

SYMPTOMS OF ANXIETY IN NURSING SCHOOL STUDENTS OF AYUB TEACHING HOSPITAL, ABBOTTABAD

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ABSTRACT

Background: Nursing students experience combined academic and clinical demands that may increase anxiety and interfere with learning, well-being, and clinical performance.

Objective: To estimate the frequency and severity of anxiety symptoms among nursing students at Ayub Teaching Hospital, Abbottabad, and to examine associations with selected demographic and academic factors.

Methods: A single-centre cross-sectional study enrolled 148 nursing students aged 16–25 years between 1 December 2020 and 31 May 2021 using non-probability convenience sampling. Anxiety symptoms were assessed with the seven-item Generalized Anxiety Disorder scale (GAD-7). Scores were classified as minimal (0–4), mild (5–9), moderate (10–14), or severe (15–21). Clinically important symptom burden was defined as GAD-7 ≥ 10 . Associations were summarized using odds ratios (ORs), 95% confidence intervals (CIs), Fisher's exact tests, and a test for trend across academic years.

Results: The mean age was 18.90 ± 2.81 years. GAD-7 scores indicated minimal symptoms in 6 students (4.1%), mild symptoms in 117 (79.1%), moderate symptoms in 21 (14.2%), and severe symptoms in 4 (2.7%). Overall, 142 students (95.9%; 95% CI 91.4–98.1) reported at least mild symptoms, whereas 25 (16.9%; 95% CI 11.7–23.7) had moderate-to-severe symptoms. Moderate-to-severe symptoms were more frequent among married than single students (87.5% vs 12.9%; OR 47.44, 95% CI 5.51–408.50; $p < 0.001$) and among students aged ≥ 20 years than those aged < 20 years (34.9% vs 9.5%; OR 5.09, 95% CI 2.06–12.57; $p < 0.001$). The proportion increased from 6.8% in first year to 36.1% in fourth year (p for trend < 0.001). Recent and upcoming examinations were not significantly associated with moderate-to-severe symptoms.

Conclusion: Anxiety symptoms were common, although the proportion with GAD-7 scores ≥ 10 was substantially lower than the proportion reporting any symptoms. Older, married, and senior-year students may require particular attention. Because the study was cross-sectional, single-centre, and conducted during the COVID-19 period, the results should be interpreted as exploratory and not as evidence of causation or a clinical diagnosis.

Keywords: Anxiety; GAD-7; mental health; nursing education; nursing students; Pakistan

INTRODUCTION

Anxiety symptoms are common among university students, but nursing students face additional demands arising from clinical placements, responsibility for patient care, exposure to illness and death, performance evaluation, and the need to integrate theoretical knowledge with technical skills. Systematic reviews indicate that stress and anxiety are substantial concerns across nursing programmes and may intensify during advanced clinical training [1–3]. Experimental and observational evidence also suggests that anxiety can disrupt attention, learning, and clinical performance [4,5]. The seven-item Generalized Anxiety Disorder scale (GAD-7) is a brief self-report measure developed to assess anxiety symptom severity. Conventional score bands are 0–4, 5–9, 10–14, and 15–21, corresponding to minimal, mild, moderate, and severe symptoms, respectively [6]. The instrument has demonstrated strong psychometric performance, including in nursing students [7], and an Urdu translation has been validated for

use in Pakistan [8]. Importantly, GAD-7 categories quantify symptom burden; they do not establish a psychiatric diagnosis without clinical assessment. The study period overlapped with the COVID-19 pandemic, which altered nursing education and clinical placements internationally and was associated with increased psychological distress among nursing students [9,10]. Local estimates remain important because educational structures, social responsibilities, access to support, and cultural attitudes toward mental health differ across settings. Evidence from Pakistan is comparatively limited, particularly for nursing students in public-sector teaching hospitals. This study therefore aimed to determine the frequency and severity of anxiety symptoms among nursing students at Ayub Teaching Hospital, Abbottabad, and to explore whether clinically important symptoms were associated with age, marital status, academic year, and the timing of examinations.

METHODS

Study design and reporting

This was a single-centre cross-sectional study. The manuscript was revised in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations [11].

