

Original Article

## Examining Anxiety and Depression among Undergraduate Nursing Students: A Cross-Sectional Study

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### Abstract

Mental health is a crucial aspect of well-being, especially among undergraduate nursing students. Nursing students face unique stressors that can impact their mental health. This study aimed to determine the anxiety and depression levels among undergraduate nursing students at Chattogram, Bangladesh. A cross-sectional study design was employed, and data were collected using an online questionnaire (Google form) that included the Hospital Anxiety and Depression Scale (HADS). Convenience sampling was used to select 124 BSc Nursing students aged over 18 years. Data analysis was conducted using SPSS version 28. The majority of participants were female (88.3%), and the mean age was 20.58 years, range 18 to 23. The prevalence of anxiety was 66.0%, with 28.0% scoring in the borderline abnormal range and 38.0% in the abnormal range. For depression, 22.4% were in the borderline abnormal range, and 18.4% were in the abnormal range. Pearson correlation test showed gender was significantly associated with anxiety ( $p = 0.004$ ). At the same time, no significant associations were found between depression and gender, depression and academic qualifications, contagious disease status, or close family members' infection status. The logistic regression analysis reveals that age is significantly associated with depression among nursing students; older students have higher odds of experiencing depression (OR = 1.384,  $p = 0.037$ ). This study highlights a significant burden of anxiety among undergraduate nursing students at CINC, with a substantial proportion experiencing abnormal levels of anxiety. The findings underscore the importance of addressing mental health issues among nursing students and implementing strategies to promote their mental well-being.

**Keywords:** Depression, Anxiety, Nursing Students, Mental Health.

### INTRODUCTION

The World Health Organization (WHO) underscores the significance of mental health in its strategy for preventing, treating, and overcoming mental health disorders<sup>1</sup>. Mental health issues are a primary cause of disability and a major public health concern globally, posing challenges in disease management and showing an increasing prevalence<sup>2,3</sup>. Depression and anxiety serve as crucial indicators of mental health and when left untreated, can have adverse effects on individuals<sup>4,5</sup>. Depression is characterized by symptoms such as loss of interest in daily activities, changes in weight,

sleep disturbances, low energy, difficulty concentrating, feelings of worthlessness or guilt, and thoughts of death or suicide<sup>6</sup>.

Globally, an estimated 12–50% of college students meet the criteria for a mental disorder, highlighting the significant prevalence of mental health issues among this population<sup>7</sup>. Factors contributing to the development of anxiety and depression among college students include academic stress from exams and workload, limited free time for leisure activities, competitive environments, concerns about meeting parental

expectations, the challenge of forming new relationships, and adjusting to a new living environment<sup>8</sup>. Additionally, biological factors such as age and gender, especially being female, can influence the likelihood of experiencing these mental health issues, along with financial pressures<sup>9,10</sup>.

Nursing students often face elevated levels of stress compared to students in other academic programs, which can lead to feelings of anxiety and depression<sup>11</sup>. They are more susceptible to depression than students in other medical fields, likely due to the demanding nature of their coursework and clinical experiences<sup>12</sup>. Factors contributing to depression among nursing students include academic pressures, challenges in clinical settings, and personal issues<sup>13</sup>. Research suggests that nursing students are particularly vulnerable to depression during their initial year of education and when they begin clinical rotations<sup>14</sup>.

This study represents the first investigation of depression, and anxiety, among undergraduate nursing students at an educational institute in Bangladesh. The examination of psychiatric morbidity among university students is crucial, as many mental disorders tend to emerge during college years<sup>15</sup>. Given the dearth of data on anxiety and depression rates among undergraduate's student at Chattogram, this study aimed to assess the Anxiety and Depression and correlation between mental health (anxiety or depression) with demographic characteristics of nursing students.

## METHODOLOGY

This study employed a cross-sectional design to assess the depression and anxiety among undergraduate nursing students at Chattogram International Nursing College (CINC) in Bangladesh.

