stressful, and I have to study until late at night, which affects my sleep." (S12)

"When I have a very heavy course schedule, my sleep hours decrease, and I feel that it affects the quality of my sleep." (S20)

Subtheme 3 Personal Preferences and External Factors

Some students neglect their sleep schedules due to social activities or personal preferences. Difficulty balancing intense schedules and social activities may also negatively impact sleep quality.

"I sacrifice sleep to participate in social activities." (S10)

"Because of the intense course schedule, I don't have time to sleep." (S18)

"Being out with friends at night affects my sleep schedule." (S22)

"I prefer social activities over sleep, so sometimes I end up staying awake." (S30)

Theme 3 Environmental Factors

Subtheme 1 Physical Environment and Conditions

Environmental factors affecting sleep quality include physical environment and surrounding conditions. Students reported that light, noise, hunger, room temperature, and smartphone use made it difficult for them to fall asleep.

"I live in a dorm, and my roommate is a complete night owl. She watches movies at night, and I can't sleep with the light on. Sleep should be in the dark." (S7)

"My room is by the window, and the streetlight shines into my room. Just when I try to fall asleep, the light constantly disturbs my sleep." (S13)

"I share a room with three people, and my roommates aren't from the nursing department. Their classes start later, so they make noise until late hours. I can't sleep until morning because of the noise." (S4)

"If there is noise in my room, it becomes very hard for me to sleep." (S17)

"I eat three meals a day, but I get very hungry late at night. When I'm hungry, I have difficulty sleeping." (S21)

"I can't sleep comfortably when I feel hungry in my stomach." (S28)

"I can't sleep when my room is too hot." (S9)

"The cold in the room during winter disrupts my sleep." (S14)

"I check social media on my phone before bed, and this keeps me awake longer." (S11)

"Using my phone in bed makes it harder for me to fall asleep." (S25)

Factors That Facilitate Sleep Quality

Theme 1 Physiological Factors Affecting Sleep Quality

Physical health is one of the most important factors directly affecting sleep quality. Students reported that when they felt healthy and physically well, it was easier to fall asleep. They also mentioned that physical activities, balanced nutrition, and stress management helped improve their sleep.

Subtheme 1 Physiological Health of Students

"When I feel healthy and my body is fit, it is easier to fall asleep." (S3)

"After exercising, my sleep at night becomes much more restful." (S15)

"After exercising, it's easier to sleep, and I sleep more deeply." (S7)

"Exercising to release fatigue improves my sleep quality." (S20)

"When I have a light dinner, I sleep more comfortably at night." (S10)

"Eating heavy food before bed prevents me from sleeping." (S5)

"When I am less stressed, I sleep much better at night." (S8)

"When I have a stress-free day, my sleep quality improves as well." (S18)

Theme 2 Psychological Factors

Subtheme 1 Relaxation and Mental Calmness

Psychological factors that enhance sleep quality include daily routines and activities aimed at stress management. Students reported that their pre-sleep routines helped both psychologically and physically to relax. Activities such as making videos, watching movies, walking, chatting, practicing yoga, praying, reading, and taking a bath were mentioned as factors that helped them relax and prepare for sleep.

"Making videos online helps me relax in the evening, and I calm down before bed." (S12)

"Watching a movie distracts me and helps me relax before sleep." (S16)

"Going for a walk helps me release the stress of the day, and I feel more peaceful before bed." (S14)

"Talking with my friends and gossiping makes me feel really good." (S23)

"Doing yoga relaxes my body and helps me sleep better at night." (S9)

"Praying helps me find inner peace and sleep more peacefully." (S29)

"Reading a book clears my mind and makes it easier to fall asleep." (S11)

"Taking a bath relaxes my body and helps me sleep more peacefully at night." (S19)

Theme 3 Environmental Factors

Subtheme 1 Physical Environment

Environmental factors are crucial elements that directly affect students' sleep quality. Factors such as peace, darkness, silence, room temperature, bed and pillow comfort, and air quality play significant roles in sleep quality.