Setting and study period

The study was conducted at the Nursing School and clinical wards of Medical Teaching Institution Ayub Teaching Hospital, Abbottabad, Khyber Pakhtunkhwa, Pakistan, from 1 December 2020 to 31 May 2021. Ayub Teaching Hospital is a tertiary-care teaching institution serving Abbottabad and surrounding regions.

Participants and sampling

Eligible participants were first-, second-, third-, and fourth-year nursing students aged 16–25 years. Staff nurses, charge nurses, and students enrolled in other health-technology programmes were excluded. Participants were recruited through non-probability convenience sampling. A total of 148 students were included.

Sample-size calculation

The supplied protocol states that a sample size of 148 was calculated using a 95% confidence level, 8% absolute precision, and an anticipated proportion of 56.7%.

Data collection and study variables

Data were collected using a structured proforma that recorded age, marital status, academic year, average weekly duty hours, whether an examination had occurred within the preceding 7 days, whether an examination was scheduled within the following 7 days, and self-reported history of a diagnosed anxiety disorder. Sex or gender was not available in the supplied results and was therefore not analysed.

Anxiety assessment

Anxiety symptoms during the preceding 2 weeks were assessed with the GAD-7 [6]. Each item is scored from 0 to 3, yielding a total score from 0 to 21. Scores were categorized as minimal (0–4), mild (5–9), moderate (10–14), or severe (15–21). For association analyses, moderate-to-severe symptoms were defined as GAD-7 ≥ 10 , a threshold commonly used to identify participants requiring further clinical assessment.

Statistical analysis

Continuous variables were summarized as mean $\pm$ standard deviation and range; categorical variables were summarized as frequencies and percentages. The prevalence of any anxiety symptoms (GAD-7 ≥ 5), moderate-to-severe symptoms (GAD-7 ≥ 10), and self-reported previous diagnosis was accompanied by Wilson 95% confidence intervals. For exploratory association analyses, GAD-7 scores were dichotomized as <10 versus ≥ 10 . Fisher's exact test was used for 2 $\times$ 2 comparisons because several cells were sparse, and ORs with 95% CIs were reported. Academic-year differences were assessed with a 4 $\times$ 2 Pearson chi-square test and a Cochran–Armitage test for linear trend. All tests were two-sided, and $p < 0.05$ was considered statistically significant. No adjustment was made for multiple comparisons. The original analysis was performed in SPSS version 23.

Ethical considerations

Ethical approval was obtained from the relevant institutional ethics committee. Written informed consent was obtained from participants before enrolment.

RESULTS

Participant characteristics

A total of 148 nursing students were included. Their ages ranged from 16 to 25 years, with a mean of 18.90 ± 2.81 years. Average weekly duty hours ranged from 36 to 56 hours, with a mean of 42.59 ± 8.27 hours. Most participants were single (140/148; 94.6%). The four academic years were represented by 44 first-year, 35 second-year, 33 third-year, and 36 fourth-year students. Thirty-nine participants (26.4%; 95% CI 19.9–34.0) reported a previous diagnosis of an anxiety disorder.

TABLE 1. PARTICIPANT CHARACTERISTICS (N=148)

Characteristic	Category or summary	Value
Age, years	Mean $\pm$ SD (range)	18.90 ± 2.81 (16–25)
Age group	<20 years	105 (70.9%)

	≥20 years	43 (29.1%)
Weekly duty hours	Mean ± SD (range)	42.59 ± 8.27 (36–56)
Marital status	Single	140 (94.6%)
	Married	8 (5.4%)
Academic year	First	44 (29.7%)
	Second	35 (23.6%)
	Third	33 (22.3%)
	Fourth	36 (24.3%)
Examination in previous 7 days	Yes	48 (32.4%)
	No	100 (67.6%)
Examination in following 7 days	Yes	53 (35.8%)
	No	95 (64.2%)
Previous anxiety diagnosis	Yes	39 (26.4%)
	No	109 (73.6%)

Distribution of GAD-7 severity

Six participants (4.1%) had minimal symptoms, 117 (79.1%) had mild symptoms, 21 (14.2%) had moderate symptoms, and 4 (2.7%) had severe symptoms. Thus, 142 participants (95.9%; 95% CI 91.4–98.1) reported at least mild symptoms, while 25 (16.9%; 95% CI 11.7–23.7) had moderate-to-severe symptoms (GAD-7 ≥10).

