Breaking the Silence: How Semester, Gender, and Transport Mode Shape Clinical Stress in Diploma Nursing Students

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ABSTRACT

Clinical training is a critical phase in nursing education, where students develop essential skills in real-world healthcare settings. However, it can be stressful, with stress levels influenced by sociodemographic factors such as semester, gender, and mode of transportation. This study assesses clinical stress levels among 291 diploma nursing students using a 30-item validated scale. Results show 74.9% of students experienced low stress, 20.3% moderate stress, and 4.8% high or very high stress. Stress levels varied by semester (p=0.036), gender (p=0.008), and mode of transportation (p=0.002), with higher stress among later-semester students, males, and those walking to clinical sites. Tailored support mechanisms could help alleviate stress for vulnerable groups.

Keywords: Clinical stress, Nursing students, Gender differences, Semester impact, Mode of transportation

INTRODUCTION

Clinical training is a fundamental component of nursing education, enabling students to gain practical experience in healthcare settings and develop essential professional skills. However, this phase can also be highly stressful, with stress affecting students' ability to perform tasks effectively and fully engage in their training [1], [2]. Factors such as semester level, gender, and mode of transportation have been shown to influence stress levels among nursing students [3], [4].

Despite the growing recognition of stress in clinical training, there remains a lack of comprehensive research exploring how these socio-demographic variables contribute to students' stress experiences. Therefore, this study aims to investigate the effects of semester level, gender, and mode of transportation on clinical stress among 291 diploma nursing students. By identifying key factors contributing to stress, this study seeks to provide valuable insights into the development of targeted support strategies to help mitigate stress and enhance the overall clinical training experience for nursing students.

LITERATURE REVIEW

Research on clinical stress among nursing students indicates that multiple factors can influence the level of stress experienced. Nursing students frequently encounter high levels of stress during their clinical training, which may stem from heavy workloads, fear of making mistakes, and interactions with patients and healthcare staff [5]. A study by Latif & Nor [6] found that clinical assignments and workload were the main stressors among nursing students. Additionally, stress can arise from the imbalance between academic demands and personal responsibilities, as students with external commitments such as part-time jobs or family obligations tend to experience higher stress levels [7].

Stress levels among students may also vary according to their semester of study. Rafati et al. [8] reported that first-year diploma students experienced higher stress levels compared to those in their second and third years. This may be attributed to the increasing clinical and academic responsibilities faced by students at this stage, as they must adapt to more complex and demanding clinical training [9]. However, some studies have found

that stress levels in final-year students can also rise due to concerns about final examinations and the transition into the workforce [10]. Thus, stress levels among nursing students may fluctuate depending on their academic year and the specific academic and clinical requirements of each semester.

The role of gender in clinical stress has also been a topic of discussion in various studies. Some research suggests that there is no significant difference in stress levels between male and female nursing students [11]. However, other studies indicate that gender may influence how students cope with stress, with female students tending to report higher levels of stress, particularly in emotional aspects and the need for social support [12]. In contrast, male students are more likely to adopt problem-focused coping strategies and are less likely to report high emotional stress [4]. Although coping mechanisms may differ, overall stress levels between genders appear to follow similar patterns in most studies.

Despite numerous studies investigating factors contributing to stress among nursing students, the impact of transportation modes on clinical stress remains underexplored. The mode of transportation used by students to travel to clinical training sites may influence their stress levels, particularly if it involves long or inconvenient commutes. A study by Mohamad et al. [13]found that environmental factors, which may include transportation modes, had a moderately strong relationship with nursing students' learning satisfaction. However, there is still a lack of studies specifically examining the relationship between transportation modes and clinical stress among nursing students. Therefore, further research is needed to gain a deeper understanding of how factors such as travel distance, transportation type, and commuting time affect stress levels among nursing students undergoing clinical training.

METHODOLOGY

Study Design

This study employs a quantitative cross-sectional design to assess clinical stress levels among diploma nursing students and examine the influence of semester level, gender, and mode of transportation on their stress experiences. The study commenced in December 2024, with data collection conducted in February 2025.

