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Original Research Article

Prevalence and sociodemographic predictors of anxiety among female nursing officers in a tertiary care hospital: a cross-sectional study

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ABSTRACT

Background: Nursing professionals operating within high-acuity clinical environments face persistent workplace stressors, making them exceptionally vulnerable to psychological morbidity. Female nursing officers may be at extreme risk owing to biological, psychological and sociocultural factors. To estimate the prevalence of anxiety and identify its predictors among working female nursing officers in a tertiary care hospital.
Methods: Utilizing a cross-sectional observational framework, we evaluated 264 female nursing officers (ages 21–40) at a tertiary care facility in New Delhi. Psychic and somatic anxiety profiles were quantified via the hamilton anxiety rating scale (HAM-A). Baseline demographic variables were evaluated using Chi-square and Mann-Whitney U tests, while independent predictors of categorical severity were isolated through multivariate logistic regression modelling.
Results: The mean age was 29.34±5.87 years. Severe anxiety was observed in 75% of participants. Younger age (≤30 years) was significantly associated with higher anxiety severity (p=0.046). Logistic regression showed that age was an independent predictor, with each additional year reducing the odds of severe anxiety by ~10% (OR=0.90, p=0.013). Marital status and number of children were not significant predictors.
Conclusions: There is a high burden of severe anxiety among female nursing officers, particularly among younger individuals. Institutional interventions focusing on early-career nurses are essential.

Keywords: Anxiety, HAM-A, India, Nursing officers, Occupational stress, Prevalence

INTRODUCTION

Anxiety is defined as an uncontrolled, diffuse, unpleasant and persistent state of negative affect, characterized by apprehensive anticipation regarding unpredictable and unavoidable future danger and accompanied by physiological symptoms of tension and a constant state of heightened vigilance.[1] Stress represents an emotional, chemical or physical element prompting mental or somatic tension, potentially acting as a catalyst for clinical pathology.[2] Stress and anxiety share overlapping cognitive features. Stress has been acknowledged as an occupational hazard since the mid-1950s.[3] Occupational distress typically surfaces as adverse physiological and psychological reactions when a worker's operational constraints, baseline capabilities or institutional resources fail to match their workplace mandates.[4] Chronic job-related strain is heavily implicated in the pathogenesis of metabolic syndrome elevating long-term cardiovascular vulnerabilities while triggering functional gastrointestinal disturbances and somatic musculoskeletal complaints affecting the cervical, scapular and lumbar regions.[5] Apart from these physiological manifestations, mental impacts include anxiety, depression, insomnia and burnout. Job stress is seen to be associated with difficulty in falling asleep and staying asleep. It is also associated with increased emotional exhaustion, depersonalisation and reduced personal accomplishments.[5] Studies on work-

related stress among nurses have reported moderate to severe levels of job-related stress; Sharma et al, found that female, divorced/widowed/separated nurses were more prevalent to report depression, anxiety and symptoms of stress than their male counterparts.[6]

Despite the recognised vulnerability of this demographic group, there has been a lacunae in the literature of anxiety among female nurses. In this study, we analysed the HAM-A scale among female nursing officers to assess the prevalence of anxiety at a tertiary care hospital. The HAM-A is a validated clinician administered tool used to access anxiety severity. The instrument utilizes 14 distinct symptom-driven domains to comprehensively gauge both cognitive (psychic) and structural (somatic) anxiety dimensions.

METHODS

Study design and setting

A cross-sectional observational study was conducted among female nursing officers stationed across diverse clinical departments at a prominent tertiary care hospital in New Delhi, India. The study protocol was executed over a 14-month period between April 2024 and June 2025.