TABLE 2. DISTRIBUTION OF ANXIETY SYMPTOM SEVERITY ACCORDING TO GAD-7 (N=148)

GAD-7 category	Score range	Frequency, n	Percentage, %
Minimal	0–4	6	4.1
Mild	5–9	117	79.1
Moderate	10–14	21	14.2
Severe	15–21	4	2.7
Total	0–21	148	100.0

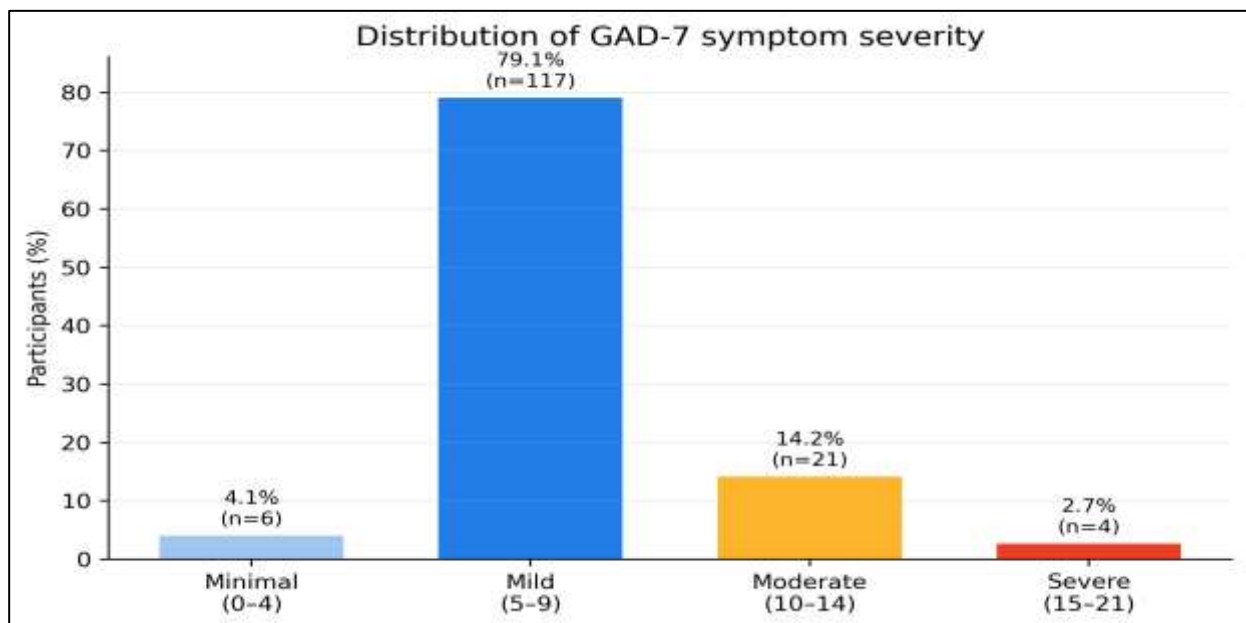


FIGURE 1. DISTRIBUTION OF GAD-7 SYMPTOM SEVERITY AMONG NURSING STUDENTS (N=148).

