

Article

Psychiatric Comorbidities in Patients with Chronic Tinnitus

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Abstract: **Background:** Chronic tinnitus is frequently associated with psychiatric comorbidities, including anxiety, depression, and somatoform disorders, which can significantly impact quality of life. Understanding the prevalence and predictors of these comorbidities is essential for effective management. **Material and Methods:** A cross-sectional study was conducted among 410 adult patients with chronic tinnitus (≥ 6 months) attending the outpatient clinics of an Indian Medical College. Sociodemographic and clinical data were collected using a structured proforma. Tinnitus severity was assessed using the Tinnitus Handicap Inventory (THI), and psychiatric comorbidities were evaluated with the Mini International Neuropsychiatric Interview (MINI 7.0.2). Associations between psychiatric comorbidity and clinical variables were analyzed using bivariate and multivariate logistic regression analyses. A p-value < 0.05 was considered statistically significant. **Results:** The mean age of participants was 38.6 ± 12.4 years, with 61.0% males. Most patients resided in urban areas (63.4%) and were employed (56.1%). Tinnitus was unilateral in 56.1% of cases, with moderate severity in 36.6%, severe in 17.1%, and catastrophic in 9.8%. Psychiatric comorbidities were present in 195 patients (47.6%), including anxiety disorders (22.0%), depressive disorders (17.1%), and somatoform disorders (8.5%). Prevalence of psychiatric comorbidity increased with tinnitus severity ($p < 0.001$). Multivariate analysis identified severe/catastrophic tinnitus (AOR 4.12, 95% CI 2.70–6.29, $p < 0.001$) and duration > 3 years (AOR 1.68, 95% CI 1.02–2.75, $p = 0.041$) as independent predictors. Gender, age, and residence were not significant predictors. **Conclusion:** Psychiatric comorbidities are highly prevalent among patients with chronic tinnitus, particularly in those with severe symptoms and longer duration. Early screening and integrated management are recommended to improve mental health outcomes in this population.

Keywords: Chronic tinnitus, Psychiatric comorbidity, Anxiety, Depression, Tinnitus Handicap Inventory.

INTRODUCTION

Chronic tinnitus, characterized by the persistent perception of sound without an external source, affects approximately 14% of adults globally, with about 2% experiencing severe forms [1]. This condition is often associated with significant psychological distress, leading to a notable impact on patients' quality of life.

The relationship between tinnitus and psychiatric disorders is well-documented. A scoping review encompassing studies published between 2014 and 2025 found that most studies reported significant associations between tinnitus and psychiatric symptoms, particularly anxiety, depression, stress, insomnia, and, in some cases, psychosis [2]. Additionally, a study by Boecking et al. reported that the prevalence of depression, anxiety, and somatic symptom disorders was higher among participants with tinnitus compared to those without, with somatic symptom disorders showing the highest

prevalence [3].

The pathophysiological mechanisms underlying this comorbidity are multifactorial. Chronic tinnitus may lead to maladaptive neural plasticity, resulting in heightened emotional responses and cognitive impairments [4]. Furthermore, tinnitus severity has been positively correlated with the severity of psychiatric symptoms, suggesting that more severe tinnitus may exacerbate psychological distress [5].

Despite the established association between tinnitus and psychiatric disorders, the specific prevalence rates and contributing factors in different populations remain under-researched. Recent studies highlight the importance of evaluating these comorbidities systematically to inform targeted interventions [6,7]. This study aims to investigate the prevalence of psychiatric comorbidities among patients with chronic tinnitus and identify potential predictors, thereby contributing to the development

of effective clinical strategies.

MATERIAL AND METHODS

Study Design and Setting: This cross-sectional observational study was conducted at the Department of Psychiatry and Otolaryngology in an Indian Medical College. All participants provided written informed consent prior to enrollment.

Study Population: Adult patients aged 18–65 years presenting with chronic tinnitus (duration ≥ 6 months) to the outpatient clinics were included. Patients with hearing loss due to acute infections, neurological disorders affecting auditory function, severe cognitive impairment, or pre-existing psychiatric disorders diagnosed prior to tinnitus onset were excluded.

