Prevalence of Stress and Coping Strategies Among Nursing Students During Clinical Rotations in Bannu

Asma Ghani¹, Muhammad Rizwan², Sadaf¹, Kalsoom¹, Muqadas¹, Nadia¹, Uroosa¹, Meherun Nisa³

¹ BSN Student, Government College of Nursing Bannu, Bannu, Pakistan
² RN Officer, DHQ Hospital Bannu, Bannu, Pakistan
3 Nursing Instructor Government College of Nursing Bannu
* Correspondence: Asma Ghani, aasmaghani5678@gmail.com

Crossref doi

ABSTRACT

Background: *Clinical rotations are a high-demand learning context for nursing students and can precipitate stress that undermines psychological well-being and clinical learning if not effectively managed.* **Objective:** *To estimate the point prevalence and severity distribution of stress and to describe coping strategies among BSN nursing students during clinical rotations in Bannu.* **Methods:** *A quantitative cross-sectional observational study was conducted among BSN students (2nd, 4th, 6th, and 8th semesters) from government and private nursing colleges in Bannu. Using proportionate stratified sampling, 160 students completed a structured online questionnaire. Stress was measured using the DASS-21 stress subscale and categorized into standard severity bands; coping strategies were assessed using a structured Likert-scale questionnaire and summarized as individual strategy frequencies and overall coping level (poor/moderate/good).* **Results:** *Normal stress was observed in 51.9% (83/160), while 48.1% (77/160; 95% CI 40.3–55.9) had elevated stress (≥ mild), including 11.3% (18/160) with severe/extremely severe stress. Elevated stress differed by semester (p=0.032; Cramér's V=0.23) and clinical exposure duration (p=0.041; Cramér's V=0.21), peaking in the 6th semester (62.5%) and among those with 6–12 months exposure (73.3%). Common "always" coping strategies were prayer/religious practices (67.5%), positive reframing (61.3%), and planning (37.5%). Poor coping was associated with higher odds of elevated stress versus good coping (OR=3.14; 95% CI 1.29–7.66; p=0.002; Cramér's V=0.28).* **Conclusion:** *Nearly half of nursing students experienced elevated stress during clinical rotations, with a distinct mid-program peak and a strong inverse association between coping capacity and stress burden, supporting targeted mentorship and structured stress-management interventions during higher-risk training phases.*

Keywords: *DASS-21; clinical rotations; nursing students; stress; coping strategies; nursing education; Bannu*

INTRODUCTION

Clinical education is a central component of undergraduate nursing programs and serves as the primary context in which students translate theoretical knowledge into direct patient care competencies. The transition from classroom-based instruction to hospital-based clinical practice represents a critical developmental phase characterized by increased responsibility, real-time decision-making, and performance evaluation under supervision (1). Within this context, nursing students are exposed to multiple academic and clinical stressors, including fear of making mistakes, managing complex patient conditions, interacting with multidisciplinary teams, and meeting institutional expectations (2,3). Empirical evidence consistently demonstrates that clinical placements are perceived as more stressful than theoretical coursework due to performance pressure, unfamiliar environments, and emotional exposure to suffering and death (4,5). While a certain degree of stress may enhance alertness and learning, excessive or poorly managed stress can negatively affect psychological well-being, cognitive functioning, academic achievement, and professional commitment (6,7).

Stress among nursing students is multidimensional and influenced by both individual and environmental determinants. Systematic reviews have identified common stressors such as heavy workload, lack of clinical competence, insufficient supervision, fear of negative evaluation, and role ambiguity (8,9). Elevated stress levels have been associated with symptoms of anxiety, emotional exhaustion, and burnout, which may compromise both learning outcomes and patient safety (10,11). Moreover, early exposure to unmanaged stress during training may influence long-term professional resilience and retention in the nursing workforce (12). These findings underscore the importance of systematically assessing stress during clinical rotations and identifying modifiable factors that can mitigate its adverse effects.

According to the transactional theory of stress and coping, stress is not solely determined by external demands but by an individual's cognitive appraisal of those demands and their perceived coping resources (13). Within this framework, coping strategies function as mediators between stressors and psychological outcomes. Coping mechanisms are typically categorized as problem-focused (e.g., planning, active problem-solving), emotion-focused (e.g., positive reframing, seeking emotional support, religious coping), or maladaptive/avoidant (e.g., denial, behavioral disengagement) (14). Evidence indicates that adaptive coping strategies, particularly planning, positive reframing, and social support seeking, are associated with lower perceived stress and better psychological adjustment among nursing students (15,16). In contrast, avoidant coping strategies have been linked to higher stress, anxiety, and poorer academic outcomes (17). Religious coping, especially in collectivist and spiritually oriented societies, has also been identified as a prominent stress-management strategy among healthcare students (18). However, the relative distribution of these coping strategies and their relationship with stress levels may vary considerably across cultural and institutional contexts.

