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Perceived stress level and coping behavior during clinical internships among nursing students at Duy Tan university

Tran Thi Thu Huong[1], Nguyen Thi Le[1], Nguyen Thi Hong Hanh[1], Tran Thao Nguyen[2]

[1]Duy Tan University, [2]TTH General Hospital Quang Binh

ABSTRACT

Objectives: *This study aims to assess the perceived stress levels and coping behaviors of nursing students during clinical internships, as well as to identify key factors influencing stress levels among nursing students at Duy Tan University in 2023.* ***Participants and Method****: A cross-sectional descriptive study was conducted on 292 nursing students at Duy Tan University. The Perceived Stress Scale (PSS) was utilized to measure stress levels, while the Coping Behavior Inventory (CBI) was employed to assess coping strategies during clinical internships. Data were analyzed using SPSS version 20.0. Descriptive statistics were used to summarize demographic characteristics, as well as the mean and standard deviation of perceived stress levels and coping behaviors. To examine the relationships between variables and students' stress levels, independent t-tests and analysis of variance (ANOVA) were performed. Statistical significance was set at $p < 0.05$, with a 95% confidence interval (CI) applied to all analyses.* ***Results***: *Nursing students at Duy Tan University experienced a moderate level of perceived stress during their clinical internships, with a mean score of 2.50 (SD = 0.428). Among the coping strategies, Transference was the most commonly used, with a mean score of 3.24 (SD = 0.835). Several factors were found to be significantly associated with stress levels, including gender, age, academic year, residential status, clinical internship location, and part-time employment status ($p < 0.05$).* ***Conclusion****: Interventions are necessary to reduce stress levels among nursing students during clinical internships, particularly for female students, final-year students, and those living alone. Additionally, students interning at large healthcare facilities and those engaged in part-time employment should receive additional support to mitigate stress and enhance their coping abilities.*

Keywords: *Stress; coping behavior; clinical internship; nursing students.*

INTRODUCTION

Stress is a natural physiological response to challenges and perceived threats, leading to emotional and behavioral changes [1]. While mild or short-term stress can enhance an individual's ability to cope with environmental challenges and foster personal growth-referred to as eustress [1] - prolonged, intense, or recurrent stress can disrupt the body's biological equilibrium. This disruption may result in various

Cor. author: Tran Thi Thu Huong
Email: huongtran159.qb@gmail.com
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physical and mental health issues, including depression, anxiety, and cardiovascular diseases [1].

Stress can stem from a variety of sources and has profound effects on both the personal and academic lives of students. Notably, research indicates that nursing students experience higher stress levels than their peers in other undergraduate programs [2, 3]. Although individual factors contribute to stress, the clinical environment serves as a major external stressor for nursing students, intensifying their psychological burden [4].

Beyond theoretical education, clinical internships play a pivotal role in nursing training, significantly contributing to students' skill development and professional expertise [5]. This stage is particularly crucial, as it allows students to gain hands-on experience, refine their clinical and interpersonal skills, and cultivate autonomy and responsibility. However, during clinical practice, students must navigate a dynamic, unfamiliar, and often demanding environment, requiring flexibility and adaptability to various situations, particularly in communication and patient interactions. Consequently, students frequently encounter multiple stressors and challenges, which can influence their learning experience and overall well-being.

In response to academic stress, coping behaviors play a crucial role in determining its impact on students' physical health, mental well-being, and academic performance [6]. Common coping strategies among students include avoidance, adaptive coping mechanisms, positive reframing, and problem-solving approaches [7].

Recent studies provide insights into how nursing students manage stress during clinical internships. For instance, Jing Liu et al (2022) found that nursing students experienced moderate stress levels during the initial phase of their clinical training, with adaptive coping strategies being the most frequently employed [8]. Similarly, Ahmed and Mohammed (2019) reported that students often relied on problem-solving behaviors and optimism to mitigate stress during clinical practice [9].

In Vietnam, recent studies have yielded similar findings, indicating that nursing students commonly experience moderate stress levels during clinical internships [10, 11]. Specifically, Nguyen Thi Huyen Trang et al. (2021) found that students frequently adopted positive reframing as a coping mechanism [10]. In contrast, Kieu Thi Phuong Thao et al (2024) reported that adaptive coping strategies were the predominant approach among nursing students in managing stress [11].

Given the critical role of adaptive coping strategies in reducing stress and mitigating its adverse effects on physical and mental health [12], it is essential to assess students' stress levels and provide appropriate interventions to enhance their coping abilities. Therefore, this study aims to: (1) Describe the perceived stress levels and coping behaviors exhibited by nursing students during clinical internships. (2) Explore key factors associated withperceived stress levels among nursing students at Duy Tan University in 2023.