"Sleeping in a peaceful environment helps me sleep comfortably through the night." (S5)

"Sleeping in my room without light helps me get deeper, more comfortable sleep." (S18)

"Sleeping in a quiet room helps me fall asleep faster, and I sleep undisturbed through the night." (S22)

"The temperature in my room is very important. Sleeping in an ideal temperature helps me sleep well." (S8)

"When my bed and pillow are comfortable, I fall asleep more easily, and my sleep isn't interrupted." (S13)

"If the air quality in my room is good, I sleep better and wake up more refreshed." (S7)

Table 3. Factors that affect and facilitate sleep quality of nursing students.

Theme	Sub-theme	Codes
Factors that affect sleep qualities		
Physiological factors	Physiological health of students	Fatigue Pain Hormonal changes Caffeine consumption
Mental and Emotional Factors	Mental Health	Depression Anxiety
	Academic Challenges	Difficulties balancing Class stress Internship stress
	Personal Preferences and External Factors	Social events Personal preferences , priorities Intensive program
Environmental factors	Physical environment and surroundings	Light Sound Hunger Heat Smartphone usage
Factors that facilitate sleep qualities		
Physiological factors	Physiological health of students	Student feeling good and healthy Exercise Nutrition Stress level
Psychological factors	Providing Relaxation and Mental Calm	Shooting videos on the internet Watching Movies Taking a walk To gossip Doing yoga Pray Reading books Taking a bath
Environmental factors	Physical environment	Darkness Silence Room temperature Bed and pillow comfort Air quality Peace

Discussion

This study aimed to examine the factors affecting the sleep quality of nursing students, and the findings were evaluated under three main themes: physiological, psychological, and environmental factors. It was observed that physiological factors, in particular, had a significant impact on students' sleep quality. According to our findings, physiological

conditions such as fatigue, pain, hormonal changes, and caffeine consumption negatively affected the students' sleep quality.

In line with the literature, studies have shown that caffeine consumption, especially when consumed in the evening, delays the onset of sleep and negatively affects sleep quality.[4, 13, 14] This suggests that nursing students' intense academic and clinical responsibilities may increase caffeine use, leading to disruptions in their sleep patterns. Moreover, it is well known that poor sleep quality is associated with both physical and psychological health problems.[15] One study indicated that insufficient sleep not only causes short-term attention deficits and fatigue but also increases the risk of chronic health issues such as accidents, injuries, hypertension, obesity, and diabetes in the long term. [15] This finding highlights the importance of developing strategies to improve sleep patterns to enhance the health of nursing students. The study extensively examined the psychological and environmental factors affecting nursing students' sleep quality. The findings indicated that sleep quality was significantly influenced by mental health, academic challenges, personal preferences, and environmental conditions.

Psychological factors are among the significant elements affecting sleep quality. Participants expressed that mental health, academic stress, and personal preferences directly affected their sleep patterns. The literature also supports these findings; mental health issues, academic challenges, and exam anxiety in university students have been noted to negatively impact sleep quality.[3] Especially during exam periods, intense stress has been reported to extend sleep onset and decrease sleep quality.[3]

Environmental factors include physical surroundings and environmental conditions. Participants indicated that factors such as light, noise, room temperature, hunger, and smartphone use made it difficult to fall asleep. This was also emphasized in a study by Açıl and colleagues (2023)[4], which suggested that environmental disturbances could disrupt sleep patterns and negatively affect overall health. It is well-known that the blue light emitted by smartphones suppresses melatonin production, thereby delaying sleep onset. Additionally, factors such as smoking, screen addiction, eating disorders, excessive caffeine consumption, and issues in social relationships can also impact sleep quality in both psychological and environmental contexts.[4] These findings suggest that the physical and mental health of nursing students should be supported.

The findings indicate that factors that facilitate sleep quality are interrelated and deeply affect students' overall health. Physiological factors are among the fundamental determinants of sleep quality. Participants expressed that they slept better when they felt

physically good and engaged in regular physical exercise. The literature supports these findings; Kurt et al. (2023)[13] reported that regular physical activity and balanced nutrition improve sleep quality.[13] Moreover, stress management's positive effect on sleep was emphasized. University students' lifestyle preferences play a critical role in maintaining sleep quality, and promoting a healthy lifestyle is necessary.