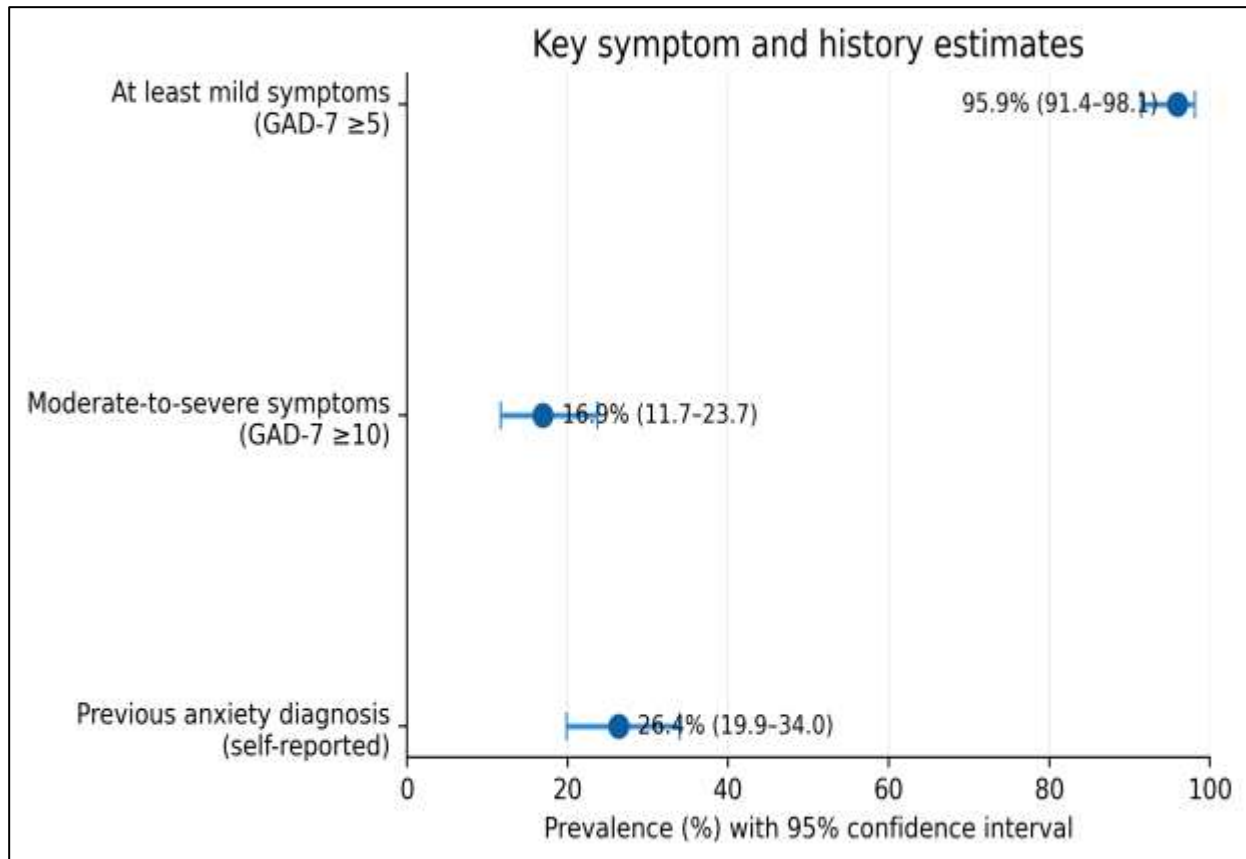


FIGURE 2. KEY PREVALENCE ESTIMATES WITH WILSON 95% CONFIDENCE INTERVALS. PREVIOUS ANXIETY DIAGNOSIS WAS SELF-REPORTED AND NOT CLINICALLY VERIFIED.

Factors associated with moderate-to-severe symptoms

Moderate-to-severe symptoms were present in 7 of 8 married students (87.5%) and 18 of 140 single students (12.9%), corresponding to an OR of 47.44 (95% CI 5.51–408.50; Fisher’s exact $p < 0.001$). The estimate was imprecise because only eight participants were married. Among students aged ≥ 20 years, 15 of 43 (34.9%) had moderate-to-severe symptoms compared with 10 of 105 (9.5%) aged < 20 years (OR 5.09, 95% CI 2.06–12.57; Fisher’s exact $p < 0.001$). The proportion also increased across academic years: 6.8% in first year, 11.4% in second year, 15.2% in third year, and 36.1% in fourth year. The overall association was significant ($\chi^2 = 13.47$, $df = 3$, $p = 0.004$), with evidence of a linear trend ($p < 0.001$). Compared with first-year students, fourth-year students had higher odds of moderate-to-severe symptoms (OR 7.72, 95% CI 1.99–29.95). Neither an examination in the preceding 7 days nor an examination in the following 7 days was significantly associated with moderate-to-severe symptoms. These exploratory analyses were unadjusted and should not be interpreted causally.