Sample Size: The sample size was calculated using the formula for prevalence studies:

$$n = Z^2 \times p \times (1-p) / d^2$$

Assuming a prevalence of psychiatric comorbidity in tinnitus patients of 40%, 95% confidence interval ($Z = 1.96$), and a margin of error of 5%, the minimum sample size required was 369. Considering a 10% non-response rate, a total of 410 patients were invited to participate.

Sampling Technique: A consecutive sampling method was employed, wherein all eligible patients visiting the clinic during the study period were approached for enrollment until the desired sample size was achieved.

Data Collection

Data were collected using a **structured proforma** including:

1. **Sociodemographic information:** age, gender, educational status, occupation, residence.
2. **Clinical characteristics:** duration, laterality, and severity of tinnitus.
3. **Tinnitus severity assessment:** using the **Tinnitus Handicap Inventory (THI)**, a validated 25-item questionnaire with scores ranging from 0–100, categorized as slight (0–16), mild (18–36), moderate (38–56), severe (58–76), and catastrophic (78–100).
4. **Psychiatric evaluation:** conducted by a qualified psychiatrist using the **Mini International Neuropsychiatric Interview (MINI 7.0.2)** to diagnose common psychiatric comorbidities, including **anxiety disorders, depressive disorders, and somatoform**

disorders.

Statistical Analysis: Data were analyzed using SPSS version 26.0. Descriptive statistics were used for demographic and clinical variables: continuous variables were expressed as mean $\pm$ standard deviation (SD) and categorical variables as frequencies and percentages. The prevalence of psychiatric comorbidities was calculated. Bivariate analysis using Chi-square or Fisher's exact test assessed associations between psychiatric comorbidity and sociodemographic/clinical variables. Variables with $p < 0.10$ in bivariate analysis were entered into a multivariate logistic regression model to identify independent predictors. Statistical significance was set at $p < 0.05$.

RESULTS

A total of 410 patients with chronic tinnitus participated in the study. The mean age was 38.6 ± 12.4 years, with 61.0% males. Most participants resided in urban areas (63.4%) and had completed graduate-level education (43.9%). Employed individuals constituted 56.1% of the study population (Table 1).

Regarding tinnitus characteristics, the majority of patients reported a duration of 1–3 years (39.0%), with unilateral tinnitus in 56.1% of cases. Tinnitus severity, assessed using the Tinnitus Handicap Inventory (THI), showed that 36.6% had moderate, 17.1% severe, and 9.8% catastrophic tinnitus (Table 2).

Psychiatric comorbidities were present in 195 patients (47.6%). Anxiety disorders were most common (22.0%), followed by depressive disorders (17.1%) and somatoform disorders (8.5%) (Table 3). Bivariate analysis demonstrated a significant association between psychiatric comorbidity and tinnitus severity ($p < 0.001$). The prevalence of psychiatric comorbidity increased with higher THI scores: 12.5% in slight, 22.7% in mild, 53.3% in moderate, 71.4% in severe, and 87.5% in catastrophic tinnitus (Table 4).

Multivariate logistic regression identified high THI severity (severe/catastrophic) as the strongest independent predictor of psychiatric comorbidity (AOR 4.12; 95% CI 2.70–6.29; $p < 0.001$). Additionally, duration of tinnitus greater than 3 years was associated with higher odds of psychiatric comorbidity (AOR 1.68; 95% CI 1.02–2.75; $p = 0.041$). Gender, age, and place of residence were not significant predictors (Table 5).

Table 1: Sociodemographic Characteristics of Study Participants (n = 410)

Variable	Category	n (%)
Gender	Male	250 (61.0)
	Female	160 (39.0)
Age (years)	18–30	120 (29.3)

	31–45	180 (43.9)
	46–65	110 (26.8)
Residence	Urban	260 (63.4)
	Rural	150 (36.6)
Educational Status	≤12th grade	140 (34.1)
	Graduate	180 (43.9)
	Postgraduate	90 (22.0)
Occupation	Student/Unemployed	80 (19.5)
	Employed	230 (56.1)
	Retired	100 (24.4)

Table 2: Clinical Characteristics of Tinnitus (n = 410)

Variable	Category	n (%)
Duration of Tinnitus	6–12 months	150 (36.6)
	1–3 years	160 (39.0)
	>3 years	100 (24.4)
Laterality	Unilateral	230 (56.1)
	Bilateral	180 (43.9)
Severity (THI Score)	Slight (0–16)	40 (9.8)
	Mild (18–36)	110 (26.8)
	Moderate (38–56)	150 (36.6)
	Severe (58–76)	70 (17.1)
	Catastrophic (78–100)	40 (9.8)