Participants and sampling

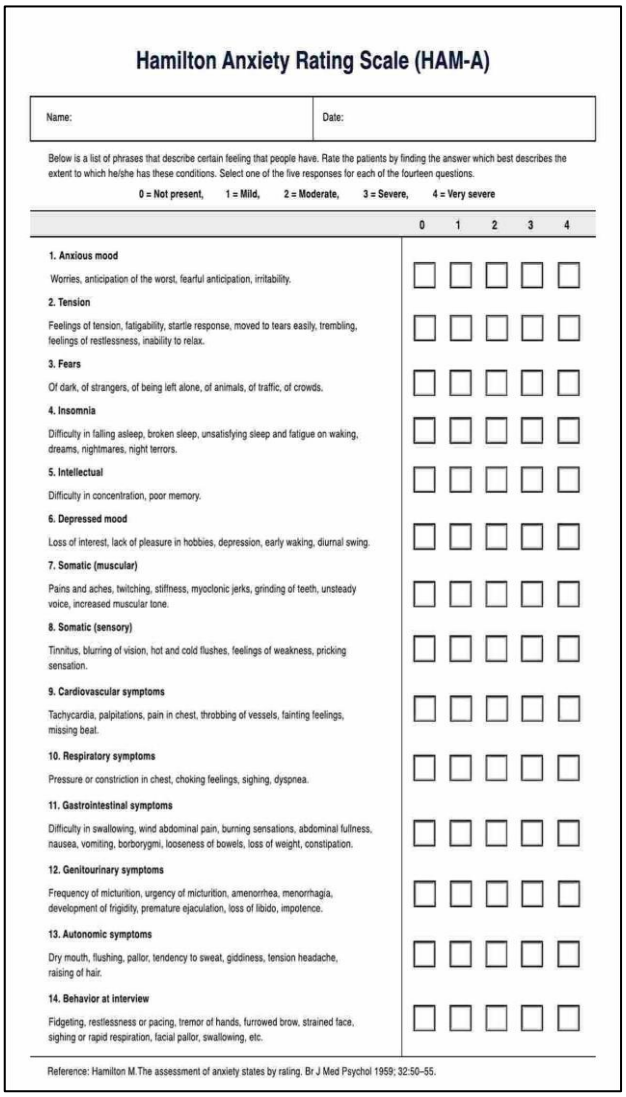
The target population comprised full-time female nursing officers actively engaged in direct patient care. A representative sample of 264 female nursing officers within the age distribution of 21 to 40 years was recruited by random sampling.

Ethical considerations

Formal institutional ethics committee approval was obtained prior to the commencement of data collection. The study was conducted in strict accordance with the ethical principles outlined in the Declaration of Helsinki. Written, voluntary informed consent was obtained from each participant prior to enrolment. Confidentiality and anonymity were rigorously maintained.

Data collection and measurement tools

Data collection was carried out in quiet, private consultation rooms during non-duty hours or designated break periods to minimize operational disruption and response bias. Baseline sociodemographic parameters including age, marital status and obstetric/maternal history were systematically recorded. Clinical anxiety profiles were quantified using the clinician-administered HAM-A instrument. The scale evaluates 14 individual symptom domains spanning psychological distress, cognitive strain and physiological manifestations (Figure 1). Each item is scored on a 5 point Likert scale ranging from 0 (not present) to 4 (severe). Cumulative scores (range 0-56) were categorized into standardized severity tiers: no/mild (≤17), mild-to-moderate (18-24), moderate-to-severe (25-30) and severe anxiety (>30).



Hamilton Anxiety Rating Scale (HAM-A)

Name: Date:

Below is a list of phrases that describe certain feeling that people have. Rate the patients by finding the answer which best describes the extent to which he/she has these conditions. Select one of the five responses for each of the fourteen questions.

0 = Not present, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe

	0	1	2	3	4
1. Anxious mood Worries, anticipation of the worst, fearful anticipation, irritability.	☐	☐	☐	☐	☐
2. Tension Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax.	☐	☐	☐	☐	☐
3. Fears Of dark, of strangers, of being left alone, of animals, of traffic, of crowds.	☐	☐	☐	☐	☐
4. Insomnia Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors.	☐	☐	☐	☐	☐
5. Intellectual Difficulty in concentration, poor memory.	☐	☐	☐	☐	☐
6. Depressed mood Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing.	☐	☐	☐	☐	☐
7. Somatic (muscular) Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone.	☐	☐	☐	☐	☐
8. Somatic (sensory) Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation.	☐	☐	☐	☐	☐
9. Cardiovascular symptoms Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat.	☐	☐	☐	☐	☐
10. Respiratory symptoms Pressure or constriction in chest, choking feelings, sighing, dyspnea.	☐	☐	☐	☐	☐
11. Gastrointestinal symptoms Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation.	☐	☐	☐	☐	☐
12. Genitourinary symptoms Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence.	☐	☐	☐	☐	☐
13. Autonomic symptoms Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair.	☐	☐	☐	☐	☐
14. Behavior at interview Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.	☐	☐	☐	☐	☐

Reference: Hamilton M.The assessment of anxiety states by rating. Br J Med Psychol 1959; 32:50–55.

Figure 1: The 14-item Hamilton anxiety rating scale used for clinical assessment of psychic and somatic anxiety symptoms.