### Sample size

The initial sample size for this study was calculated to be 384 using the formula

$$n = \frac{(Z^2 P q)}{d^2},$$

where  $Z$  is 1.96,  $P$  is 0.5,  $q$  is  $1 - P$ , and  $d$  is 0.05.

Due to limitations in recruitment and data collection, the final number of participants included

in the study was 124. Challenges such as difficulties in reaching out to potential participants and time constraints contributed to this reduced sample size.

## Instruments

The questionnaire consisted of two sections: demographic information and the Hospital Anxiety and Depression Scale (HADS). The demographic section of the questionnaire collected information on participants' age, gender, academic qualifications, marital status, living arrangements, and employment status. These variables were chosen to provide a comprehensive overview of the sample population and to allow for the exploration of potential associations with anxiety and depression levels. Hospital Anxiety and Depression Scale (HADS) is a widely used self-report questionnaire designed to assess levels of anxiety and depression in individuals. It consists of 14 items, with 7 items each for anxiety (HADS-A) and depression (HADS-D) subscales<sup>16</sup>. Participants were asked to rate each item based on how they have been feeling over the past week. Responses were scored on a 4-point Likert scale (0-3), with higher scores indicating more severe symptoms. The total score for each subscale (HADS-A and HADS-D) ranges from 0 to 21, with scores between 0 and 7 considered normal, 8 to 10 indicating borderline abnormality, and 11 to 21 suggesting abnormal levels of anxiety or depression<sup>16</sup>. HADS has been widely used in various populations and has demonstrated good reliability and validity.

## Data Collection

Data for this study were collected from October to December 2023 using a cross-sectional design. The aim was to assess the prevalence of depression and anxiety among undergraduate nursing students at Chattogram International Nursing College (CINC) in Bangladesh. The data collection method involved the use of an online questionnaire created with Google Forms. A total of 124 participants were recruited for the study. Participants were selected using convenience sampling and were required to meet the inclusion criteria of being BSc Nursing students at CINC and being aged 18 years or older. Participation in the study was voluntary, and all participants provided informed consent before

completing the questionnaire. Ethical approval for the study was obtained from the institutional review board of CINC and University of Creative Technology Chittagong (ref. No.: UCTC/IRB/2024/102). Participants were assured of confidentiality, and their responses were anonymized.

### Statistical Analysis

The data collected in this study were analyzed using SPSS version 28. Descriptive statistics were used to summarize the demographic characteristics of the participants and their responses to the Hospital Anxiety and Depression Scale (HADS). Means, standard deviations, frequencies, and percentages were calculated to provide a comprehensive overview of the sample population and the distribution of anxiety and depression. Pearson's chi-square test and independent t-tests were employed to examine the associations between demographic variables and anxiety or depression. The level of statistical significance was set at  $p < 0.05$ . Additionally, logistic regression analysis was conducted to identify predictors of anxiety and depression among the participants. Odds ratios (OR) with 95% confidence intervals (CI) were reported to assess the strength and direction of these associations. Variables included in the logistic regression models were age, academic qualifications, living situation, employment status, contagious disease status, and close family members' infection status.

### RESULTS

The demographic characteristics of the participants are shown in Table 1. A total of 124 participants completed the survey, with the majority being female (88.3%) and the remaining 11.7% being male. The age of participants ranged from 18 to 23 years, with the largest proportion falling in the 21-23 age group (59.2%). 31.1% were in their first year of B.Sc in Nursing, constituting 41 individuals. Additionally, 34.8% were in their second year of B.Sc in Nursing, totaling 46 individuals. Furthermore, 28.0% were in their third year of B.Sc in Nursing, comprising 37 individuals. In terms of marital status, the vast majority of participants were single (97.5%), while a small percentage were

married (1.7%). Participants reported various living arrangements, with the majority living with their parents (51.7%) or friends (35.0%). Regarding employment status, most participants were studying (95.8%), while a small percentage were working and studying (3.3%).