In Pakistan, emerging research has documented moderate to high levels of academic and clinical stress among nursing students, with coping styles influencing perceived health and psychological well-being (19,20). Nevertheless, most published studies originate from large urban centers or province-wide samples, limiting contextual specificity. Educational infrastructure, clinical supervision patterns, hostel accommodation, and sociocultural support systems differ substantially across regions, potentially shaping both stress exposure and coping responses. In Khyber Pakhtunkhwa, particularly in Bannu, there is limited empirical evidence quantifying the point prevalence of stress during clinical rotations and describing the coping mechanisms employed by Bachelor of Science in Nursing (BSN) students. The absence of region-specific data constrains the development of targeted institutional interventions, mentorship models, and stress-management programs tailored to local needs.

From a population perspective (P), undergraduate BSN students engaged in clinical rotations represent a group exposed to structured clinical training environments. The exposure (E) of interest is participation in clinical rotations characterized by patient care responsibilities, academic evaluation, and supervised practice. The primary outcome (O) is the level of stress as measured by a validated instrument, specifically the stress subscale of the Depression Anxiety Stress Scale (DASS-21), which provides standardized categorization into normal, mild, moderate, severe, and extremely severe levels (21). A secondary outcome is the pattern of coping strategies adopted by students, encompassing problem-focused, emotion-focused, and avoidant approaches. Although this study does not involve a formal comparison group (C), it implicitly examines variations in stress levels and coping patterns across demographic and academic characteristics within the defined population.

The research problem, therefore, lies in the insufficient local evidence regarding the magnitude of stress and the distribution of coping strategies among nursing students during clinical rotations in Bannu. Without quantifying stress levels and identifying predominant coping mechanisms, nursing institutions lack empirical guidance to design preventive and supportive interventions. Furthermore, understanding whether students predominantly rely on adaptive or maladaptive coping strategies has implications for curriculum design, mentorship structures, and psychological support services. Addressing this knowledge gap is essential for strengthening clinical preparedness, enhancing resilience, and promoting mental well-being within nursing education programs.

Accordingly, the objective of this study was to determine the point prevalence of stress among BSN students during clinical rotations in Bannu and to describe the coping strategies they employ to manage clinical stress. The study sought to answer the following research question: What is the prevalence and severity distribution of stress among nursing students during clinical rotations in Bannu, and what coping mechanisms are most frequently utilized to manage this stress?

MATERIALS AND METHODS

This study employed a quantitative cross-sectional observational design to estimate the point prevalence of stress and to describe coping strategies among undergraduate nursing students during clinical rotations. A cross-sectional approach was selected because it allows for the simultaneous assessment of exposure (clinical rotation) and outcomes (stress levels and coping strategies) within a defined population at a specific time point, which is appropriate for prevalence estimation and descriptive epidemiology (22). The study was conducted in government and private nursing colleges located in Bannu, Khyber Pakhtunkhwa, Pakistan. Data collection was carried out over a defined academic term during which students were actively engaged in hospital-based clinical rotations.

The target population comprised Bachelor of Science in Nursing (BSN) students enrolled in the second, fourth, sixth, and eighth semesters who had clinical exposure at the time of data collection. First-semester students were excluded because they had not yet commenced clinical rotations. Second-semester students from private institutions were excluded if they had not started clinical placements. Additional exclusion criteria included students not currently participating in clinical training and those unwilling to provide informed consent. Eligibility was verified through institutional enrollment records and self-report confirmation of active clinical placement.

A proportionate stratified sampling strategy was used to enhance representativeness across semesters and institutional types (public and private). The total eligible population consisted of 228 students. Strata were defined by academic semester and institution type. Within each stratum, participants were allocated proportionally according to the size of the stratum relative to the total population. Students were invited to participate through official academic communication channels, including institutional messaging groups and direct electronic contact. Participation was voluntary, and no incentives were provided.

The sample size was calculated using the finite population correction formula for prevalence studies. Assuming a 95% confidence level (Z = 1.96), an expected population proportion (p) of 0.5 to maximize variance, and a margin of error (E) of 0.05, the initial calculated sample size was 144 students. To compensate for a potential 10% non-response rate, the required sample size was increased to 158. A total of 160 students completed the survey, thereby slightly exceeding the calculated minimum and enhancing statistical precision.