Statistical analysis

Data analyses were performed using SPSS. Unadjusted bivariate associations for non-parametric continuous variables and nominal groupings were evaluated using Chi-square tests and Mann-Whitney U tests. To isolate independent predictors of severe anxiety while controlling for baseline confounding factors, significant demographic parameters were entered into a multivariate logistic regression model. Statistical significance across all models was defined a priori at $p<0.05$.

RESULTS

A total of 264 female nursing officers successfully completed the clinical evaluation and were included in the

final analysis. The mean age of study population was 29.34±5.87 years, with a median age of 28.0 (21.0-40.0) years. Most participants (62.1%, n=164) were 30 years of age or younger, reflecting a predominantly younger workforce. In terms of marital status, more than half of the participants were unmarried (52.7%, n=139) while 47% (n=124) were married. Only one particular participant was a widow (0.4%, n=1). The majority of participants (64.0%; n=169) had no children, 9.8% (n=26) had one child, 23.9% (n=63) had two children while 2.3% (n=6) had 3 children (Figure 2). The mean HAM-A score for the entire sample was 33.24±8.9, with a median score of 35 and an overall score range of 0 to 44. Based on the established HAM-A score boundaries, 4.9% (n=13) of the subjects fell into the no/mild anxiety category, 10.6% (n=28) had mild to moderate anxiety and 9.5% (n=25) had moderate to severe anxiety. Notably, a striking 75.0% (n=198) of the female nursing officers met the criteria for severe anxiety.

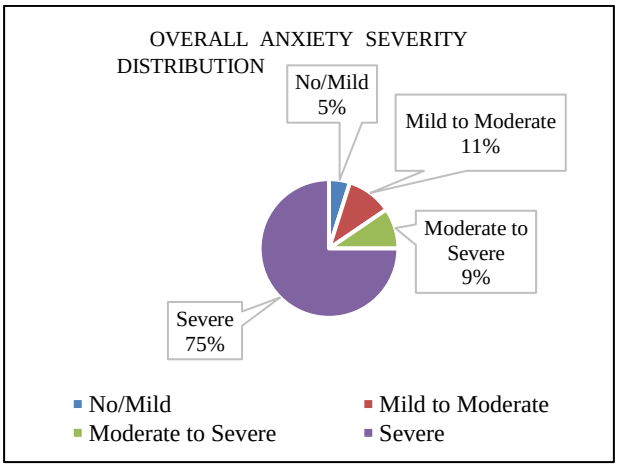


Figure 2: Overall distribution of anxiety severity among female nursing officers (n=264).

When evaluated categorically, the younger nurses aged 30 years or less showed a higher burden of severe anxiety compared with those more than 30 years (79.9% vs 67.0%; Chi-square p=0.046) (Figure 3). This significant variation was also observed when analyzing continuous scale parameters, where younger nurses scored significantly higher on the cumulative HAM-A index than older peers (34.3±8.49 versus 31.5±9.32; Mann-Whitney p=0.007) (Table 1).

Similarly, baseline marital status showed a significant association with categorical anxiety distributions, with severe anxiety clustering more densely among unmarried officers (79.1%) than married officers (71%; Chi-square p=0.033). Analysis of continuous metrics reinforced this disparity, showing significantly elevated baseline anxiety scores among unmarried personnel (34.2±8.53 versus 32.15±9.21; Mann-Whitney p=0.038) (Table 1).

Conversely, a participant's number of children demonstrated no statistically reliable or meaningful connection to categorical severity rankings (p=0.326) or continuous anxiety configurations (Kruskal-Wallis p=0.173) (Table 1).

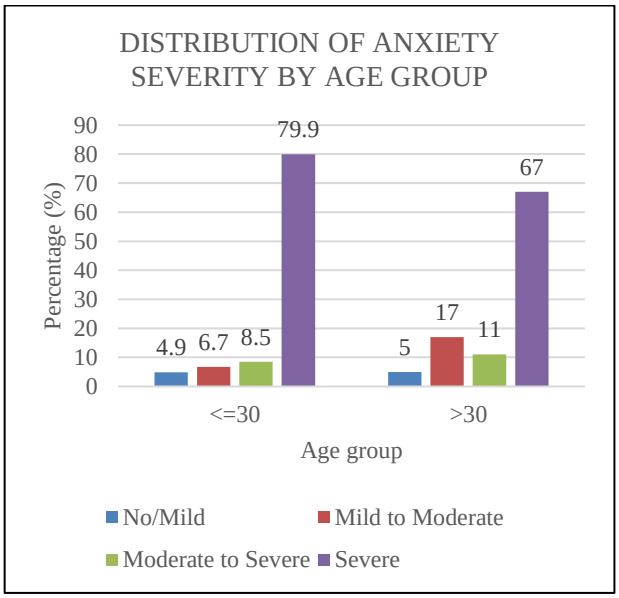


Figure 3: Comparison of HAM-A anxiety severity categories between younger (≤30 years) and older (>30 years) female nursing officers (Chi-square p=0.046).