**Table 1.** Demographic characteristics of the participants (N = 124)

Variable	Frequency	Percentage
<b>Age</b>	<b>Mean 20.58 (SD 1.65)</b>	
18-20 years	49	39.2
21-23 years	74	59.2
<b>Gender</b>		
Female	106	88.3
Male	14	11.7
<b>Academic Qualifications</b>		
B.Sc. in nursing 1st year	41	31.1
B.Sc. in nursing 2nd year	46	34.8
B.Sc. in nursing 3rd year	37	28.0
<b>Marital Status</b>		
Married	2	1.7
Single	117	97.5
<b>Living with</b>		
Alone	5	4.2
Friends	42	35
Parents	62	51.7
Relatives	10	8.3
<b>Employment Status</b>		
Studying	115	95.8
Working and studying	4	3.3

Note: Some variables have fewer responses due to incomplete data (e.g., N = 120 for gender and N = 119 for employment status). Percentages are calculated based on the total responses for each variable.

Participants' responses regarding stress, fear/anxiety, and contagious diseases are displayed in Table 2. In terms of stress, the majority of participants reported experiencing stress sometimes (73.3%), while a smaller proportion reported experiencing stress regularly (23.3%). Only a small percentage of participants reported not experiencing stress at all (3.3%). Regarding fear or anxiety, the majority of participants reported experiencing these feelings sometimes (56.7%), while 30.0% reported experiencing fear or anxiety regularly. A smaller percentage of participants reported not experiencing fear or anxiety at all (13.3%). When asked about being infected with a contagious disease, the majority of participants reported not being infected

(88.3%), while 10.8% reported being infected. Lastly, regarding close family members being infected, the majority of participants reported that their close family members were not infected (81.7%), while 17.5% reported that their close family members were infected.

**Table 2.** Responses to Stress, Fear/Anxiety, and Contagious Disease

Variable	Frequency	Percentage
<b>Do you feel stress in your daily life?</b>		
No	4	3.3
Sometimes	88	73.3
Yes	28	23.3
<b>Do you experience fear or anxiety in your daily life?</b>		
No	16	13.3
Sometimes	68	56.7
Yes	36	30
<b>Have you been infected with a contagious disease?</b>		
No	106	88.3
Yes	13	10.8
<b>Have any of your close family members been infected?</b>		
No	98	81.7
Yes	21	17.5

Table 3 presents the scores for the Hospital Anxiety and Depression Scale for anxiety and depression. Among the participants, 28.0% scored in the normal range for anxiety, 28.0% scored in the borderline abnormal range, and 38.0% scored in the abnormal range. The majority of participants scored in the normal range for depression, accounting for 59.2% of the sample. Meanwhile, 22.4% scored in the borderline abnormal range, and 18.4% scored in the abnormal range.

**Table 3.** Distribution of Anxiety and Depression Scores Based on the Hospital Anxiety and Depression Scale (HADS)

Score	Anxiety		Depression	
	Frequency	Percent	Frequency	Percent
Normal	37	29.8	74	59.6
Borderline abnormal	37	29.8	28	22.5
Abnormal	50	40.3	23	18.5

Table 4 presents the bivariate analysis results for anxiety among nursing students. Significant associations were found between anxiety and gender ( $p = 0.004$ ), with 75.7% of females and 94.0% of males reporting anxiety. However, no significant association was found between anxiety and academic qualifications ( $p = 0.147$ ).

**Table 4.** Bivariate Analysis Results for Anxiety

Variable	Anxiety No	Anxiety Yes	p Value
<b>Age</b>	20.40 (1.65)	20.64 (1.65)	0.461
<b>Gender</b>			
Female	28 (75.7%)	79 (94.0%)	0.004
Male	9 (24.3%)	5 (6.0%)	
<b>Academic Qualifications</b>			
B.Sc. in nursing 1st year	16 (43.2%)	25 (29.1%)	0.147
B.Sc. in nursing 2nd year	9 (24.3%)	36 (41.9%)	
B.Sc. in nursing 3rd year	12 (32.4%)	25 (29.1%)	
<b>Living with</b>			
Parents or relatives	6 (16.7)	10 (11.9)	0.482
Alone or friends	30 (83.3)	74 (88.1)	

Table 5 presents the bivariate analysis results for depression among nursing students. No significant associations were found between depression and gender ( $p = 0.670$ ), academic qualifications ( $p = 0.615$ ), contagious disease status ( $p = 0.318$ ), or close family members' infection status ( $p = 0.342$ ). The table provides insight into the prevalence of depression among nursing students and its non-significant associations with these factors.

