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Perceived Stress and Associated Factors among Undergraduate Nursing Students during Academic Clinicals: An Analytical Cross-Sectional Study

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ABSTRACT

This analytical cross-sectional study aimed to determine perceived stress and examine its associations with demographic and academic clinical characteristics among BScN students during academic clinicals at a private nursing institution in Karachi, Pakistan. The data was collected from 136 students by using Perceived Stress Scale (PSS) and purposive sampling from August 2021 to October 2021. Independent-samples t-tests and one-way analysis of variance were used for bivariate comparisons. The statistical significance was considered at $p < 0.05$. 75% female and 25% male participated in the study. The mean total perceived stress score was 49.96 ± 17.26. The factors found to be significantly associated with specific dimensions of academic clinical stress included gender, with male students reporting higher stress related to teachers and nursing staff ($p = .036$) and lack of professional knowledge and skills ($p = .049$); marital status, with married students reporting higher stress related to taking care of patients ($p = .043$); number of academic clinicals, with differences in stress related to lack of professional knowledge and skills ($p = .030$) and the clinical environment ($p = .017$); and perception of stress during academic clinicals, with students who perceived themselves as stressed reporting higher stress related to peers and daily life ($p = .034$). Total perceived stress was not significantly associated with the demographic or academic clinical characteristics examined. These findings identify specific domains of academic clinicals that may warrant attention in clinical supervision and student-support strategies.

Keywords: *Baccalaureate; Cross-Sectional Studies, Education, Nursing, Psychological; Perceived Stress Scale, Stress*

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INTRODUCTION

Stress is a natural, physical, and physiological response of the body experienced by students when presented with challenging circumstances that may affect their physical, mental, and social well-being[1]. The nursing profession is stressful as students interact with patients having complex personalities in both in and outpatient settings setting. It is an emotionally demanding profession as it involves professionals encountering emotionally challenging situations regularly[2].

Students begin a new era of their lives when they enroll in a nursing programme. They deal with changes and adjust to new surroundings and circumstances. As they transition from high school/college life to a professional role, the students are prone to stress, which can affect their health and academic performance[3]. Moreover, nursing is a performance-based profession in which students are trained to become registered nurses. The transition of practically acquired professional abilities of undergraduate nursing students to clinical settings is challenging and results in stressful situations during their academic clinicals[4]. They undergo essential clinical training in hospitals, manage hectic schedules, fulfil the requirements for nursing curriculum, and appear in examinations that require critical thinking skills. Combined with family and work responsibilities, all these factors contribute to a high-stress level in undergraduate nursing students[5].

As a result of all these factors, feelings of tension and anxiety may occur, which may significantly affect their academic clinicals, that involve the exposure of real and simulated patient experience. This may sometimes result in quitting of the profession due to a lack of

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coping stress, high expectations, internal and external pressures associated, and frequent exposure to human suffering. Thus, nursing students encounter far greater stress than those in other disciplines[5].

Responsibility for patients' condition, fear of making mistakes in academic clinicals, and limited time to give patient care and to brief the clinical instructor about the patient case cause clinical stress[6]. Furthermore, discouraging feedback from clinical instructors during academic clinicals in front of patients and miscommunication between nursing students and clinical instructors are significant sources of clinical stress[7]. Other factors at clinicals, which lead to stress, are lack of knowledge and skills to deal with patients with emotional problems, not sharing experiences and emotions of clinical practices with other nursing staff, feeling insecure about clinical skills or competency, managing patients with impending death, workplace conflicts, interpersonal problems with patients and work overburden[8]. Furthermore, the pressure of time in which undergraduate nursing students have to meet the academic clinicals' objectives, not developing clinical skills, lack of practical skills and caring attitudes between clinical instructors and student nurses significantly affect undergraduate nursing students' learning and motivation, which leads to clinical stress[9].

Academic stress occurs when a person's workload exceeds his or her capacities or capabilities during an academic performance[10,11]. Academic stress is caused by a variety of factors, such as dissatisfaction with instructional methods, exam preparation, academic clinicals, discouraging feedback from clinical instructors, lack of guidance from clinical nursing instructors, the gap between theory and practice, ambiguity about the curriculum and its content, and failure to pass clinical assessments and theoretical exams[12].