Data were collected using a structured, self-administered online questionnaire developed in English and distributed via a secure Google Forms platform. The survey consisted of three components: demographic characteristics, assessment of stress levels, and assessment of coping strategies. Demographic variables included age, gender, academic semester, duration of clinical exposure (<6 months, 6–12 months, >1 year), and living arrangement (hostel or day scholar). The primary outcome variable, stress level, was measured using the Stress subscale of the Depression Anxiety Stress Scale-21 (DASS-21), a validated instrument developed by Lovibond and Lovibond (21). The stress subscale contains seven items rated on a four-point Likert scale (0 = did not apply to me at all to 3 = applied to me very much or most of the time). Item scores were summed and multiplied by two according to standard DASS-21 scoring guidelines to obtain the final stress score, which was categorized as normal (0–14), mild (15–18), moderate (19–25), severe (26–33), or extremely severe (≥34) based on established cutoffs (21).

Coping strategies were assessed using a structured coping questionnaire comprising items reflecting commonly reported strategies in nursing education literature, including planning, positive reframing, reliance on religious practices, emotional expression (talking to someone), taking breaks for relaxation, physical activity, and avoidance behaviors (14–18). Each coping item was rated on a five-point Likert scale ranging from 1 (Never) to 5 (Always). For overall coping level classification, item scores were summed to generate a total coping score. Predefined cutoffs based on tertile distribution were used to categorize coping levels as poor, moderate, or good. Internal consistency reliability was assessed using Cronbach's alpha coefficient for both the DASS-21 stress subscale and the coping scale within the study sample.

To minimize selection bias, all eligible students within each stratum were invited to participate. Standardized instructions were provided at the beginning of the survey to reduce information bias. The questionnaire was pre-tested on a small group of students not included in the final sample to ensure clarity and comprehension. Responses were collected anonymously to reduce social desirability bias and encourage honest reporting. Duplicate submissions were prevented by restricting responses to one per institutional email account. Data completeness was monitored during collection, and incomplete questionnaires were excluded from analysis. Potential confounding variables such as semester level, duration of clinical exposure, and living arrangement were measured to allow for stratified analysis.

Data were exported from Google Forms into Microsoft Excel and subsequently analyzed using IBM SPSS Statistics (version 26.0). Descriptive statistics were computed for all variables. Categorical variables were summarized using frequencies and percentages, while continuous variables were assessed for normality and summarized using means and standard deviations where appropriate. The point prevalence of elevated stress was calculated as the proportion of students scoring in the mild, moderate, severe, or extremely severe categories. Associations between stress categories and demographic variables were explored using chi-square tests or Fisher's exact test where applicable. The relationship between coping level (poor, moderate, good) and stress category was examined using chi-square analysis, and effect sizes were estimated using Cramér's V. A two-sided p-value <0.05 was considered statistically significant. Missing data were handled using complete-case analysis, as the proportion of missing responses was minimal.

Ethical approval was obtained from the relevant institutional review authority prior to data collection. Participants were provided with an electronic informed consent form outlining the purpose of the study, voluntary participation, confidentiality measures, and the right to withdraw at any time without academic consequences. No personal identifiers were collected.

Data were stored in password-protected files accessible only to the research team, and all procedures adhered to the principles of autonomy, beneficence, non-maleficence, and justice.

To ensure reproducibility and data integrity, the survey instrument, scoring procedures, and statistical analysis plan were predefined prior to analysis. Variable coding schemes and categorization thresholds were documented, and data cleaning procedures were performed systematically, including range checks and consistency verification. The study methodology was designed in accordance with established reporting standards for cross-sectional studies to facilitate transparency and replication (23).

RESULTS

A total of 160 nursing students were included in the analysis. As shown in Table 1, the majority of participants were aged 18–25 years (151/160, 94.4%), while only 9 students (5.6%) were older than 25 years. Females constituted 65.0% (104/160) of the sample, whereas males represented 35.0% (56/160). In terms of academic distribution, 55 students (34.4%) were in the 4th semester, 38 (23.8%) in the 8th semester, 35 (21.9%) in the 2nd semester, and 32 (20.0%) in the 6th semester. Regarding clinical exposure duration, 97 students (60.6%) had less than six months of experience, 48 (30.0%) had more than one year, and 15 (9.4%) had between 6 and 12 months. A greater proportion of participants resided in hostels (98/160, 61.3%) compared to day scholars (62/160, 38.8%). Overall, the sample predominantly consisted of young female students with relatively limited clinical exposure.

Table 2 presents the distribution of stress levels measured using the DASS-21 stress subscale. More than half of the students (83/160, 51.9%; 95% CI: 44.1%–59.7%) fell within the normal stress category. However, 77 students (48.1%; 95% CI: 40.3%–55.9%) exhibited elevated stress levels (mild to extremely severe). Specifically, 32 students (20.0%) reported mild stress, 27 (16.9%) moderate stress, 14 (8.8%) severe stress, and 4 (2.5%) extremely severe stress. Notably, 18 students (11.3%) experienced severe to extremely severe stress, indicating a clinically relevant subgroup requiring attention. These findings demonstrate that although a slight majority maintained normal stress levels, nearly half of the cohort experienced some degree of psychological strain during clinical rotations.

