Between Sleep and Scores: Examining the Relationship Between Sleep Duration, Academic Performance, and Clinical Stress among Nursing Students

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ABSTRACT

Background: Clinical training is a crucial aspect of nursing education but is often associated with high stress levels. Sleep duration and academic performance (CGPA) are potential factors influencing clinical stress, yet their combined impact remains underexplored. Objective: This study examines the relationship between sleep duration, CGPA, and clinical stress levels among nursing students during clinical placements. Methods: A quantitative cross-sectional study was conducted among 291 diploma nursing students (mean age = 22.66, SD = 1.86; 79.4% female). Data were collected via an online survey in February 2025, assessing clinical stress (NSPCSS), sleep duration (hours/night), and CGPA. One-way ANOVA was used for statistical analysis. Results: The mean sleep duration was 6.61 hours (SD = 7.17), and the mean CGPA was 3.84 (SD = 0.13). Sleep duration showed a significant association with clinical stress ($F = 2.72$, $p = 0.001$), while CGPA had no significant relationship with clinical stress ($F = 0.77$, $p = 0.858$). Conclusion: Shorter sleep duration correlates with higher clinical stress, whereas CGPA does not significantly influence stress levels. These findings highlight the need for interventions promoting healthy sleep habits to support nursing students' well-being during clinical training.

Keywords: Nursing students, sleep duration, CGPA, clinical stress

INTRODUCTION

Clinical training is a fundamental component of nursing education, shaping students' professional competencies. However, this experience is often associated with high stress levels due to intensive workloads and demanding academic requirements [1]. One of the key factors influencing clinical stress is sleep duration and quality. Adequate sleep is essential not only for physical and mental well-being but also for maintaining cognitive function and emotional stability [2]. Sleep deprivation has been linked to elevated cortisol levels, impairing concentration and decision-making abilities during clinical training. The demanding academic schedule and clinical responsibilities that require continuous focus often led to sleep disturbances among students, making them more vulnerable to excessive clinical stress [3].

Apart from sleep, academic performance also plays a significant role in determining stress levels among nursing students. CGPA is commonly used as a benchmark for academic excellence and can influence students' confidence and anxiety levels during clinical placements [4]. Students with lower CGPA may experience higher stress levels due to a lack of confidence in applying theoretical knowledge in clinical practice [5]. Conversely, students with higher academic achievements tend to be better prepared for clinical training. However, the pressure to maintain outstanding academic performance can also become an additional stressor, affecting their overall well-being [6], [7]. Balancing academic performance and clinical

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training often forces students to sacrifice sleep, which may further impair their clinical performance and elevate stress levels.

Previous studies have demonstrated that insufficient sleep can increase anxiety, mental fatigue, and reduce focus [2], [8], [9]. Sleep-deprived students are more likely to struggle with problem-solving and making accurate decisions in high-pressure situations [7]. In the clinical training context, fatigue due to inadequate sleep can negatively impact interactions with patients and increase the risk of clinical errors, which not only compromises patient safety but also adds emotional stress to students [2]. Moreover, prolonged sleep disturbances have been associated with reduced mental resilience and a higher likelihood of experiencing chronic stress [10], [11].

In terms of academic performance, studies suggest that students with lower academic achievements are more prone to higher stress levels due to difficulties in comprehending and applying knowledge in dynamic clinical environments [9]. However, while a higher CGPA is often linked to greater confidence, the pressure to maintain academic excellence can be overwhelming. For instance, Karabulut [12] reported that students with a CGPA of 3.01–4.00 still experienced high clinical stress levels. Similarly, Mohamed et al. [13] found that 55.2% of students with excellent academic performance still suffered from clinical stress. This suggests that students who excessively focus on academic performance may neglect their well-being, including sacrificing sleep to study or complete assignments, which ultimately exacerbates their stress levels.

While numerous studies have examined the relationship between sleep and stress, as well as academic performance and stress separately, research exploring how these two factors simultaneously influence clinical stress among nursing students remains limited. Therefore, this study aims to investigate the relationship between sleep duration, academic performance measured through CGPA, and clinical stress levels among nursing students during their clinical placements. A deeper understanding of this relationship can assist educational institutions in formulating more effective stress management strategies, whether through approaches that promote sleep balance or systematic academic support programs.

In conclusion, this study highlights the importance of understanding factors contributing to clinical stress among nursing students, particularly in terms of sleep duration and academic performance. By identifying the relationship between these factors, this research can help develop more holistic intervention strategies to enhance nursing students' well-being and ensure they are better prepared to face the challenges of clinical training.

METHODOLOGY

Study Design

This study employs a quantitative cross-sectional design to examine the relationship between sleep duration, academic performance (CGPA), and clinical stress levels among nursing students. The primary objective is to determine whether sleep duration and CGPA are significantly associated with clinical stress during clinical placements. Given the demanding nature of clinical training, understanding the influence of academic performance and sleep patterns on students' stress levels is crucial for improving well-being and academic outcomes.