RESEARCH PARTICIPANTS AND METHODS

Research participants: This study involved nursing students from Duy Tan University.

Inclusion criteria: Nursing students from the 2nd to 4th year who were undergoing clinical internships at healthcare institutions.

Exclusion criteria: Students who declined to provide informed consent or were unavailable during the data collection period were excluded from the study.

Location: The research was conducted at Duy Tan University and six clinical internship sites, including Danang Hospital, Hospital C, Military Hospital 17, Hai Chau District Medical Center, Son Tra District Medical Center, and Lien Chieu District Medical Center.

Duration: From December 2023 to May 2024.

Research design*:* This was a descriptive cross-sectional study.

Research sample: A complete sampling method was employed, including all eligible students during the study period. A total of 292 students met the inclusion criteria.

Data collection instrument: The questionnaire consists of 3 parts:

Part 1:Characteristics of the participants: gender, age, academic year, residential status, academic performance, clinical internship location, part-time employment, Participation in extracurricular activities.

Part 2: The Perceived Stress Scale (PSS), developed by Sheu et al (1997), consists of 29 items that assess nursing students' stress levels during clinical practice across six dimensions. Stress levels are measured using a 5-point Likert scale ranging from 0 (never) to 4 (always). The results are categorized into three levels: a high level of stress is indicated by a mean score greater than 2.67, a moderate level is reflected by mean scores between 1.34 and 2.66, and a low level is represented by mean scores below 1.34 [13]. This scale was translated into Vietnamese and utilized in studies conducted by Nguyen Thi Ngoc Phuong (2010) [14] and Nguyen Thi Huyen Trang (2021) [10], with Cronbach's alpha values of 0.86 and 0.91, respectively, demonstrating good reliability. In the present study, reliability analysis of the PSS yielded a Cronbach's alpha of 0.939, confirming the high internal consistency of the scale.

Part 3: The Coping Behavior Inventory (CBI), developed by Sheu et al (2002), consists of 19 items that are categorized into four distinct coping behavior groups. Responses are assessed using a 5-point Likert scale ranging from 0 (never) to 4 (always). Notably, Item 7 is negatively worded and is therefore recoded prior to analysis to ensure consistency in scoring. A higher mean score on the CBI scale indicates more frequent utilization of the respective coping behaviors[7]. The scale was translated into Vietnamese and applied in the studies conducted by Nguyen Thi Ngoc Phuong (2010) [14] and Nguyen Thi Huyen Trang (2021) [10], where it demonstrated a Cronbach's alpha of 0.71, indicating acceptable internal consistency. Furthermore, in a pilot study involving 30 nursing students (who were not part of the main research sample), the CBI scale exhibited a Cronbach's alpha of 0.859, suggesting a high level of reliability in measuring coping behaviors among nursing students.

Data collection method: A structured questionnaire was utilized as the primary method for data collection in this study.

The research was conducted at Duy Tan University and six clinical internship sites, including Danang Hospital, Hospital C, Military Hospital 17, Hai Chau District Medical Center, Son Tra District Medical Center, and Lien Chieu District Medical Center. The researcher engaged with students during their clinical internships

at these medical facilities and academic sessions at the university to provide a comprehensive explanation of the study's objectives.

Prior to participation, students received detailed information regarding the study's objectives and procedures. Additionally, any questions or concerns raised by the participants were clarified by the researcher. Students who provided informed consent to participate were instructed to complete the questionnaire and return it immediately upon completion..

Data processing method: The data were analyzed using SPSS version 20.0. Descriptive statistics were employed to summarize the demographic characteristics of the participants, as well as the mean and standard deviation of perceived stress levels and coping behaviors.

To examine the relationships between variables and students' perceived stress levels, independent t-tests and analysis of variance (ANOVA) were conducted. All statistical analyses were performed with a 95% confidence interval (CI), and a p-value of less than 0.05 ($p < 0.05$) was considered statistically significant.

Research ethics:

The study was conducted after obtaining official approval from Duy Tan University. Prior to participation, students were fully informed about the purpose and scope of the study, as well as their right to withdraw at any time without any consequences for their academic progress. The researcher ensured confidentiality and anonymity by coding each participant's questionnaire with a unique identifier, thereby protecting their personal information. Furthermore, the study posed no risk or harm to participants, and all collected data were used solely for research purposes.