The associations between demographic variables and elevated stress (≥ mild) are summarized in Table 3. Elevated stress was observed in 53 of 104 female students (51.0%) compared to 24 of 56 male students (42.9%), although this difference was not statistically significant (p = 0.381; Cramér's V = 0.07), suggesting a negligible effect size. A statistically significant association was identified between academic semester and elevated stress (p = 0.032; Cramér's V = 0.23), indicating a small-to-moderate effect.

The highest proportion of elevated stress was observed among 6th semester students (20/32, 62.5%), followed by 8th semester students (20/38, 52.6%), 4th semester students (24/55, 43.6%), and 2nd semester students (13/35, 37.1%). Duration of clinical exposure was also significantly associated with elevated stress (p = 0.041; Cramér's V = 0.21). Students with 6–12 months of exposure demonstrated the highest proportion of elevated stress (11/15, 73.3%), compared to those with more than one year (26/48, 54.2%) and less than six months (40/97, 41.2%). Living arrangement did not show a statistically significant association with stress (p = 0.559; Cramér's V = 0.05), with elevated stress reported in 51.0% of hostel residents and 43.5% of day scholars.

The distribution of individual coping strategies is detailed in Table 4. Reliance on prayer or religious practices was the most frequently endorsed strategy, with 108 students (67.5%) reporting that they "always" used this approach, while only 9 (5.6%) reported "never" using

it. Positive thinking was also highly prevalent, with 98 students (61.3%) indicating "always," and only 7 (4.4%) reporting "never." Planning to handle stress was consistently practiced by 60 students (37.5%) as "always," while 47 (29.4%) reported "sometimes," and 12 (7.5%) indicated "never." Physical activity was reported as "always" by 51 students (31.9%) and "sometimes" by 66 (41.3%), whereas 11 students (6.9%) never used physical activity for stress relief. Taking breaks to relax was most commonly reported as "sometimes" (76/160, 47.5%), with 26 students (16.3%) indicating "always."

Avoidance behaviors showed greater variability: 39 students (24.4%) reported "never," 45 (28.1%) "sometimes," and 28 (17.5%) "always." Emotional expression (talking to someone) was less frequently practiced at higher levels, with only 16 students (10.0%) reporting "always," while 43 (26.9%) indicated "never." Overall, adaptive strategies such as religious coping, positive reframing, and planning were more commonly endorsed than avoidance or limited emotional sharing.

Table 5 illustrates the association between overall coping level and elevated stress. Among students categorized with poor coping (n = 12), 10 (83.3%) exhibited elevated stress, compared to 46 of 89 (51.7%) with moderate coping and 21 of 59 (35.6%) with good coping. The association between coping level and stress was statistically significant (χ^2 = 12.84, p = 0.002), with a moderate effect size (Cramér's V = 0.28).

Students with poor coping had 3.14 times higher odds of experiencing elevated stress compared to those with good coping (OR = 3.14; 95% CI: 1.29–7.66). These findings quantitatively support the inverse relationship between adaptive coping capacity and stress severity, indicating that stronger coping mechanisms are associated with lower levels of perceived stress during clinical training.

Table 1. Demographic characteristics of participants (N = 160)

Variable	Category	n	%
Age	18–25 years	151	94.4
	>25 years	9	5.6
Gender	Male	56	35.0
	Female	104	65.0
Semester	2nd	35	21.9
	4th	55	34.4
	6th	32	20.0
	8th	38	23.8
Duration of Clinical Exposure	<6 months	97	60.6
	6–12 months	15	9.4
	>1 year	48	30.0
Living Arrangement	Hostel	98	61.3
	Day Scholar	62	38.8

The distribution of stress levels based on the DASS-21 stress subscale is shown in Table 2. The overall point prevalence of elevated stress (mild to extremely severe) was 48.1% (77/160; 95% CI: 40.3%–55.9%). Severe to extremely severe stress was observed in 11.3% of students (18/160).

Table 2. Distribution of stress levels among nursing students (N = 160)

Stress Category	n	%	95% CI
Normal	83	51.9	44.1–59.7
Mild	32	20.0	14.0–26.0
Moderate	27	16.9	11.1–22.7
Severe	14	8.8	4.4–13.2
Extremely Severe	4	2.5	0.1–4.9

Associations between demographic variables and elevated stress (≥ mild) were examined using chi-square analysis (Table 3). Elevated stress was significantly associated with semester level (p = 0.032, Cramér's V = 0.23), with higher proportions observed among 6th and 8th semester students. Duration of clinical exposure was also significantly associated with elevated stress (p = 0.041, Cramér's V = 0.21). No statistically significant associations were observed for gender or living arrangement.