On the other hand, fear of unknown clinical settings, handling technical equipment, fear of caring for patients incorrectly, lack of communication and psychomotor skills to care for patients, and academic workload are the most common sources of stress, and all these factors significantly affect the student[13]. Literature searches have shown that academic clinical stress has been widely studied among developed countries. However, a few recent researches were found among developing countries focusing on diploma nursing students, however this programme has been phased out in Pakistan. To the authors' knowledge, limited recent evidence is available regarding factors associated with stress in undergraduate nursing students. Therefore, the present study aimed to determine the level of perceived stress using Perceived Stress Scale (PSS) and factors associated with the stress and its association with demographic and academic clinical characteristics among undergraduate nursing students.

METHODOLOGY

Design and Study Setting

A quantitative analytical cross-sectional design was used. The study was conducted at the School of Nursing and Midwifery, Aga Khan University, Karachi, Pakistan, from August 2021 to October 2021 with permission letter no. 2021-6148-18103.

Study Population and Sample

The data were collected from enrolled Bachelor of Science in Nursing (BScN) students in years II, III, and IV of the odd semesters. Participants were recruited using purposive sampling technique.

The intended target was 225 students (41.1% of the total enrolled population); 136 participants were ultimately analyzed (24.9% of the total enrolled population and 34.3% of the 397 students enrolled in years II–IV). No formal probability-based sample size calculation was used; 225 represented the planned recruitment target. The final sample was lower than the target because of the stated time constraint.

Inclusion Criteria

BScN students who had completed at least one in-person academic clinicals, and students who had completed virtual or simulation-based academic clinicals after receiving previous in-person academic clinical exposure.

Exclusion Criteria

BScN students who had completed all academic clinicals virtually or through simulation without previous in-person exposure and those who did not provide consent to participate in this study.

Data Collection Process and Tools

Purposive sampling technique was used to enroll participants. Data collection was conducted through an online Google Forms survey. A total of 136 participants completed the survey.

Perceived Stress Scale (PSS)

The Perceived Stress Scale was used to assess perceived stress during academic clinicals. The questionnaire comprised two parts: socio-demographic and academic clinical characteristics, and the 29-item Perceived Stress Scale. The scale assesses six domains: "stress from taking care of patients (8 items), stress from teachers and nursing staff (6 items), stress from assignments and workload (5 items), stress from peers and daily life (4 items), stress from lack of professional knowledge and skills (3 items), and stress from the clinical environment (3 items)." Each item was scored on a 5-point Likert scale from 0 (never) to 4 (very often), giving a total score range of 0-116; higher scores indicate greater perceived stress[14,15]. No validated severity cut-off was applied in the present study.

Validity and Reliability of Perceived Stress Scale

The original instrument has reported internal consistency reliability of 0.89, one-week test-retest reliability of 0.60, and a content validity index of 0.94. The questionnaire was adapted to the cultural setting. For the present study, five experts for content validity reviewed the instrument. The Content Validity Index was 0.91 for relevance and 0.89 for language clarity. Internal consistency in the present study was Cronbach's $\alpha = 0.915$[15]. The questionnaire was pre-tested on 10% of the sample to assess clarity and feasibility.

Statistical Analysis

SPSS version 25.0 was used to enter and analyze the data. Means and standard deviations for continuous variables and frequencies and percentages for categorical variables were calculated. One-way analysis of variance (ANOVA) was used for variables with more than two groups and independent-samples t-tests were used for comparisons involving two groups. The statistical significance was considered at < 0.05.

The assumptions of independence of observations, approximate normality of the outcome variable within groups, and homogeneity of variance were considered before the respective analyses. Homogeneity of variance was assessed using Levene's test. Where equal variances were not satisfied, the unequal-variance version of the t-test was used as appropriate. For two-group comparisons, mean differences with 95% confidence intervals and Cohen's d were reported. For ANOVA, F statistics, degrees of freedom, exact p-values, and eta squared (η^2) were reported.

Ethical Consideration

The Ethical Review Committee (ERC) of Aga Khan University (AKU) approved the study with a reference number 2021-6148-18103. The approvals from of Aga Khan University Ethics Review Board and the Assistant Dean of the School of Nursing & Midwifery undergraduate program were obtained, where the study was planned to be conducted via a signed document. The study was conducted in accordance with all the ethical principles of research. Confidentiality and anonymity of the participants were maintained.

RESULTS

Most participants were aged 21-26 years, female, and single. Among the academic characteristics, 44.1% were in the fourth year of the BScN programme, and 62.5% had completed four or more academic clinicals. The largest group (41.9%) had completed academic clinicals in fundamental of nursing, adult health nursing, pediatrics health nursing, mental health nursing, and critical care nursing. Overall, 87.5% reported a perception of stress during academic clinicals. Other demographic and academic clinical characteristics are shown in (Table 1).