Psychological factors are directly related to participants' stress management and relaxation strategies. In this study, activities such as shooting videos on the internet, watching movies, walking, doing yoga, praying, and reading books were identified as effective methods to improve sleep quality. A study by Şalva et al. (2020)[16] supports these findings, demonstrating that these activities help individuals relax mentally and ease the process of falling asleep.[16] However, it is essential to consider individual differences when applying such methods effectively.

Environmental factors are other crucial elements influencing sleep quality. Participants noted that a peaceful, dark, and quiet environment, as well as an appropriate room temperature, comfortable bed, and pillow, facilitated falling asleep. Similar findings can be found in the literature; Şalva et al. (2020)[16] highlighted the impact of environmental conditions on sleep quality.[16] Moreover, Filiz and Kaya's (2021)[17] study revealed that environmental disturbances, combined with internet addiction, lead to poor sleep quality and consequently a decline in academic performance.[17] These findings highlight the necessity of a multidisciplinary approach to improving university students' sleep quality. Raising awareness among students about sleep hygiene, stress management, and environmental adjustments could serve as an effective strategy for enhancing sleep quality. Furthermore, it is recommended that the long-term impacts of these factors on health and academic performance be explored in greater depth.

In this study, nursing students' perceptions and experiences of sleep were analyzed through metaphors, revealing references to various objects and concepts. The findings indicate that participants drew inspiration from nature, daily life, and personal emotions to describe their sleep experiences. Sleep was expressed through metaphors such as "water," "book," "battery," and "koala," portraying it as both a fundamental need and an element for energy renewal. The frequent use of the "water" metaphor underscores the perception of sleep as an essential requirement for life.

Conversely, some participants used negative metaphors for sleep, such as "spoiled food," "torn book," and "timid bird." These metaphors reflect the irregular and insufficient sleep experiences of nursing students, often due to their intense academic and clinical

responsibilities. Additionally, metaphors such as "television antenna" and "antenna losing signal in the wind" emphasize the sensitivity and instability of their sleep patterns. The emotional and physiological analysis of these metaphors reveals the unmet sleep needs of students and the impact of their negative sleep experiences on daily life. This underscores the importance of interventions aimed at improving nursing students' sleep hygiene.

Despite the critical role of sleep in health and well-being, nursing education programs lack sufficient content on sleep and sleep-promoting interventions. [18,19] This gap in educational curricula may lead future nurses to rely on personal experiences rather than evidence-based practices when addressing patients' sleep needs. Integrating sleep education into nursing curricula could enhance awareness of the relationship between sleep quality and health outcomes.

These findings also suggest that metaphor analysis provides valuable insights into students' perceptions of sleep and highlights areas requiring intervention. Addressing physiological, psychological, and environmental factors within nursing education programs could better prepare students to manage their own health while promoting evidence-based patient care practices.

Conclusion

This study examined the physiological, psychological, and environmental factors affecting the sleep quality of nursing students and revealed their significant impact on students' health and academic performance. The findings suggest that promoting healthy lifestyle habits and raising awareness of sleep hygiene can improve students' sleep quality. Students should be encouraged to develop habits such as engaging in regular physical activity, maintaining a balanced diet, and limiting caffeine consumption.

Educational programs should include training on stress management and relaxation techniques, while access to mental health support should be made more readily available. Furthermore, sleep environments should be adjusted to ensure they are quiet, dark, and comfortable. Limiting smartphone use before bedtime should also be promoted as part of sleep hygiene practices.

Based on these findings, it is recommended that further comprehensive studies be conducted to explore the long-term effects of sleep quality on health and academic performance.

Authorship contribution statement

BM: Writing – review & editing, Writing – original draft, Supervision, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation,

Conceptualization. **FÖ:** Writing – review & editing, Methodology, Conceptualization. **MTB:** Writing – review & editing, Methodology, Conceptualization.

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