TABLE 3. EXPLORATORY ASSOCIATIONS WITH MODERATE-TO-SEVERE ANXIETY SYMPTOMS (GAD-7 ≥ 10)

Factor	Category	GAD-7 ≥ 10 , n/N (%)	Reference	OR	95% CI
Marital status	Single	18/140 (12.9)	Reference	1.00	—
	Married	7/8 (87.5)	Single	47.44	5.51–408.50
Age group	< 20 years	10/105 (9.5)	Reference	1.00	—
	≥ 20 years	15/43 (34.9)	< 20 years	5.09	2.06–12.57
Academic year	First	3/44 (6.8)	Reference	1.00	—
	Second	4/35 (11.4)	First	1.76	0.37–8.46
	Third	5/33 (15.2)	First	2.44	0.54–11.05
	Fourth	13/36 (36.1)	First	7.72	1.99–29.95
Exam in previous 7 days	No	19/100 (19.0)	Reference	1.00	—
	Yes	6/48 (12.5)	No	0.61	0.23–1.64
Exam in following 7 days	No	18/95 (18.9)	Reference	1.00	—
	Yes	7/53 (13.2)	No	0.65	0.25–1.68

^a Fisher’s exact test. ^b Pearson chi-square test for the 4×2 table. ORs and p values were reconstructed from the aggregate counts supplied and must be verified against the original dataset.

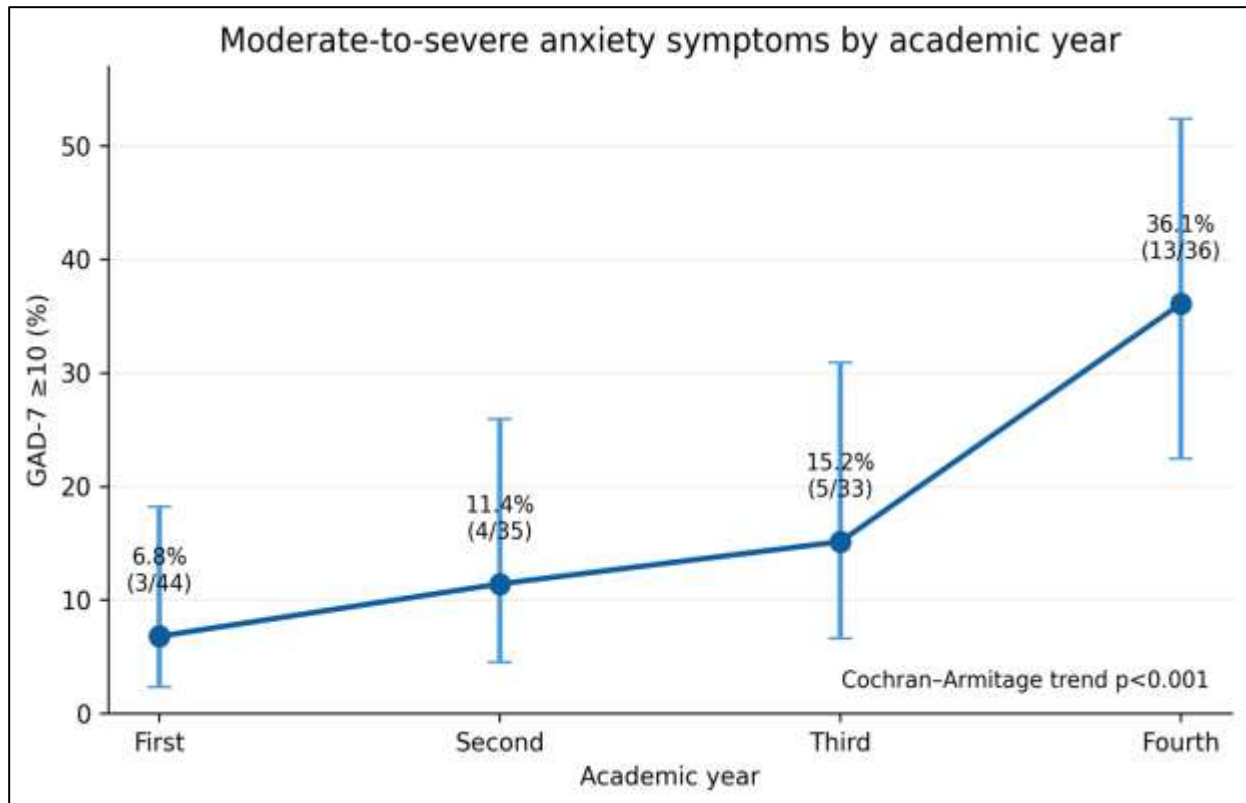


FIGURE 3. PERCENTAGE OF STUDENTS WITH MODERATE-TO-SEVERE ANXIETY SYMPTOMS (GAD-7 ≥ 10) BY ACADEMIC YEAR. ERROR BARS SHOW WILSON 95% CONFIDENCE INTERVALS.