Table 3. Association between demographic variables and elevated stress (≥ mild)

Variable	Category	Elevated Stress n (%)	Normal n (%)	p-value	Cramér's V
Gender	Male	24 (42.9)	32 (57.1)	0.381	0.07
	Female	53 (51.0)	51 (49.0)		
Semester	2nd	13 (37.1)	22 (62.9)	0.032	0.23
	4th	24 (43.6)	31 (56.4)		
	6th	20 (62.5)	12 (37.5)		
	8th	20 (52.6)	18 (47.4)		
Clinical Exposure	<6 months	40 (41.2)	57 (58.8)	0.041	0.21
	6–12 months	11 (73.3)	4 (26.7)		
	>1 year	26 (54.2)	22 (45.8)		
Living Arrangement	Hostel	50 (51.0)	48 (49.0)	0.559	0.05
	Day Scholar	27 (43.5)	35 (56.5)		

Table 4. Frequency distribution of coping strategies (N = 160)

Coping Strategy	Never n (%)	Rarely n (%)	Sometimes n (%)	Often n (%)	Always n (%)
Talk to someone	43 (26.9)	33 (20.6)	64 (40.0)	4 (2.5)	16 (10.0)
Plan to handle stress	12 (7.5)	20 (12.5)	47 (29.4)	21 (13.1)	60 (37.5)
Religious practices	9 (5.6)	11 (6.9)	16 (10.0)	16 (10.0)	108 (67.5)
Take breaks	14 (8.8)	20 (12.5)	76 (47.5)	24 (15.0)	26 (16.3)
Positive thinking	7 (4.4)	5 (3.1)	28 (17.5)	22 (13.8)	98 (61.3)
Avoid stressful situations	39 (24.4)	33 (20.6)	45 (28.1)	15 (9.4)	28 (17.5)
Physical activity	11 (6.9)	18 (11.3)	66 (41.3)	14 (8.8)	51 (31.9)

The frequency distribution of individual coping strategies is summarized in Table 4. The most frequently reported "Always" responses were reliance on prayer or religious practices (67.5%) and positive thinking (61.3%). Planning to handle stress was reported as "Always" by

37.5% of students, while 31.9% consistently used physical activity. Avoidance behaviors were reported as "Always" by 17.5% of participants.

Overall coping levels were categorized as poor (7.5%), moderate (55.6%), and good (36.9%). The association between coping level and stress category is presented in Table 5. Students with poor coping were significantly more likely to report elevated stress compared to those with good coping (χ^2 = 12.84, p = 0.002, Cramér's V = 0.28). The odds of elevated stress among students with poor coping were 3.14 times higher than those with good coping (OR = 3.14; 95% CI: 1.29–7.66).

Table 5. Association between overall coping level and elevated stress (≥ mild)

Coping Level	Elevated Stress n (%)	Normal n (%)	Odds Ratio (95% CI)	p-value	Cramér's V
Poor (n=12)	10 (83.3)	2 (16.7)	3.14 (1.29–7.66)	0.002	0.28
Moderate (n=89)	46 (51.7)	43 (48.3)	1.62 (0.86–3.05)		
Good (n=59)	21 (35.6)	38 (64.4)	Reference		