Study Population

The study targeted diploma nursing students undergoing clinical training at a nursing institution in Malaysia. A universal sampling approach was utilized, including all eligible students from Semester 2 to Semester 6, ensuring a comprehensive representation of students across different academic and clinical exposure levels. The inclusion of students at different training levels minimizes selection bias and provides a broader understanding of how academic performance and sleep patterns influence clinical stress.

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Eligibility Criteria

Inclusion:

- Actively enrolled diploma nursing students.
- Currently engaged in clinical placements.
- Provided informed consent for participation.

Exclusion:

- Semester 1 students (as they have not yet started clinical training).
- Students on leave, withdrawn, or who declined participation.

Data Collection

Data collection was conducted over one month (February 2025) via an online survey distributed through Google Forms. The study utilized the Nursing Students' Perceived Clinical Stress Scale (NSPCSS), originally developed by Rafati et al. [14], to assess clinical stress levels among nursing students. Prior permission was obtained from the original authors for ethical compliance.

- Sleep duration was measured based on self-reported sleep hours per night.
- Academic performance was assessed using CGPA from students' most recent semester.
- Clinical stress levels were measured using the 30-item Nursing Students' Perceived Clinical Stress Scale (NSPCSS), rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with total scores ranging from 30 to 150.

Data Analysis

Statistical analysis was performed using SPSS Version 27, incorporating descriptive and inferential statistics.

Clinical stress levels were categorized as follows:

- Descriptive analysis summarized demographic data, sleep duration, and CGPA distribution among participants.
- One-way Analysis of Variance (ANOVA) was employed to assess differences in clinical stress levels across sleep duration and CGPA groups.
- A p-value of <0.05 was considered statistically significant in identifying associations between sleep duration, academic performance, and clinical stress.
- Clinical stress levels were categorized as follows
  i. Low stress: 30–59
  ii. Moderate stress: 60–89
  iii. High stress: 90–119
  iv. Very high stress: 120–150

Ethical Considerations

This study adhered to the ethical guidelines set by the Ministry of Health Malaysia and received approval from the Medical Research and Ethics Committee (MREC) under NMRR ID-24-04102-UZS. Prior to participation, all students were provided with a detailed explanation of the study's objectives, procedures, potential risks, and benefits, and written informed consent was obtained to ensure voluntary participation. To maintain confidentiality, all responses were anonymous and de-identified, with data used exclusively for research purposes. Participants had the right to withdraw from the study at any stage without any academic consequences. Additionally, the study complied with the Declaration of Helsinki and institutional ethical research protocols to safeguard participants' rights and well-being.

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RESULTS

Socio-Demographic Characteristics of Respondents

Table 1 presents the sociodemographic background of the study participants (n=291). The participants' ages ranged from 20 to 32 years, with a mean age of 22.66 years (SD = 1.86). In terms of gender distribution, the majority were female (79.4%), while male participants accounted for 20.6% of the sample. Regarding sleep duration during clinical training, the average sleep duration was 6.61 hours (SD = 7.17), indicating variability in the amount of rest received by students. The participants' cumulative grade point average (CGPA) had a mean value of 3.84 (SD = 0.13), suggesting that most students maintained a relatively high academic performance despite the demands of clinical training.

Table 1: Sociodemographic Background (N=291)

Demographic characteristics	**n**	**%**
Age (years)		
	*22.66	**1.86
Gender		
Male	60	20.6
Female	231	79.4
Sleep Duration During Clinical Training (hours)		
	*6.61	**7.17
PNGK		
	*3.84	**0.13

Notes: *Mean; **SD

Level of stress clinical

Table 2 presents the distribution of clinical stress levels among the study participants (n=291). Most students (74.9%) reported experiencing low levels of clinical stress, while 20.3% had moderate stress levels. A smaller proportion of students (4.5%) experienced high clinical stress, and only 0.3% reported very high stress levels.

Table 2 Level Of Stress Clinical (N=291)

Level of stress Clinical	**Frequency**	**Percent**
Low	218	74.9
Moderate	59	20.3
High	13	4.5
Very high	1	0.3

Level of stress clinical: 30–59: Low; 60–89: Moderate; 90–119: Tinggi and 120–150: Very High

Relationship Between Clinical Stress Levels, Sleep Duration, and Academic Performance (CGPA) Among Nursing Students

Table 3 presents the results of the one-way ANOVA analysis examining the relationship between clinical stress levels and sociodemographic factors among nursing students (n=291). The findings indicate that CGPA (M = 3.84, SD = 0.13) did not show a statistically significant relationship with clinical stress levels (F = 0.77, p = 0.858), suggesting that academic performance was not a major determinant of stress in this

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context. However, sleep duration (M = 6.61 hours, SD = 7.17) demonstrated a statistically significant association with clinical stress levels (F = 2.72, p = 0.001), indicating that variations in daily sleep duration were significantly related to perceived stress during clinical training.