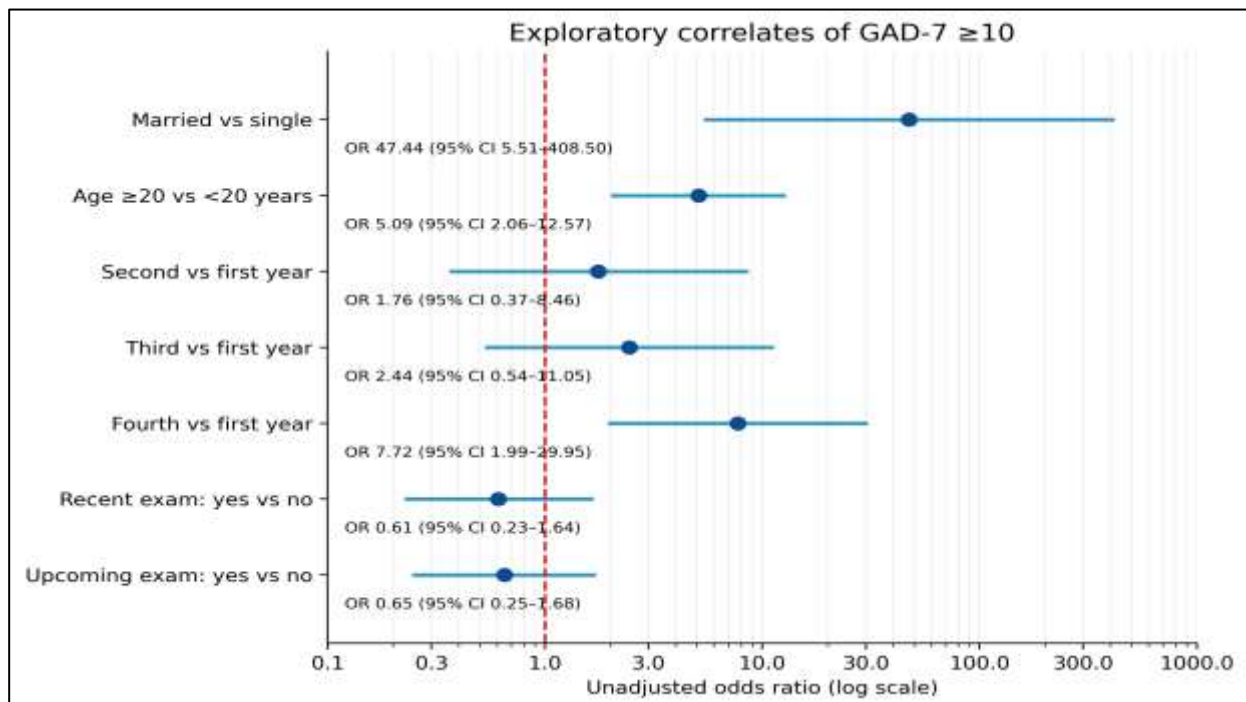


FIGURE 4. FOREST PLOT OF UNADJUSTED ODDS RATIOS FOR MODERATE-TO-SEVERE ANXIETY SYMPTOMS (GAD-7 ≥ 10). ESTIMATES ARE EXPLORATORY; THE MARITAL-STATUS ESTIMATE IS UNSTABLE BECAUSE ONLY EIGHT PARTICIPANTS WERE MARRIED.