These findings indicate that while approximately half of the students demonstrated normal stress levels, a substantial proportion experienced elevated stress, particularly those in advanced semesters and those employing less adaptive coping strategies. Coping level showed a statistically significant association with stress severity, supporting the conceptual model that adaptive coping mitigates perceived stress during clinical training.
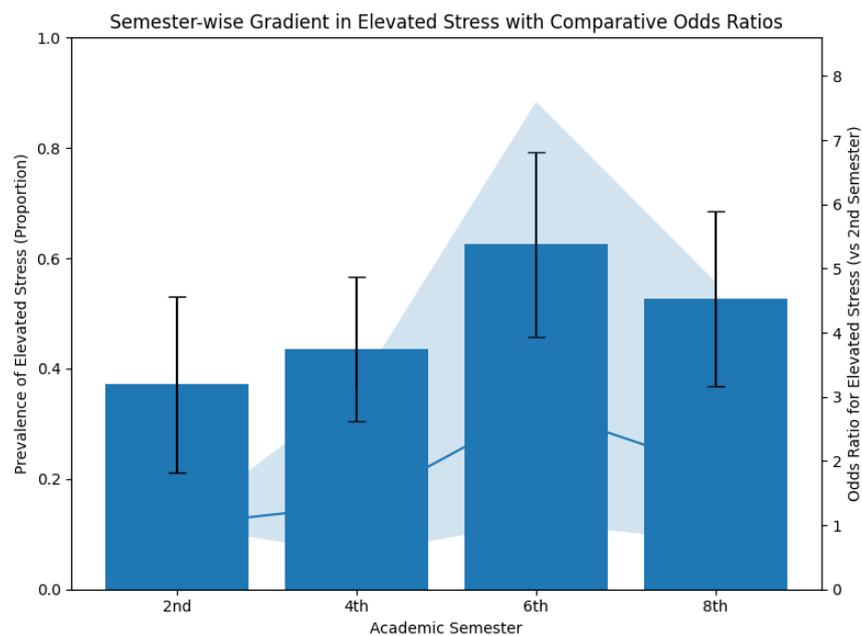
The figure demonstrates a clear academic progression gradient in elevated stress prevalence across semesters. The prevalence of elevated stress increased from 37.1% in 2nd semester students to 43.6% in 4th semester students, peaked at 62.5% in 6th semester students, and remained high at 52.6% in 8th semester students. The 95% confidence intervals show widening variability in advanced semesters, particularly in the 6th semester, indicating both higher burden and dispersion of stress responses. When compared to 2nd semester students (reference), the odds of elevated stress were 1.30 times higher in 4th semester students, 2.82 times higher in 6th semester students, and 1.89 times higher in 8th semester students, with the largest effect observed in the 6th semester. The overlapping yet upward-shifted confidence bands around the odds ratios suggest a clinically meaningful, though variably

precise, escalation in stress risk as students advance academically. This nonlinear gradient—peaking before final semester—highlights a potential transitional vulnerability period during mid-to-late clinical training, underscoring the need for targeted stress mitigation interventions particularly in the 6th semester cohort.

DISCUSSION

This study quantified the point prevalence of stress and examined coping patterns among undergraduate nursing students during clinical rotations in Bannu, providing region-specific evidence within a structured epidemiological framework. Nearly half of the students (48.1%) experienced elevated stress (mild to extremely severe), and 11.3% reported severe to extremely severe stress levels. These findings align with international literature reporting moderate to high stress prevalence among nursing students in clinical environments (24,25). The magnitude observed in this cohort is clinically meaningful, as persistent stress at these levels has been associated with impaired concentration, emotional exhaustion, and reduced academic performance (26). Although 51.9% of participants fell within the normal stress range, the substantial proportion experiencing elevated stress underscores the need for systematic monitoring and preventive interventions within clinical education programs.

A significant gradient in stress prevalence was observed across academic semesters. Elevated stress increased from 37.1% in second-semester students to 62.5% in sixth-semester students, with a slight decline to 52.6% in eighth-semester students. The odds of elevated stress were nearly three times higher in sixth-semester students compared to second-semester students. This nonlinear pattern suggests that mid-to-late training represents a particularly vulnerable period, potentially reflecting increased patient-care responsibility, preparation for professional examinations, and heightened performance expectations. Similar semester-related increases in stress have been documented in other nursing education contexts, where advanced clinical responsibilities amplify perceived workload and accountability (27,28). The slight reduction observed in the final semester may reflect partial adaptation, improved clinical competence, or anticipatory transition toward professional practice. From a developmental perspective, this pattern is consistent with stress-appraisal models indicating that stress intensifies when perceived demands exceed coping resources, particularly during transitional academic stages (13).

Duration of clinical exposure was also significantly associated with elevated stress, with students reporting 6–12 months of exposure demonstrating the highest stress prevalence (73.3%). This transitional exposure period may represent a phase in which students are no longer novices yet have not fully consolidated clinical confidence, leading to heightened performance pressure. Previous evidence indicates that perceived clinical competence and self-efficacy strongly influence stress appraisal in nursing students (29). Although clinical confidence was not directly measured in this study, the exposure gradient observed supports the hypothesis that adaptation to clinical environments may be non-linear, with peak stress occurring during intermediate exposure periods rather than at initial entry or prolonged experience.

Gender and living arrangement were not significantly associated with elevated stress in this cohort. While some studies report higher stress among female students (30), others have found no consistent gender-based differences when academic and clinical stressors are comparable (31). The absence of a significant association in this study suggests that stress during clinical rotations may be more strongly driven by academic and experiential factors than by demographic characteristics. Similarly, hostel residence did not confer additional

stress risk compared to day scholars, indicating that institutional and clinical stressors may outweigh environmental living differences within this setting.