Study Population

The study population consists of all diploma nursing students from Semester 2 to Semester 6 who are enrolled in a nursing institution in Malaysia. This study employs a universal sampling method, where all eligible students within these semesters are included to ensure comprehensive representation of the target population. The use of universal sampling minimizes selection bias and enhances the generalizability of the findings, as it captures the full range of clinical stress experiences across different academic levels.

The inclusion criteria for this study require participants to be actively enrolled in a diploma nursing program, currently in Semester 2 to Semester 6, and undergoing clinical training at the time of data collection. Additionally, participants must be willing to provide informed consent to ensure ethical participation. Students in Semester 1 are excluded from the study, as they have yet to gain clinical exposure, which is a fundamental component in assessing clinical stress. Furthermore, students who are on leave, have withdrawn from the program, or have declined to participate are also excluded to maintain data accuracy and relevance.

Data Collection

Data collection was conducted over a one-month period in February 2025 using an online survey administered via Google Forms to assess clinical stress levels among diploma nursing students. The study utilized a structured questionnaire which is Nursing Students' Perceived Clinical Stress Scale (NSPCSS) developed and validated by Rafati et al. [14], consisting of 30 items measured on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The reliability of the instrument was previously established, with a Cronbach’s alpha coefficient greater than 0.7, indicating strong internal consistency. Prior to its administration, formal permission was obtained previous study to ensure ethical compliance and proper acknowledgment of the validated instrument. The Google Forms link was distributed electronically via institutional email and

student communication platforms, with participants given one week to complete the questionnaire, and reminders sent periodically to maximize response rates.

Data Analysis

Data were analysed using SPSS Version 27, employing descriptive and inferential statistical methods. Descriptive statistics summarized participants' demographic characteristics and clinical stress levels, measured using the Nursing Students' Perceived Clinical Stress Scale (NSPCSS), which consists of 30 items scored on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The total NSPCSS score ranges from 30 to 150, categorized as low (30–59), moderate (60–89), high (90–119), and very high (120–150). For inferential analysis, the Chi-square test was used to determine the relationship between clinical stress levels and independent variables (semester level, gender, and mode of transportation). A p-value of <0.05 was considered statistically significant. The study achieved a 97.9% response rate, with 291 responses collected from the required 298, ensuring complete and reliable data for analysis.

Ethical Considerations

This study adhered to strict ethical guidelines set by the Ministry of Health Malaysia and received ethical approval from the Medical Research and Ethics Committee (MREC) under NMRR ID-24-04102-UZS. Prior to data collection, all participants were provided with a detailed explanation of the study's objectives, procedures, potential risks, and benefits. Written informed consent was obtained from each participant to ensure voluntary participation. To uphold confidentiality and anonymity, all responses were de-identified, and data were used solely for research purposes. Participants were assured that their responses would remain anonymous and that no identifying information would be disclosed in any reports or publications. Furthermore, students were informed of their right to withdraw at any stage of the study without any academic consequences or penalties. The study followed ethical principles outlined in the Declaration of Helsinki and complied with institutional and national research ethics standards to ensure the protection of participants' rights and well-being.

RESULTS

Socio-Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of the study participants, comprising 291 diploma nursing students. The majority were from Semester 3 (45.7%), followed by Semester 2 (19.2%), Semester 5 (12.4%), Semester 4 (11.7%), and Semester 6 (11.0%). The participants' ages ranged from 20 to 32 years, with a mean age of 22.66 years (SD = 1.86). In terms of gender, 79.4% were female, while 20.6% were male. Regarding the mode of transportation, 55.7% of students walked to their clinical placements, while 44.3% used the college bus.

Table 1: Sociodemographic Background (N=291) *Mean; **SD

Demographic characteristics	**n**	**%**
Semester		
Semester 2	56	19.2
Semester 3	133	45.7
Semester 4	34	11.7
Semester 5	36	12.4
Semester 6	32	11.0

Age (years)		
Min-max: 20-32	*22.66	**1.86
Gender		
Male	60	20.6
Female	231	79.4
Mode of Transportation		
Walking	162	55.7
College Bus	129	44.3

Level of stress clinical

Table 2 shows the levels of clinical stress among nursing students (n=291). Most students (74.9%, n=218) experienced low stress levels (30–59 points), while 20.3% (n=59) reported moderate stress (60–89 points). A small percentage (4.5%, n=13) experienced high stress (90–119 points), and only 0.3% (n=1) reported very high stress (120–150 points). This indicates that most students perceive clinical training as low to moderately stressful, with only a few experiencing high levels of stress.