Table 3: Relationships Stress Level With Socio-Demographic (N=291)

Demographic characteristics	Mean (SD)	df	Mean Square	F	p-value
PNGK					0.858
	3.84 (0.13)	48	0.26	0.77	
Sleep duration (hours/daily)					**0.001**
	6.61 (7.17)	13	0.81	2.72	

Notes: one-way ANOVA applied for all relationship; significant value: <0.005

DISCUSSION

This study aimed to examine the relationship between sleep duration, academic performance (CGPA), and clinical stress levels among nursing students during clinical placements. The findings revealed that sleep duration had a significant relationship with clinical stress levels (p = 0.001), whereas CGPA was not significantly associated with clinical stress (p = 0.858). These results suggest that sleep duration plays a crucial role in influencing stress levels among nursing students, while academic performance may not necessarily determine clinical stress levels in the context of clinical training.

This finding aligns with previous research indicating that stress significantly impacts sleep quality and academic performance among nursing students [15]. A study conducted at CMH Lahore Institute of Nursing highlighted that sleep deprivation affects nursing students' perceptions of their academic performance and patient safety, with most students acknowledging that adequate sleep is necessary for better clinical performance [16].

Relationship Between Sleep Duration and Clinical Stress

The significant relationship between sleep duration and clinical stress is consistent with prior studies demonstrating that insufficient sleep increases stress, disrupts cognitive function, and affects emotional stability [2]. Sleep deprivation is linked to elevated cortisol levels, which can impair concentration, decision-making abilities, and emotional regulation [3]. In a demanding clinical environment, where precision and attentiveness are essential, mental fatigue due to inadequate sleep can exacerbate stress and hinder students' clinical performance [7].

Furthermore, sleep disturbances among nursing students are often associated with heavy academic workloads, clinical training responsibilities, and irregular shift schedules, making them more susceptible to excessive stress [13]. This study supports previous research showing that students who receive adequate sleep can manage stress more effectively and adjust better to the demands of clinical training [16]. Proper sleep enhances memory retention and learning capabilities while also regulating physiological responses to stress, reducing symptoms of mental fatigue that may impair clinical performance [9].

Chronic sleep deprivation can compromise cognitive function, decrease resilience to clinical stress, and increase the likelihood of clinical errors, further contributing to student anxiety and stress levels [17]. Thus, this study highlights that maintaining sufficient sleep duration is essential for managing clinical stress effectively among nursing students.

Relationship Between CGPA and Clinical Stress

The findings also indicated that CGPA did not have a significant relationship with clinical stress. This contradicts some previous studies that suggest lower academic performance is linked to higher stress levels

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[4], [5]. However, the results support research stating that academic excellence does not necessarily reduce stress, as students with higher CGPA may also experience significant pressure to maintain their performance [18].

Studies in nursing education frequently emphasize that stress is more strongly associated with clinical environments and personal challenges rather than academic performance [6]. While students with lower CGPA may feel less confident in applying theoretical knowledge to clinical practice, the actual stressors in clinical placements often stem from fear of making mistakes, interactions with healthcare professionals, and the pressure to apply theoretical knowledge in real-life situations [13], [19].

Although CGPA can provide an advantage in terms of theoretical understanding, the pressure to maintain high academic performance may disrupt students' sleep patterns, ultimately increasing their stress levels [7], [15]. This study suggests that other factors may play a more dominant role in determining clinical stress levels than academic performance alone, including coping strategies, social support, and the clinical learning environment [20].

Previous research has shown that clinical stress is influenced more by workload, faculty support, and the overall learning environment rather than academic grades alone [19], [20]. Thus, while higher CGPA may provide students with better theoretical knowledge, clinical stress is more closely related to real-world clinical experiences and students' ability to cope with hands-on challenges in practical training [21]–[23].

Implications for Nursing Education and Clinical Training

The findings of this study have significant implications for nursing education and clinical training. Since sleep deprivation significantly impacts clinical stress, nursing institutions should prioritize awareness programs on sleep hygiene, stress management interventions, and structured time management training to help students achieve a better balance between academic and clinical commitments.

Initiatives such as workshops on sleep awareness [2], more flexible clinical scheduling [1], and mental health support services [24] could help mitigate the adverse effects of sleep deprivation on clinical stress. Additionally, faculty members and clinical supervisors should recognize the impact of fatigue on students' cognitive abilities and performance, ensuring that structured rest periods are integrated into clinical training schedules [25], [26].

From an academic performance perspective, nursing institutions should also establish comprehensive academic support systems, including mentorship programs and academic counselling services, to assist students struggling to balance academic and clinical demands. This study suggests that more flexible evaluation systems and adaptive learning strategies may help reduce stress among nursing students.

CONCLUSION

This study found that sleep duration had a significant relationship with clinical stress, whereas CGPA showed no significant association with clinical stress among nursing students. These findings highlight that sleep deprivation contributes more to clinical stress than academic performance alone. However, this study has several limitations, including reliance on self-reported data, which may introduce bias in reporting sleep duration and stress levels. Additionally, the cross-sectional design limits the ability to determine causal relationships between the studied variables. Future studies should consider longitudinal approaches to assess the long-term effects of sleep on clinical stress and explore other influencing factors such as coping strategies, social support, and clinical workload. In terms of recommendations, nursing institutions should prioritize sleep awareness interventions, implement more flexible clinical schedules, and provide mental health and academic support programs to help students manage stress more effectively during clinical training.

CONFLICT OF INTEREST

The authors declare no conflict of interest related to this study.

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