Coping strategy distribution revealed a predominance of adaptive mechanisms, particularly religious coping (67.5% reporting "always"), positive reframing (61.3%), and proactive planning (37.5%). These findings are consistent with evidence from culturally similar populations where spiritual coping and positive cognitive reframing are central components of stress management (18,20). According to coping theory, problem-focused strategies such as planning are particularly effective when stressors are perceived as controllable, whereas emotion-focused strategies, including religious coping and positive reframing, help regulate emotional responses to less controllable stressors (13,14). The high reliance on religious coping in this cohort may reflect sociocultural norms that integrate spirituality into daily life and professional identity formation.

Importantly, overall coping level demonstrated a statistically significant association with stress severity. Students categorized with poor coping had 3.14 times higher odds of experiencing elevated stress compared to those with good coping (OR = 3.14; 95% CI: 1.29–7.66). The moderate effect size (Cramér's V = 0.28) indicates a meaningful relationship between coping capacity and stress outcomes. This finding supports the transactional model of stress and coping, which posits that coping responses mediate the impact of stressors on psychological outcomes (13). Similar associations have been reported in studies demonstrating that adaptive coping predicts lower stress and improved psychological well-being among nursing students (16,17). Conversely, the presence of poor coping mechanisms substantially increases vulnerability to stress-related symptoms.

Avoidance behaviors were reported as "always" by 17.5% of students, while 24.4% reported never engaging in avoidance. Although avoidance was less prevalent than adaptive strategies, its presence in a subset of students is clinically relevant, as maladaptive coping has been associated with higher anxiety, depressive symptoms, and academic disengagement (17,31). Additionally, only 10.0% of students reported consistently talking to someone about their feelings, suggesting limited utilization of interpersonal emotional support. Social support has been identified as a protective factor buffering stress among healthcare students (32). The relatively low frequency of emotional disclosure in this cohort indicates an area where structured peer-support or mentorship programs may enhance resilience.

From an educational perspective, these findings have direct implications for curriculum development and student support services. The concentration of elevated stress in mid-to-late semesters suggests that interventions should be strategically implemented before and during this transition. Structured stress management workshops, resilience training, and enhanced clinical mentorship during the sixth semester may mitigate peak stress levels. Furthermore, fostering adaptive coping—particularly planning skills, cognitive reframing, and structured physical activity—may reduce the proportion of students progressing to severe stress categories. Evidence-based stress-reduction interventions in nursing education have demonstrated improvements in psychological well-being and academic performance (33).

Several limitations warrant consideration. The cross-sectional design precludes causal inference, limiting the ability to determine whether coping strategies reduce stress or whether stress severity influences coping selection. Self-reported measures may introduce reporting bias despite anonymity safeguards. Additionally, although significant associations were observed, multivariable modeling was not performed to adjust for potential residual confounding. Longitudinal research tracking stress trajectories across semesters would provide stronger evidence regarding temporal dynamics and causal pathways.

Despite these limitations, this study provides robust, context-specific data on stress prevalence and coping patterns among nursing students in Bannu. The integration of prevalence estimates, effect sizes, and confidence intervals enhances interpretability and clinical relevance. The identification of a semester-specific stress gradient and a strong association between coping capacity and stress severity offers actionable insights for nursing educators and policymakers. Strengthening adaptive coping resources and implementing targeted support during high-risk academic phases may contribute to improved psychological well-being, clinical competence, and long-term professional sustainability within the nursing workforce.

CONCLUSION

This study demonstrates that nearly half of undergraduate nursing students in Bannu experience elevated stress during clinical rotations, with 11.3% reporting severe to extremely severe levels, indicating a clinically important subgroup at risk. Stress prevalence exhibited a nonlinear academic gradient, peaking in the sixth semester and during intermediate clinical exposure, suggesting a transitional vulnerability period within training. Adaptive coping strategies—particularly religious coping, positive reframing, and proactive planning—were commonly used; however, students with poor coping had more than threefold higher odds of elevated stress, underscoring the protective role of effective coping mechanisms. These findings emphasize the need for structured, semester-targeted stress management interventions, strengthened mentorship during high-risk academic phases, and institutional strategies that promote adaptive coping to enhance psychological resilience, academic performance, and clinical competence among nursing students.

REFERENCES

1. Labrague LJ, McEnroe-Petitte DM, Gloe D, Thomas L, Papathanasiou IV, Tsaras K. A literature review on stress and coping strategies in nursing students. J Ment Health. 2018;27(5):471–480.

2. Foster K, Fethney J, McKenzie H, Fisher M, Harkness E, Kozlowski D. Emotional intelligence and perceived stress in nursing students: A multi-institutional cross-sectional study. Nurse Educ Today. 2020;93:104528.

3. Pulido-Martos M, Augusto-Landa JM, Lopez-Zafra E. Sources of stress in nursing students: A systematic review of quantitative studies. Int J Environ Res Public Health. 2021;18(7):3495.