Table 1. Demographic Profile and Academia-Related Variables of the Study (n=136)

Variables	Frequency (n)	Percentages (%)
Age in years		
14-20	26	19.1
21-26	110	80.8
Gender		
Male	34	25

Female	102	75
Marital status		
Single	130	95.6
Married	06	4.41
Program enrolled		
BScN	136	100
Year of Study		
2nd year	43	31.6
3rd year	33	24.3
4th year	60	44.1
Physical academic clinicals completed		
One	14	10.3
Two	24	17.6
Three	13	09.6
Four or more	85	62.5
Academic clinicals in academic courses;		
Fundamental of Nursing (FON)	09	06.6
FON*, AHN**	40	29.4
FON, AHN, PHN***	09	06.6
FON, AHN, MHN******	21	15.4
FON, AHN, PHN, MHN, CCN*******	57	41.9
Perceptions of stress		
Yes	119	87.5
No	17	12.5

Fundamental of Nursing, Adult Health Nursing**, Pediatric Health Nursing***, Mental Health Nursing****, Critical Care Nursing*****

Level of Stress

Figure 1 shows the descriptive statistics for perceived stress and its subscales. The mean total perceived stress score was 49.96 ± 17.26. Among the domains, the highest mean score was for stress from taking care of patients (12.96 ± 5.01) followed by stress from assignments and workload (10.07 ± 4.06), teachers and nursing staff (9.39 ± 4.61), peers and daily life (7.16 ± 3.29), the clinical environment (5.55 ± 2.41), and lack of professional knowledge and skills (4.83 ± 2.39).

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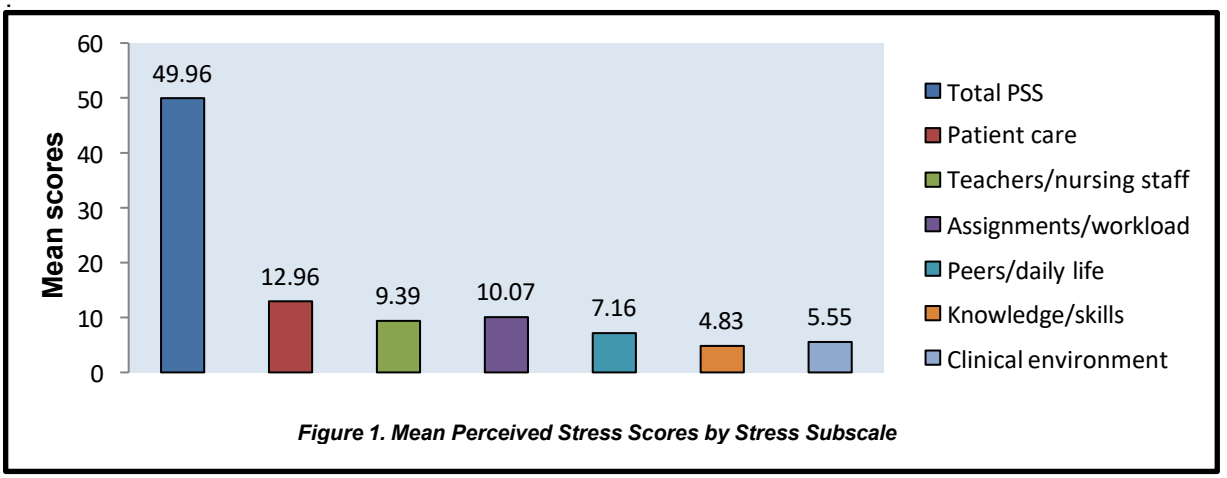


Figure 1. Mean Perceived Stress Scores by Stress Subscale

Association of Stress and its Domains with Demographic Variables

Table 2 presents the reported bivariate associations between demographic/academic clinical characteristics and perceived stress outcomes. Gender was significantly associated with stress from teachers and nursing staff (p = 0.036) and lack of professional knowledge and skills (p = 0.049). Marital status was significantly associated with stress from taking care of patients (p = 0.043). The number of academic clinicals was significantly associated with stress from lack of professional knowledge and skills (p = 0.030) and the clinical environment (p = 0.017).