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

Association Between Semester Level, Gender, Mode of Transportation, and Clinical Stress Levels

Table 3 presents the association between semester level, gender, and mode of transportation with clinical stress levels among diploma nursing students. The Chi-square test revealed significant relationships between all three variables and stress levels, as indicated by p-values less than 0.05.

Regarding semester level ($p = 0.036$), Semester 2 students had the highest proportion of low stress (85.7%), followed by Semester 4 (82.4%) and Semester 3 (75.2%). In contrast, higher semesters (Semester 5 and 6) showed increased proportions of moderate to high stress, with Semester 5 reporting the highest percentage of high (2.8%) and very high stress (2.8%).

For gender ($p = 0.008$), both male and female students predominantly experienced low stress (76.7% and 74.5%, respectively). However, male students reported a higher proportion of high stress (11.7%) compared to female students (2.6%), while very high stress was only observed in one female student (0.4%).

Regarding mode of transportation ($p = 0.002$), a significant difference was found between students who walked and those who used the college bus. Among students who walked, 27.2% reported moderate stress, and 3.1%

experienced high stress, whereas students who used the college bus reported lower moderate stress (11.6%) but slightly higher high stress (6.2%). Very high stress (0.6%) was only observed among walking students.

Table 3: Relationships Stress Level with Socio-Demographic (n=291)

Demographic characteristics	**n (%)**	**Level of stress, n (%)**				***p-value***
		Low	**Moderate**	**High**	**Very high**	
Semester						***0.036***
Semester 2	56 (19.2)	48 (85.7)	6 (10.7)	2 (3.6)	0 (0.0)	
Semester 3	133 (45.7)	100 (75.2)	24 (18.0)	9 (6.8)	0 (0.0)	
Semester 4	34 (11.7)	28 (82.4)	6 (17.6)	0 (0.0)	0 (0.0)	
Semester 5	36 (12.4)	21 (58.3)	13 (36.1)	1 (2.8)	1 (2.8)	
Semester 6	32 (11.0)	21 (65.6)	10 (31.3)	1 (3.1)	0 (0.0)	
Gender						***0.008***
Male	60 (20.6)	46 (76.7)	7 (11.7)	7 (11.7)	0 (0.0)	
Female	231 (79.4)	172 (74.5)	52 (22.5)	6 (2.6)	1 (0.4)	
Mode of Transportation						***0.002***
Walking	162 (55.7)	112 (69.1)	44 (27.2)	5 (3.1)	1 (0.6)	
College Bus	129 (44.3)	106 (82.2)	15 (11.6)	8 (6.2)	0 (0.0)	

Notes: Significant p-value: <0.05

DISCUSSION

This study aimed to assess the impact of semester level, gender, and mode of transportation on clinical stress among diploma nursing students. The findings indicate that clinical stress levels varied significantly based on these demographic factors, with higher stress levels observed among final-semester students, male students, and those who walked to clinical placements. These results align with previous studies emphasizing the effects of academic progression, gender differences, and transportation factors on stress among nursing students [3], [4].

Most students (74.9%) reported low stress levels, while 20.3% experienced moderate stress, and 4.8% reported high or very high stress. These findings suggest a more favourable stress distribution compared to previous studies conducted in Saudi Arabia [5] and Nepal [15]. However, despite the lower overall stress prevalence, a subset of students still experienced moderate to high stress levels, highlighting the need for targeted interventions to mitigate clinical stress among nursing students.

Impact of Semester Level on Clinical Stress

The findings revealed a significant association between semester level and clinical stress ($p = 0.036$), with higher-semester students exhibiting greater stress compared to those in earlier semesters. Students in Semester 2 (85.7%) and Semester 4 (82.4%) predominantly reported low stress levels, whereas students in Semester 5

and 6 showed an increasing prevalence of moderate to high stress. These results are consistent with prior research, which indicates that senior nursing students experience heightened stress due to the increasing complexity of clinical training and academic demands [2], [16].