4. Reyes AT, Andrusyszyn MA, Iwasiw C, Forchuk C, Babenko-Mould Y. Resilience in nursing education: An integrative review. J Nurs Educ. 2015;54(8):438–444.

5. Yildiz U, Ozbas A, Cavdar I, Yildizeli S, Onler E. Assessment of nursing students' stress levels and coping strategies in operating room practice. Nurse Educ Pract. 2015;15(3):192–195.

6. Alhassan A. Clinical practice stressors among nursing students. Int J Nurs Sci. 2019;6(2):205–209.

7. Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM, Cañadas-De la Fuente GA. Prevalence of burnout syndrome in nursing students: A systematic review and meta-analysis. J Prof Nurs. 2019;35(5):389–397.

8. Riley JM, Collins D, Collins J. Nursing students' commitment and the mediating effect of stress. Nurse Educ Today. 2019;76:172–177.

9.   Lazarus RS, Folkman S. Transactional theory and research on emotions and coping. Eur J Pers. 1987;1(3):141–169.

10.   Wang W, Xu H, Wang B, Zhu E. The mediating effects of learning motivation on the association between perceived stress and positive deactivating academic emotions in nursing students undergoing skills training. J Korean Acad Nurs. 2019;49(4):495–504.

11.   Hickman L, DiGiacomo M, Phillips J, Rao A, Newton PJ, Jackson D. The experience of clinical placement for undergraduate nursing students: A systematic review. JBI Evid Synth. 2021;19(6):1298–1370.

12.   White KA. The development and validation of a tool to measure self-confidence and anxiety in nursing students during clinical decision making. J Nurs Educ. 2014;53(1):14–22.

13.   Galbraith ND, Brown KE. Assessing intervention effectiveness for reducing stress in student nurses: A systematic review. Nurse Educ Today. 2011;31(3):282–288.

14.   Turner K, McCarthy VL. Stress and anxiety among nursing students: A review of intervention strategies in literature between 2009 and 2015. Nurse Educ Pract. 2017;22:21–29.

15.   Khan A, Hussain R, Shah SAH. Stress and coping mechanisms among nursing students in Khyber Pakhtunkhwa, Pakistan. J Pak Med Assoc. 2020;70(5):918–922.

16.   Zafar S, Khan UR. Academic and clinical stress, coping styles and perceived health among nursing students in Pakistan. Int J Nurs Educ Scholarsh. 2021;18(1):20200050.

17.   Shdaifat E, Al-Amer M, Jamama A. Stress and coping strategies among nursing students. Open Nurs J. 2021;15:50–56.

18.   Turner K, McCarthy VL. Stress and anxiety among nursing students: A review of intervention strategies. Nurs Educ Perspect. 2017;38(4):196–202.

19.   Lovibond SH, Lovibond PF. Manual for the Depression Anxiety Stress Scales. 2nd ed. Sydney: Psychology Foundation; 1995.

20.   Labrague LJ, McEnroe-Petitte DM. A literature review on stress and coping strategies among nursing students during clinical training. Nurse Educ Today. 2017;57:15–21.

21.   Shdaifat E, Jamama A, Al-Amer M. Stress and coping strategies among nursing students. Glob J Health Sci. 2018;10(5):33–41.

22.   Jimenez C, Navia-Osorio PM, Diaz CV. Stress and health in novice and experienced nursing students. J Adv Nurs. 2010;66(2):442–455.

23.   von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. PLoS Med. 2007;4(10):e296.

24.   Gibbons C. Stress, coping and burnout in nursing students. Int J Nurs Stud. 2010;47(10):1299–1309.

25.   Folkman S, Lazarus RS. Coping as a mediator of emotion. J Pers Soc Psychol. 1988;54(3):466–475.

26.   Alzayyat A, Al-Gamal E. A review of the literature regarding stress among nursing students during their clinical education. Int Nurs Rev. 2014;61(3):406–415.

27. Reeve KL, Shumaker CJ, Yearwood EL, Crowell NA, Riley JB. Perceived stress and social support in undergraduate nursing students' educational experiences. Nurse Educ Today. 2013;33(4):419–424.

28. Hamaideh SH. Stressors and reactions to stressors among university students. Int J Soc Psychiatry. 2011;57(1):69–80.

29. Al-Gamal E, Hamdan-Mansour AM. Psychological distress and coping among nursing students: A descriptive correlational study. Nurs Health Sci. 2013;15(4):564–569.

30. Mahmoud JS, Staten RT, Hall LA, Lennie TA. The relationship among young adult college students' depression, anxiety, stress, demographics, life satisfaction, and coping styles. Issues Ment Health Nurs. 2012;33(3):149–156.

DECLARATIONS