Table 2. Factors Associated with Perceived Stress and Its Subscales among Undergraduate Nursing Students (n = 136)

Factor	Stress subscale	Groups	M ± SD	Test	MD (95% CI)	Effect size	p
Gender	Teachers and nursing staff	Male	14.32 ± 6.19	t-test	1.91 (0.13–3.69)	d = 0.42	.036
		Female	12.51 ± 4.49				
	Lack of professional knowledge and skills	Male	5.53 ± 2.75	t-test	0.93 (0.01–1.86)	d = 0.39	.049
		Female	4.60 ± 2.22				
Marital status	Taking care of patients	Married	17.00 ± 7.75	t-test	4.22 (0.13–8.31)	d = 0.85	.043
		Single	12.78 ± 4.83				
Number of academic clinicals	Lack of professional knowledge and skills	One	5.64 ± 2.90	ANOVA	—	η² = 0.065	.030
		Two	4.92 ± 2.19				
		Three	6.31 ± 2.93				
		≥ Four	4.45 ± 2.18				
	Clinical environment	One	7.21 ± 3.02	ANOVA	—	η² = 0.074	.017
		Two	6.04 ± 2.65				
		Three	5.46 ± 2.07				
		≥ Four	5.15 ± 2.17				
Perceived stress during academic clinicals	Peers and daily life	Yes	7.39 ± 3.19	t-test	1.80 (0.13–3.46)	d = 0.55	.034
		No	5.59 ± 3.61				

M = Mean; SD = Standard deviation; MD = Mean difference; CI = Confidence interval; η² = Eta squared.

Perception of stress during academic clinicals was significantly associated with stress from peers and daily life (p = 0.034). The associations involving total perceived stress and the other reported outcomes with p-values of 0.052–0.090 were not statistically significant at the prespecified threshold of p < 0.05. Effect sizes were generally small to moderate in the reported analyses. The largest eta squared values were observed for the number of academic clinicals in relation to stress from the clinical environment (η² = 0.074) and stress from lack of professional knowledge and skills (η² = 0.065). The largest reported Cohen's d values were observed for the marital-status comparisons.

DISCUSSION

The mean total perceived stress score was49.96 ± 17.26, with the highest domain scores for taking care of patients (12.96 ± 5.01), assignments and workload (10.07 ± 4.06), and teachers and nursing staff (9.39 ± 4.61). Significant bivariate associations were identified for selected stress domains according to gender, marital status, number of academic clinicals completed, and students' perception of stress. These associations occurred at the domain level rather than for total perceived stress, supporting the multidimensional nature of academic clinicals. Previous studies similarly identify academic workload, clinical responsibilities, relationships with educators and staff, and concerns about professional competence as important sources of stress[16,17]. The highest contributing factor in our study was identified as taking care of patients. This finding is consistent with the dimensions identified in the original development of the instrument by Sheu et al., which included patient care as one of the most contributing factors for stress[15,18]. Patient care responsibilities

may be particularly challenging as students translate theoretical knowledge into clinical decisions[19] as further shown in another study conducted in Taiwan that found that the strong predictor of professional competence in clinical practice was "stress from taking care of patients" among 114 undergraduate nursing students (β = −0.336, p <0.001)[6].

Assignments and workload was the second highest domain, consistent with evidence that nursing students must manage academic requirements alongside clinical responsibilities. A study conducted in Canada reported that stress sources varied according to students' educational stage, including clinical-performance expectations and concerns related to transition into professional practice[2]. Stress related to teachers and nursing staff was relatively high. Baluwa et al. identified lecturers, clinical teachers, and nursing staff as major contributors to stress among nursing students, while Mazalová et al. reported a relationship between the clinical learning environment and students' stress related to teachers and nursing staff[3,5]. Although different instruments and study contexts limit direct comparison, the overlap in reported stressors provides contextual support for the present findings. Evidence also indicates that academic and clinical stressors are interconnected and include academic demands, clinical experiences, fear of errors, and concerns about patient well-being[19,20].

Gender and Stress Related Domains

The level of stress was high in male as compared to female students in both domains of teachers and nursing staff (14.32 ± 6.19 vs.
12.51 ± 4.49; mean difference 1.91, 95% CI
0.13–3.69, Cohen's d = 0.42, p = 0.036) and
professional knowledge and skills (5.53 ± 2.75 vs. 4.60 ± 2.22; mean difference 0.93, 95% CI
0.01–1.86, Cohen's d = 0.39, p = 0.049).
However, previous researches have not demonstrated a consistent gender pattern of stress. As reported in one of the study consistent with the current study findings reported a significantly higher overall academic clinical-stress score among male nursing students[4]. Contrasting to this result, a study conducted in Germany reported high academic clinical stress in females as compared to male[21].

The unequal gender distribution in the present study, with 34 male and 102 female students, also limits precision. Other potentially relevant factors, such as previous clinical experience, placement characteristics, staff support, and coping strategies, were not measured. Therefore, these findings could be considered sample specific and confirmed in larger, more balanced samples.