RESULTS

Table 1. Characteristics of study participants (n = 292)

Characteristic		n	%
Gender	Male	27	9.2
	Female	265	90.8
Age (Mean ± SD: 20.76 ± 0.793)	20	130	44.5
	21	107	36.6
	>= 22	55	18.8
Academic year	Second year	130	44.5
	Third year	107	36.6
	Fourth year	55	18.8
Residential status	Living alone in rented accommodation	31	10.6
	Sharing rented accommodation	198	67.8
	Living with family/relatives	63	21.6

Characteristic		n	%
Academic performance	Average (GPA 2.00 – 2.49)	19	6.5
	Good (GPA 2.50 – 3.19)	226	77.4
	Very Good (GPA 3.20 – 3.59)	41	14.0
	Excellent (GPA 3.60 – 4.00)	6	2.1
Clinical internship location	Danang Hospital	168	57.5
	Hospital C	58	19.9
	Military Hospital 17	20	6.8
	Hai Chau District Medical Center	20	6.8
	Son Tra District Medical Center	12	4.1
	Lien Chieu District Medical Center	14	4.8
Part-time employment	Yes	40	13.7
	No	252	86.3
Participation in extracurricular activities	Yes	20	6.8
	No	272	93.2

Among the 292 participants, female students accounted for a higher proportion (90.8%) compared to male students. Most students lived in rented accommodation (78.4%). During clinical internships, the majority of students practiced at Da Nang Hospital (57.5%) and Hospital C (19.9%). Additionally, 13.7% of students worked part-time, and only 6.8% regularly participated in extracurricular activities.

Table 2. Perceived stress score during clinical internship of nursing students (n = 292)

Content	Mean ± SD
Stress due to lack of knowledge and professional skills	2.21 ± 0.811
Stress from assignments and workload	2.59 ± 0.528
Stress from patient care	**2.96 ± 0.646**
Stress from the clinical practice environment	2.60 ± 0.998
Stress from nursing faculty and staff	2.12 ± 0.532
Stress from peers and academic life	2.16 ± 0.616
Mean perceived stress score	**2.50 ± 0.428**

The mean perceived stress score of nursing students during clinical internship was classified as moderate (2.50 ± 0.428). The highest mean score was observed for 'patient care' (2.96 ± 0.646).

Table 3. Coping behaviors for stress during clinical internship of nursing students (n = 292)

Coping behaviors	Mean ± SD
Transference	**3.24 ± 0.835**
Staying optimistic	2.78 ± 0.519
Problem solving	2.66 ± 0.786
Avoidance	1.41 ± 0.633

To cope with stress during clinical internship, nursing students most frequently adopted transference behavior (3.24 ± 0.835), while avoidance behavior was the least chosen strategy (1.41 ± 0.633).

Table 4. Association between nursing students' characteristics and perceived stress score during clinical internship (n = 292)

Characteristic		Mean ± SD	t/F	p	Post Hoc
Gender	Male	2.28 ± 0.533	-2,292t	**0.029**	
	Female	2.52 ± 0.411			
Age	20①	2.47 ± 0.416			
	21②	2.45 ± 0.509	4,891F	**0.000**	③ > ①>②
	>=22③	2.66 ± 0.187			
Academic year	Second year①	2.47 ± 0.416			
	Third year②	2.45 ± 0.509	4,891F	**0.000**	③>①>②
	Fourth year③	2.66 ± 0.187			
Residential status	Living alone in rented accommodation①	2.66 ± 0.411			
	Sharing rented accommodation ②	2.45 ± 0.442	3,721F	**0.025**	①>②>③
	Living with family/ relatives③	2.25 ± 0.370			
Academic performance	Average (GPA 2.00 – 2.49)	2.54 ± 0.358			
	Good (GPA 2.50 – 3.19)	2.49 ± 0.444			
	Very good (GPA 3.20 – 3.59)	2.50 ± 0.389	1,006F	0.390	
	Excellent (GPA 3.60 – 4.00)	2.78 ± 0.191			

Characteristic		Mean ± SD	t/F	p	Post Hoc
Clinical internship location	Danang Hospital①	2.57 ± 0.390	3,306F	**0.006**	①>②>③>④>⑤>⑥
	Hospital C②	2.47 ± 0.480			
	Military Hospital 17③	2.36 ± 0.451			
	Hai Chau District Medical Center④	2.35 ± 0.420			
	Son Tra District Medical Center⑤	2.34 ± 0.467			
	Lien Chieu District Medical Center⑥	2.25 ± 0.415			
Part-time employment	Yes	2.67 ± 0.223	4,437t	**0.000**	
	No	2.47 ± 0.446			
Participate in extracurricular activities	Yes	2.43 ± 0.341	-0.704t	0.482	
	No	2.50 ± 0.434			