DISCUSSION

This study found a high frequency of self-reported anxiety symptoms among nursing students: 95.9% scored at least 5 on the GAD-7. However, the more clinically relevant threshold of GAD-7 ≥ 10 was met by 16.9%. This distinction is essential. A score in the mild range reflects symptoms and does not establish an anxiety disorder. The study also identified strong unadjusted associations between moderate-to-severe symptoms and being married, age ≥ 20 years,

and advanced academic year. Examination timing was not associated with symptom severity. The observed proportion with GAD-7 ≥ 10 is broadly compatible with evidence that a substantial minority of nursing students experience clinically important anxiety. A 2023 systematic review and meta-analysis found considerable variation between studies, instruments, and settings, with mild-to-moderate anxiety commonly reported [1]. Nursing students often experience greater psychological distress than non-nursing students, reflecting the combined demands of academic study and clinical practice [3,12]. The progressive increase across academic years is plausible because senior students assume more complex clinical responsibilities and approach transition into professional practice. Previous studies have linked clinical exposure, workload, performance evaluation, and fear of errors with psychological distress [2–5]. Nevertheless, the current academic-year analysis was unadjusted, and year of study may be confounded by age, duty hours, personal responsibilities, or previous mental-health problems. The association with marital status was large but based on only eight married participants, producing a very wide confidence interval. It should therefore be interpreted as a signal requiring replication rather than a precise effect estimate. Married students may face competing academic, financial, household, or caregiving demands, but those mechanisms were not measured in this study. Similarly, the age association cannot be separated from academic seniority or marital status without multivariable analysis. The study was conducted during the COVID-19 pandemic. Reviews published since then indicate that nursing students experienced elevated anxiety during disrupted teaching and clinical placements [9,10]. Pandemic-related exposures were not measured in the supplied dataset, so the contribution of COVID-19 cannot be quantified. It should be treated as an important contextual factor rather than a demonstrated cause. Nursing schools should consider confidential mental-health screening pathways, clear referral mechanisms, and support that is accessible without academic penalty. Interventions should not be limited to examination periods because examination timing was not associated with moderate-to-severe symptoms in this sample. Evidence supports skills-based, cognitive-behavioral, mindfulness, coping, and curriculum-focused approaches, although intervention quality and effects vary [13,14]. Support may be particularly relevant for senior, older, married, and previously diagnosed students, while avoiding stigmatization or assumptions based on group membership.

Strengths and limitations

The study used a recognized symptom scale and included students from all four academic years. The revised analysis reports confidence intervals and uses exact tests for sparse 2×2 tables. Several limitations materially affect interpretation. First, convenience sampling at a single institution limits generalizability and may introduce selection bias. Second, the cross-sectional design precludes temporal or causal inference. Third, the GAD-7 is a symptom measure rather than a diagnostic interview, and the version/language administered was not documented in the supplied manuscript. Fourth, the married subgroup was very small, resulting in unstable estimates. Fifth, self-reported previous diagnosis was not clinically verified. Sixth, sex/gender data, response rate, missing-data procedures, socioeconomic variables, living arrangements, and pandemic-specific exposures were unavailable. Seventh, only aggregate tables were supplied for revision, preventing verification of data entry, scale reliability, multivariable modelling, or participant-level assumptions. Finally, multiple exploratory comparisons were conducted without multiplicity adjustment.

CONCLUSION

Anxiety symptoms were common among nursing students at Ayub Teaching Hospital, but the proportion with moderate-to-severe symptoms was 16.9%, substantially lower than the proportion reporting any symptoms. Older age, marital status, and advanced academic year were associated with greater symptom burden in unadjusted analyses, whereas examination timing was not. The findings support accessible screening and referral services but require cautious interpretation because of the single-centre cross-sectional design, convenience sampling, sparse subgroups, and pandemic context. Replication using multicentre probability samples, validated local-language instruments, and multivariable analysis is warranted.

Declarations

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' contributions

Imran Ullah: Conceptualization, Methodology, Investigation, and Writing – original draft. Amin ur Rashid: Data curation, Investigation, and Writing – review and editing. Aamer Mumtaz: Formal analysis, Validation, and Visualization. Abid Ul Abrar: Data collection, Resources, and Project administration. Najma Ishtiaq: Methodology, Validation, and Writing – review and editing. Syed Tahir Hussain Shah: Supervision, Conceptualization, Project administration, and Writing – review and editing.

All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work

Acknowledgements

The authors gratefully acknowledge the nursing students who participated in this study and the administration of the Nursing School at Ayub Teaching Hospital for their support and cooperation.

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