**Table 5.** Bivariate Analysis Results for Depression

Variable	Depression		p Value
	No	Yes	
<b>Age</b>	20.38 (1.60)	20.88 (1.71)	0.102
<b>Gender</b>			
Female	63 (87.5)	45 (90.0)	0.67
Male	9 (12.5)	5 (10.0)	
<b>Academic Qualifications</b>			
B.Sc. in nursing 1st year	27 (36.5)	14 (28.0)	0.615
B.Sc. in nursing 2nd year	26 (35.1)	20 (40.0)	
B.Sc. in nursing 3rd year	21 (28.4)	16 (32.0)	
<b>Living with</b>			
Parents or relatives	7 (9.7)	9 (18.4)	0.168
Alone or friends	65 (90.3)	40 (81.6)	
<b>Contagious Disease Status</b>			
Yes	6 (8.3%)	7 (14.0%)	0.318
No	66 (91.7%)	43 (86.0%)	
<b>Close Family Members Infection Status</b>			
Yes	11 (15.3%)	11 (22.0%)	0.342
No	61 (84.7%)	39 (78.0%)	

Table 6 presents the logistic regression analysis, revealing that age is significantly associated with

depression among nursing students; older students have higher odds of experiencing depression (OR = 1.384,  $p = 0.037$ ). No significant associations were found between any predictor variables and anxiety. Other variables, including academic qualifications,

living situation, employment status, contagious disease status, and close family members' infection status, did not show significant associations with depression.

**Table 6.** Logistic Regression Analysis of Factors Associated with Anxiety and Depression among Nursing Students

Variables	Anxiety			Depression		
	OR	95% CI	P Value	OR	95% CI	P Value
<b>Age</b>	1.033	(0.755, 1.412)	0.84	1.384	(1.02, 1.876)	0.037
<b>Academic Qualifications</b>			0.405			0.81
B.Sc. in nursing 2nd year	2.162	(0.686, 6.82)	0.188	1.121	(0.382, 3.285)	0.835
B.Sc. in nursing 3rd year	1.76	(0.521, 5.949)	0.363	0.8	(0.247, 2.589)	0.71
<b>Living with</b>						
Alone or Friends	1.383	(0.414, 4.625)	0.598	0.426	(0.132, 1.374)	0.153
<b>Employment Status</b>						
Working and studying	0.13	(0.012, 1.424)	0.095	3.867		0.999
<b>Contagious Disease Status</b>						
Yes	1.158	(0.08, 16.722)	0.914	1.106	(0.16, 7.628)	0.919
<b>Close Family Members Infection Status</b>						
Yes	0.416	(0.044, 3.962)	0.446	0.557	(0.108, 2.869)	0.484

Notes: OR = odds ratio; CI = confidence interval.

## DISCUSSION

In this study, the majority of participants were female ( $n = 106$ , 88.3%), with only 14 (11.7%) being male. This gender distribution contrasts with a previous study on university students, where males accounted for 50.4% of participants, differing significantly from the 49.6% of females<sup>17</sup>. Another study reported that most respondents were female ( $n = 238$ ), making up 84.7% of the sample<sup>18</sup>.

The age distribution among respondents in this study showed that the majority were aged 21-23 years (59.2%), with (39.2%) in the 18-20 years age group. This distribution contrasts somewhat with findings from a study on college-going students, where 66.6% fell into the 18-20 years age bracket and 33.4% were in the 21-24 years age group<sup>19</sup>. Similarly, another study reported that most nursing students surveyed were 21 years old (50.9%), followed by 20-year-olds (30.6%) and 22-year-olds (18.5%)<sup>18</sup>.