This trend suggests that clinical stress intensifies as students' progress through their training, likely due to greater clinical responsibilities, increased patient care demands, and the expectation of higher competency levels [8], [9]. However, contrasting studies indicate that first-year students experience the highest stress levels compared to senior students, as they struggle with adjusting to clinical environments and learning expectations [8].

Furthermore, final-year students are particularly vulnerable to heightened stress levels due to concerns related to final examinations, job placements, and transitioning into the workforce [10]. The shift from structured academic learning to independent clinical practice further contributes to their stress. Addressing these challenges requires academic mentoring programs, career counselling services, and structured stress management training to support students, particularly in their final semesters.

Gender Differences in Clinical Stress

This study also identified a significant relationship between gender and clinical stress ($p = 0.008$), with male students experiencing higher levels of moderate and high stress compared to female students. Specifically, 11.7% of male students reported high stress, compared to 2.6% of female students. These findings contradict studies that suggest female nursing students typically experience greater stress, particularly in emotional aspects and their need for social support [13], [16], [17], [18]. However, they align with research suggesting that male students may underreport emotional stress while experiencing significant performance-related clinical and academic stress [4].

One possible explanation for this gender disparity is the social and professional pressure faced by male students in a predominantly female profession. Previous studies have suggested that male nursing students encounter gender role stereotypes, lack male mentors, and are often expected to perform physically demanding tasks in clinical settings [19], [20]. Additionally, male students tend to adopt problem-focused coping strategies, which may lead to higher perceived stress when they face clinical challenges without immediate solutions [21].

To address these disparities, nursing institutions should consider implementing gender-sensitive support programs, including mentorship opportunities for male students, peer support networks, and inclusive learning environments. These initiatives could help reduce stress levels and enhance the overall well-being of male students in clinical training.

Impact of Mode of Transportation on Clinical Stress

The study also demonstrated a significant association between mode of transportation and clinical stress levels ($p = 0.002$), where students who walked to clinical placements reported higher stress levels compared to those using the college bus. Among students who walked, 27.2% experienced moderate stress, and 3.1% reported high stress, whereas students using the college bus had lower moderate stress levels (11.6%) but slightly higher high stress levels (6.2%).

These findings suggest that transportation-related factors significantly contribute to students' stress levels, possibly due to long commuting distances, unpredictable weather conditions, and physical exhaustion before starting clinical shifts. Previous studies have linked commuting difficulties, including lengthy travel times and unreliable transportation, to heightened stress levels among nursing students [22]. Additionally, students who walk long distances may face further stress due to safety concerns, fatigue, and difficulties in managing their time effectively [13].

To alleviate these challenges, nursing institutions should enhance transportation accessibility, such as providing additional shuttle services or financial assistance for students commuting long distances.

Furthermore, flexible clinical scheduling may enable students to better manage travel time and minimize external stressors.

Implications for Nursing Education

The findings of this study have several important implications for nursing education and institutional policies, particularly in addressing clinical stress experienced by students based on semester level, gender, and mode of transportation. As these factors significantly influence students' stress levels, targeted intervention strategies should be introduced to provide more effective support. For final-semester students, institutions should offer additional academic guidance, career counselling, and stress management programs to help them cope with increasing clinical demands and prepare for their transition into the workforce. For male students, mentorship programs and social support initiatives can be implemented to help them navigate gender role stereotypes in nursing, which may contribute to higher stress levels in clinical settings. Additionally, for students facing challenges in commuting to clinical placements, measures such as improving transportation facilities and implementing more flexible scheduling can help alleviate external stressors related to travel distance and physical fatigue before clinical shifts. By implementing appropriate interventions, nursing institutions can enhance students' well-being and ensure a more positive and conducive clinical training experience, ultimately fostering their learning and professional development.

CONCLUSION

This study highlights the significant influence of semester level, gender, and mode of transportation on clinical stress among nursing students, with final-semester students, male students, and those walking to clinical placements experiencing higher stress levels. Targeted interventions such as academic support, gender-based programs, and improved transportation facilities are needed to enhance students' well-being. However, the cross-sectional design limits the ability to track stress variations over time, and other influencing factors such as clinical workload and peer support were not considered. Future studies should explore longitudinal designs and assess psychosocial factors, coping mechanisms, and intervention effectiveness to develop more comprehensive strategies for managing clinical stress in nursing students.

Conflict of Interest

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

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