(t: t-test, F: one way Anova)

Gender, age, academic year, residential status, clinical internship location, and part-time employment were significantly associated with the perceived stress score during clinical internship ($p = 0.029$; $p < 0.001$; $p < 0.001$; $p = 0.025$; $p = 0.006$; $p < 0.001$, respectively). Higher mean perceived stress score were observed in female students, older age groups (≥22 years), fourth-year students, those living alone, those interning at Danang Hospital, and students with part-time jobs. No significant association was found between mean perceived stress score and academic performance or participation in extracurricular activities ($p = 0.390$; $p = 0.482$, respectively).

DISCUSSION

Perceived stress score and coping behaviors: The perceived stress score of nursing students at Duy Tan University during clinical internship was classified as moderate (2.50 ± 0.428). This finding aligns with the studies conducted by Nguyen Thi Huyen Trang (2.38 ± 0.40) [10], Kieu Thi Phuong Thao (1.98 ± 0.43) [11], and Waddah M. D'emeh (2.58 ± 0.92) [15]. However, a higher perceived stress score was recorded in the study by Mahfouz, R., & Alsahli, H (2016) [4]. Conversely, Admi, H., et al (2018) reported that nursing students experienced mild to moderate perceived stress levels [16]. These discrepancies may be attributed to differences in the measurement tools used across studies and variations in the academic years of the participants.

The primary source of stress during clinical internship for nursing students at Duy Tan University was "stress from patient care" (2.96 ± 0.647), which is consistent with the findings of W.A. Ahmed et al [9]. This can be explained by the fact that patient care requires students to apply theoretical knowledge in real-life situations, often for the first time, leading to anxiety

and stress [17]. In contrast, studies by Nguyen Thi Huyen Trang [10] and Emad A.S. [12] indicated that the most significant stressor was academic workload, while Kieu Thi Phuong Thao et al [11] identified the clinical practice environment as the main source of stress. For Duy Tan University nursing students, the clinical practice environment also caused considerable stress (2.60 ± 0.998). This discrepancy may stem from differences in clinical settings, hospital policies, and the level of support provided to students. Given the increasing patient overload and rising care demands [10], it is recommended that educational institutions collaborate with clinical sites to create structured, supportive environments and provide stress management training for nursing students.

The most frequently adopted coping behavior during clinical internship was Alternative behavior, followed by Optimistic behavior and Problem-solving behavior. This finding is consistent with the study by Kieu Thi Phuong Thao et al [11]. Ahmed's research, however, highlighted Problem-solving behavior as the most commonly used strategy [9], while Nguyen Thi Huyen Trang [10] found that Optimistic behavior was the most preferred coping mechanism. The tendency to use alternative behaviors may reflect students' adaptive strategies to navigate stressful situations by seeking social support or employing relaxation techniques. Institutions should encourage the use of active coping mechanisms, such as problem-solving and cognitive restructuring, through workshops and peer support programs.

In this study, avoidance behavior was the least utilized coping strategy, consistent with previous findings by Nguyen Thi Huyen Trang [10], Kieu Thi Phuong Thao [11], and Ahmed [9]. In contrast, nursing students in Türkiye were more likely to adopt avoidance behavior as a coping mechanism [19]. This difference may stem from variations in cultural norms and social expectations regarding stress management. Although avoidance behavior may provide temporary emotional relief, it can lead to increased stress and unresolved issues over time. For nursing students, prolonged reliance on avoidance coping may negatively impact their clinical performance and mental well-being. Providing mental health support, organizing stress management workshops, and fostering open communication with clinical instructors may help students develop more adaptive coping mechanisms, thereby improving both their academic performance and emotional resilience.

The findings indicate that stress during clinical internship is influenced by various factors, and nursing students use different coping strategies to manage it. Future research should focus on tracking changes in stress levels and coping behaviors over time. Additionally, it is important to assess the effectiveness of specific interventions, such as stress management programs or psychological support, in helping students cope better during clinical practice.

Association between nursing students' characteristics and perceived stress score: This study found that gender, academic year, living situation, clinical internship location, and part-time employment were significantly associated with perceived stress score during clinical internships ($p < 0.05$). Mean perceived stress score were higher among female students ($p = 0.023$), fourth - and second-year students ($p = 0.014$, $p = 0.037$), those living alone ($p = 0.018$), students practicing at Da Nang Hospital and Hospital C ($p = 0.029$), and

those with part-time jobs ($p = 0.041$). Age and GPA showed no significant association with mean perceived stress score ($p > 0.05$).