This study included participants at different stages of their B.Sc in Nursing program: 31.1% were in the first year (41 individuals), 34.8% were in the second year (46 individuals), and 28.0% were in the

third year (37 individuals). Comparatively, a previous study among college students showed 20% from 1-2 semesters, 28.4% were from 3-4 semesters, 14.6% were from 5-6 semesters<sup>20</sup>.

The study found that 28.0% of participants had normal anxiety levels, 28.0% were borderline abnormal, and 38.0% were abnormal. For depression, 59.2% were normal, 22.4% were borderline abnormal, and 18.4% were abnormal. This contrasts with a study reporting higher rates of depression (40.5%) and anxiety (68.3%) among undergraduate students in Pakistan<sup>17</sup>. Moreover, a significant majority of students (51%,  $n = 350$ ) reported experiencing anxiety and depression at moderate to extremely severe levels<sup>11</sup>.

Our study revealed a significant association between anxiety and gender ( $p = 0.004$ ), with 75.7% of females and 94.0% of males reporting anxiety. This aligns with Nagaraja G. M's findings, which showed a higher proportion of male students experiencing anxiety<sup>21</sup>. In contrast, another study<sup>22</sup> reported that female participants were significantly more exposed to symptoms of anxiety. Similarly, Zaher JS et al. found a similar trend when comparing

depression and anxiety among nurses in critical care and internal surgical units at hospitals<sup>23</sup>.

Additionally, there were significant associations between depression and age. Older students have higher odds of experiencing depression (OR = 1.384,  $p = 0.037$ ). These results contrast with a study conducted in Hong Kong, China, which found increased levels of depression associated with academic qualifications among second-year students<sup>19</sup>. This suggests that the factors influencing anxiety and depression in nursing students may vary between different populations and settings.

### Study Limitations

This study has several limitations that should be considered when interpreting the findings. First, the relatively small sample size ( $n = 124$ ) limits the statistical power of the study and its generalizability to a broader population. Future research should aim to include larger and more representative samples to validate these results. Second, the gender imbalance, with 88.3% of participants being female, introduces potential bias. This overrepresentation may have influenced the findings, particularly given known gender differences in anxiety and depression prevalence. Efforts to recruit a more gender-balanced sample in future studies are essential to improve representativeness and reliability. Third, the use of an online survey for data collection may have introduced self-selection bias, as individuals experiencing symptoms of anxiety or depression may have been more likely to participate. This limitation could affect the cross-sectional nature of the study, and future studies should explore alternative recruitment methods to minimize this bias. Fourth, the study did not collect information on participants' past or current diagnoses of anxiety or depression. The absence of this information limits the ability to account for pre-existing mental health conditions that might influence the observed outcomes. Addressing this limitation in future studies would provide a more comprehensive understanding of the factors affecting mental health. Fifth, the study did not control for physical health conditions, which could act as confounders in the reported mental health outcomes. Future research should incorporate measures to account for participants' physical health to ensure more accurate

findings. Lastly, the cross-sectional design of this study prevents establishing causal relationships between demographic factors and mental health outcomes. Longitudinal studies are recommended to better capture the temporal relationships and causal pathways of anxiety and depression among nursing students.

### CONCLUSION

This study is the first to examine the prevalence of depression and anxiety among baccalaureate nursing students in Bangladesh. The findings reveal a high prevalence of anxiety and moderate levels of depression among nursing students, with anxiety linked to gender and depression to age. Female students experienced higher anxiety, while older students were more prone to depression. These findings highlight the need for tailored mental health interventions, such as gender-specific support programs and counseling services. Institutions should implement strategies to promote well-being and address these disparities. Future research with larger, more diverse samples and longitudinal designs is essential to validate these results and develop effective interventions.

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### Conflict of Interest

The authors declare they have no conflicting interests.