Marital Status and Patient Care Stress

Marital status was significantly associated with patient-care stress. Married students reported higher stress than single students (17.00 ± 7.75 vs. 12.78 ± 4.83; mean difference 4.22, 95% CI 0.13–8.31, Cohen's d = 0.85, p = 0.043). This finding could be interpreted cautiously because only six participants were married. The literature does not establish marital status as a consistent determinant of clinical stress, and the present dataset did not include employment, household workload, dependents, family responsibilities, or financial circumstances. Thus, the finding represents a sample specific bivariate association requiring confirmation in larger studies with more balanced groups.

Academic Clinical and Stress Related Domains

The number of academic clinicals completed was significantly associated with stress related to professional knowledge and skills (η^2 = 0.065, p = 0.030) and the clinical environment (η^2 = 0.074, p = 0.017). "Stress from professional knowledge and skills" was highest among students who had completed three academic clinicals (6.31 ± 2.93) compared with those who had completed four or more (4.45 ± 2.18). Clinical environment stress decreased from 7.21
± 3.02 among students who had completed one academic clinical to 5.15 ± 2.17 among those who had completed four or more. Greater clinical exposure may be associated with increased familiarity with clinical routines and expectations; however, the cross-sectional design does not establish causality. Differences in year of study, previous experience, placement type, clinical complexity, and supervision may also contribute to these patterns.

The non-linear pattern for professional knowledge and skills further suggests that clinical exposure may not uniformly reduce academic clinical stress. Students may encounter increasingly complex patients and responsibilities as they progress through training. Similarly, the literature revealed that sources of stress varied across educational stages[22].

Perception of Stress and Peers/Daily Life

Students who perceived stress during academic clinicals reported higher stress related to peers and daily life than those who did not (7.39 ± 3.19 vs. 5.59 ± 3.61; mean difference 1.80,

95% CI 0.13–3.46, Cohen's d = 0.55, p = 0.034). This finding is consistent with literature identifying interpersonal, social factors as components of nursing-student stress[23]. Loureiro et al. also emphasized the role of social support, and coping during clinical practice[24]. However, the direction of relationship cannot be established due the cross-sectional design.

Strengths and Limitations

The study has several strengths. It examined perceived stress across multiple domains of academic clinicals rather than relying only on a total score. It also used a previously developed instrument and included pilot testing to assess the clarity of the questionnaire. Domain-specific findings may be useful for nursing faculty and clinical educators when considering student-support strategies during clinical education.

There were few limitations in the study. A cross-sectional design cannot provide temporal or causal relationships. Further purposive sampling and the single-institution setting limit generalizability of the study. In addition to it, the data were self-reported and collected online, which may have influenced participation and responses.

Future studies using larger samples from multiple institutions and longitudinal or mixed-methods designs could provide a broader understanding of perceived stress during academic clinicals and the experiences underlying the quantitative findings.

CONCLUSION

The mean total perceived stress score was 49.96 ± 17.26 among the 136 undergraduate nursing students. The highest mean domain scores were for "stress from taking care of patients, assignments and workload, and teachers and nursing staff". Significant bivariate associations were identified for gender with stress from teachers and nursing staff and lack of professional knowledge and skills; marital status with stress from taking care of patients; number of academic clinicals with stress from lack of professional knowledge and skills and the clinical environment; and perceived stress during academic clinicals with stress from peers and daily life. Total perceived stress was not significantly associated with the demographic or academic clinical characteristics examined. The findings support focused assessment and student-support activities addressing patient-care demands, clinical supervision, and development of professional knowledge and skills.

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Author Contributions:
SU: Conception & Design, Data Collection, Data Analysis & Interpretation, Manuscript Writing, Critical Revision, and Final Approval.
FBH: Conception & Design, Data Collection, Data Analysis & Interpretation, Manuscript Writing, Critical Revision, and Final Approval.
LAC: Conception & Design, Data Collection, Data Analysis & Interpretation, Manuscript Writing, Critical Revision, and Final Approval.
YNP: Conception & Design, Data Collection, Data Analysis & Interpretation, Manuscript Writing, Critical Revision, and Final Approval.
TSA: Conception & Design, Data Collection, Data Analysis & Interpretation, Manuscript Writing, Critical Revision, and Final Approval.

Conflict of Interest
None.

Disclosure and Funding Source
None.

Ethical Approval
The study was reviewed and approved by the Ethical Review Committee (ERC) of Aga Khan University (AKU) (Reference No.: 2021-6148-18103).

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