Gender differences in mean perceived stress score were evident, with female nursing students reporting significantly higher mean perceived stress score than male students ($p < 0.05$). This finding aligns with the study by Bsharat, F. (2023) [20], which also reported higher mean perceived stress score among female nursing students. One possible explanation is that female students may experience greater emotional investment in patient care, leading to heightened stress when faced with challenging clinical situations.

Academic year was another significant factor, with fourth-year students experiencing the highest levels of stress ($p = 0.003$). This finding is consistent with the research of Nguyen Thi Huyen Trang [10], which also observed elevated stress levels among senior nursing students. Fourth-year students at Duy Tan University are in the graduation internship phase, during which they spend extensive hours at the hospital under the direct supervision of clinical staff. This intensive clinical exposure, combined with the pressure of academic requirements and upcoming licensure examinations, likely contributes to their increased stress levels. In contrast, second-year students reported higher stress levels than third-year students, which may stem from their initial exposure to the clinical environment and limited proficiency in nursing skills. This result differs from the study by Admi et al [16], which found that second-year students had higher stress levels than those in more advanced years. The discrepancy may be attributed to differences in assessment instrument, as Admi et al. used the Nursing Students Stress Scale (NSSS) while this study employed the Perceived Stress Scale (PSS), as well as variations in sample size and educational contexts.

Residential status also influenced perceived stress score, with students living alone reporting significantly higher stress than those living with family or friends ($p < 0.05$). This finding aligns with a study conducted in Brazil, which highlighted the protective effect of family support in mitigating stress [21]. Living with others may offer emotional and practical support, easing the psychological burden associated with clinical training. Conversely, students living alone may lack immediate social support, increasing their vulnerability to stress. Furthermore, research by Nguyen Thi Thanh Thao [22] found that students living alone had a higher demand for psychological counseling, underscoring the mental health challenges faced by this group.

The clinical practice location was another critical factor, with students practicing at Da Nang Hospital and Hospital C experiencing higher perceived stress score ($p = 0.008$). These hospitals are classified as Level I hospital, characterized by a high patient volume and complex medical cases. Such environments demand advanced clinical competencies and rapid decision-making, which can be particularly stressful for nursing students. Moreover, specialized units such as intensive care and stroke wards pose additional challenges, requiring students to perform complex procedures under time pressure.

Part-time employment was also associated with increased perceived stress score ($p < 0.05$). While part-time jobs can provide financial support and professional experience, they may also exacerbate stress by reducing the time available for academic

preparation and rest. According to Oonyu's research [23], balancing work and academic responsibilities is a significant stressor for nursing students. The dual demands of employment and education may impair students' ability to manage their clinical responsibilities effectively, leading to heightened stress levels.

These findings emphasize the multifaceted nature of stress among nursing students during clinical internships. Interventions aimed at reducing stress should consider gender-specific support, targeted assistance for senior students, and mental health resources for those living alone. Additionally, academic institutions could explore strategies to balance clinical training demands with part-time employment, ensuring that students receive adequate support to manage their stress levels effectively.

This study has some limitations. The cross-sectional design limits causal conclusions, and self-reported data may be affected by recall and social desirability biases. Findings from a single institution may not generalize to other settings, and unmeasured factors (e.g., personality traits and social support) may also influence stress and coping. Future research should adopt longitudinal designs to capture temporal changes, integrate objective measures such as physiological or clinical assessments to reduce bias, and incorporate diverse populations across demographics, socioeconomic backgrounds, and health conditions to enhance generalizability and applicability.

CONCLUSION

This study indicates that nursing students at Duy Tan University experience a moderate level of perceived stress score during clinical internship. Among the four coping behavior groups, students most frequently adopt transference coping behaviors. Significant associations were observed between perceived stress score and gender, academic year, residential status, clinical internship location, and part-time employment ($p < 0.05$). To mitigate stress and enhance student preparedness, educational institutions should increase opportunities for hands-on practice in simulation centers before clinical internships. Instructors should provide psychological preparation, clarify differences between theoretical knowledge and clinical practice, and offer guidance on communication skills with patients, families, and healthcare professionals. Special attention and support should be given to female students, final-year students, those living alone, working part-time, and those interning at high-pressure medical facilities. Future research should explore the long-term effects of stress and evaluate the effectiveness of stress management interventions tailored for nursing students.

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