To identify independent predictors of severe anxiety, a multivariate logistic regression analysis was conducted which incorporated age, marital status and parity at the same time to see which ones stood on their own (Table 2).

The analysis revealed that age was the only significant independent predictor of severe anxiety (Odds Ratio (OR)=0.90; 95% Confidence Interval (CI): 0.84–0.98; p=0.013). This means that for every extra year of a nurse's age, her likelihood of experiencing severe anxiety drops by about 10%.

In contrast, once age was accounted for in the model, being married (OR=1.50; 95% CI: 0.61–3.68; p=0.375) and the number of children (OR=1.04; 95% CI: 0.63–1.70; p=0.892) were not statistically significant predictors of severe anxiety (Table 2).

Table 1: Comparison of continuous Hamilton anxiety rating scale scores across age, marital status and number of children categories.

Variables	Group	Mean±SD	Median	Range	N	Mann Whitney/KW test
Age (in years)	≤30	34.3±8.49	36	0–44	164	p=0.007* (Significant)
	>30	31.5±9.32	33	2–44	100	
Marital status	Married	32.15±9.21	34	2–44	124	p=0.038* (Significant)
Marital status	Unmarried	34.2 ±8.53	36	0–44	139	
Number of children	0	34.18±8.2	35	0–44	169	p=0.173 (Not Significant)
Number of children	1	30.23 ±11.82	32	2–44	26	
Number of children	2	31.86±8.96	34	3–44	63	
Number of children	3	34.33±10.5	38	18–44	6	

* indicates statistical significance at p<0.05.

Table 2: Logistic regression analysis evaluating demographic predictors of severe anxiety among female nursing officers (n=264).

Variables	Coef.	OR	95% CI	P value
Age	-0.101	0.90	0.84 – 0.98	0.013
Married	0.406	1.50	0.61 – 3.68	0.375
Children	0.034	1.04	0.63 – 1.70	0.892
Constant	3.895	49.1	6.01 – 401.6	<0.001

Statistical significance is defined a priori at p<0.05.

DISCUSSION

The high prevalence of anxiety among female nursing officers with three-fourth of participants falling within severe anxiety levels according to HAM-A score highlights substantial psychological burden experienced by them in tertiary care hospital. This prevalence is higher than reported previous studies.[7-11] Prior epidemiological reviews among South Asian nursing workforces have captured moderate-to-severe anxiety parameters across a highly variable spectrum of 40% to 87.4%, though rarely clustering so densely within the maximum severity tier.[6,7,12,13] The study aligns with previous literature demonstrating greater vulnerability to psychological distress among younger and less experienced nurses.[12,15,16] Although marital status showed association in univariate analysis, it did not remain significant after adjustment, suggesting age as the primary determinant. The markedly higher proportion of severe anxiety in our study reflects the cumulative impact of workplace stressors specific to tertiary care settings, including high patient load, staffing constraints, administrative burden and limited recovery time. It may represent persistent psychological morbidity. Post pandemic psychological burden is an additive factor for anxiety and stress amongst healthcare workers.[17]

Limitations

While this study provides valuable insights into the mental health burden among female nursing officers, certain inherent constraints should be considered. First, the data collection was centered at a single, high-volume tertiary care hospital in New Delhi; findings may reflect the specific operational dynamics of major referral centers rather than smaller community or rural healthcare facilities. Secondly, secondary workplace variables such as specific clinical unit rotations, shift schedules, off duty recovery hours and individual coping resources offer promising avenues for deeper exploration in future research. Finally, although the clinician-administered HAM-A scale offers a robust and validated diagnostic measure of clinical anxiety, combining psychometric evaluations with physiological biomarkers could further enrich future investigations.

CONCLUSION

The study demonstrates the predominance of severe anxiety, with 75% of participants falling into this category according to HAM-A. Younger age emerged as a single independent predictor, with early-career nurses showing disproportionately higher severity levels. These findings highlight anxiety as a significant occupational health challenge rather than an isolated psychological concern. Structural psychological counselling, mentorship initiatives, stress management training and workplace interventions aimed at reducing occupational stress should be integrated in nursing workplace forces. Protecting the mental health of nursing personnel is essential not only for worker well-being, but also for maintaining clinical standards and patient safety across tertiary healthcare systems.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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