### REFERENCES

1. Organization WH. Mental health action plan 2013-2020. Geneva, Switzerland; 2013. 2020.
2. Wainberg ML, Scorza P, Shultz JM, et al. Challenges and opportunities in global mental health: a research-to-practice perspective. *Current psychiatry reports*. 2017;19:1-10.
3. Collaborators G. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. 2018;
4. Teh CK, Ngo CW, Vellasamy R, Suresh K. Depression, anxiety and stress among undergraduate students: a cross sectional study. *Open Journal of Epidemiology*. 2015;5(04):260-268.
5. Redhwan Ahmed Al-naggar RAA-n, Al-Naggar DH. Prevalence and associated factors of emotional disorder among Malaysian university students. 2012;

6. Chand SP, Arif H. Depression. StatPearls Publishing. Accessed 15 July, 2024.
7. Bruffaerts R, Mortier P, Kiekens G, et al. Mental health problems in college freshmen: Prevalence and academic functioning. *Journal of affective disorders*. 2018;225:97-103.
8. Kumaraswamy N. Academic stress, anxiety and depression among college students: A brief review. *International review of social sciences and humanities*. 2013;5(1):135-143.
9. Bangasser DA, Curtis A, Reyes BA, et al. Sex differences in corticotropin-releasing factor receptor signaling and trafficking: potential role in female vulnerability to stress-related psychopathology. *Molecular psychiatry*. 2010;15(9):896-904.
10. Kruisselbrink Flatt A. A suffering generation: Six factors contributing to the mental health crisis in North American higher education. *College Quarterly*. 2013;16(1):n1.
11. Samson P. Role of coping in stress, anxiety, depression among nursing students of Purbanchal University in Kathmandu. 2019;
12. Moreira DP, Furegato ARF. Estresse e depressão entre alunos do último período de dois cursos de enfermagem. *Revista Latino-Americana de Enfermagem*. 2013;21:155-162.
13. Puthran R, Zhang MW, Tam WW, Ho RC. Prevalence of depression amongst medical students: A meta-analysis. *Medical education*. 2016;50(4):456-468.
14. Janatolmakan M, Andaieshgar B, Aryan A, Jafari F, Khatony A. Comparison of depression rate between the first-and final-year nursing students in Kermanshah, Iran. *Psychology Research and Behavior Management*. 2019:1147-1153.
15. Scott KM, Lim C, Al-Hamzawi A, et al. Association of mental disorders with subsequent chronic physical conditions: world mental health surveys from 17 countries. *JAMA psychiatry*. 2016;73(2):150-158.
16. Michopoulos I, Douzenis A, Kalkavoura C, et al. Hospital Anxiety and Depression Scale (HADS): validation in a Greek general hospital sample. *Annals of general psychiatry*. 2008;7:1-5.
17. Asif S, Mudassar A, Shahzad TZ, Raouf M, Pervaiz T. Frequency of depression, anxiety and stress among university students. *Pakistan journal of medical sciences*. 2020;36(5):971.
18. Sakai M, Nakanishi M, Yu Z, et al. Depression and anxiety among nursing students during the COVID-19 pandemic in Tohoku region, Japan: A cross-sectional survey. *Japan Journal of Nursing Science*. 2022;19(3):e12483.
19. Cheung T, Wong SY, Wong KY, et al. Depression, anxiety and symptoms of stress among baccalaureate nursing students in Hong Kong: a cross-sectional study. *International journal of environmental research and public health*. 2016;13(8):779.
20. Syed A, Ali SS, Khan M. Frequency of depression, anxiety and stress among the undergraduate physiotherapy students. *Pakistan journal of medical sciences*. 2018;34(2):468.
21. Nagaraja G, Reddy M, Ravishankar S, Jagadisha D, Muninarayana D. Study the Prevelence of Depression among Nursing College Students of Kolar District, Karnataka State. *IOSR Journal Of Humanities And Social Science*. 2015;20(5):135 - 139.
22. Jovanovic V, Djonović N, Dutina A. Factors associated with the depression, anxiety and stress among high medical school of professional studies students. 2017;
23. Zaher SJ, Vafaei M, Abianeh EE. Comparing depression, anxiety and stress among the Nurses in the critical care and internal surgical units at the selected hospitals of the Social Security Organization of Tehran in 2016. *International Journal of Medical Research & Health Sciences*. 2016;5(9):254-261.