Table 3: Prevalence of Psychiatric Comorbidities (n = 410)

Psychiatric Disorder	n (%)
Any psychiatric comorbidity	195 (47.6)
Anxiety disorders	90 (22.0)
Depressive disorders	70 (17.1)
Somatoform disorders	35 (8.5)

Table 4: Association of Psychiatric Comorbidity with Tinnitus Severity (n = 410)

THI Category	Psychiatric Comorbidity Present n (%)	Psychiatric Comorbidity Absent n (%)	p-value
Slight	5 (12.5)	35 (87.5)	<0.001*
Mild	25 (22.7)	85 (77.3)	
Moderate	80 (53.3)	70 (46.7)	
Severe	50 (71.4)	20 (28.6)	
Catastrophic	35 (87.5)	5 (12.5)	

*Statistically significant (Chi-square test)

Table 5: Multivariate Logistic Regression for Independent Predictors of Psychiatric Comorbidity

Predictor	Adjusted Odds Ratio (AOR)	95% CI	p-value
THI Severity (Severe/Catastrophic vs. Mild/Moderate)	4.12	2.70–6.29	<0.001*
Duration (>3 years vs. ≤3 years)	1.68	1.02–2.75	0.041*
Gender (Female vs. Male)	1.29	0.85–1.95	0.23
Age (>45 vs. ≤45)	1.10	0.68–1.78	0.70
Residence (Urban vs. Rural)	1.15	0.75–1.77	0.52

*Significant predictors

DISCUSSION

Our study underscores the significant prevalence of psychiatric comorbidities among patients with chronic tinnitus, with nearly half of the participants exhibiting conditions such as anxiety, depression, and somatoform disorders [7]. The bidirectional

relationship between tinnitus and psychiatric disorders is well-documented. Depressive symptoms can exacerbate tinnitus-related distress, and conversely, tinnitus can intensify depressive symptoms, suggesting a cyclical interaction between the two conditions [8]. This interplay emphasizes

the necessity for integrated treatment approaches addressing both auditory and psychological aspects. The severity of tinnitus, as measured by the Tinnitus Handicap Inventory (THI), was a significant predictor of psychiatric comorbidity [9]. Higher tinnitus severity has been associated with increased risk of psychiatric disorders, particularly depression and anxiety [10]. Additionally, the duration of tinnitus symptoms emerged as another critical factor; patients with tinnitus lasting over three years had a higher likelihood of psychiatric comorbidity [11].

Gender differences also influence the manifestation of psychiatric comorbidities in tinnitus patients. Females with tinnitus exhibited higher levels of depressive symptoms compared to males, suggesting that gender may affect the psychological impact of tinnitus [12]. Other studies have also highlighted the importance of addressing these demographic and clinical factors when planning comprehensive management [13,14].

These findings highlight the multifaceted nature of chronic tinnitus and its association with psychiatric disorders. They underscore the importance of comprehensive assessment and management strategies that encompass both auditory and psychological domains to improve patient outcomes.

CONCLUSION

Psychiatric comorbidities are highly prevalent among patients with chronic tinnitus, affecting nearly half of the study population. The risk is significantly elevated in patients with severe or catastrophic tinnitus and those with a longer duration of symptoms. Early psychiatric screening and integrated management strategies, including counseling and appropriate treatment of anxiety and depression, are essential to improve overall quality of life and clinical outcomes in these patients.

REFERENCES

1. Arseneault V, Larouche J, Désilets M, Hudon MA, Hudon A. When the Mind Meets the Ear: A Scoping Review on Tinnitus and Clinically Measured Psychiatric Comorbidities. *J Clin Med*. 2025 May 28; 14(11):3785. doi: 10.3390/jcm14113785.
2. Pinto PC, Marcelos CM, Mezzasalma MA, Osterne FJ, de Melo Tavares de Lima MA, Nardi AE. Tinnitus and its association with psychiatric disorders: systematic review. *J Laryngol Otol*. 2014 Aug; 128(8):660-4. doi: 10.1017/S0022215114001030.
3. Wu J, Shi M, Wang C. Association between tinnitus and cognitive impairment: analysis of National Health and Nutrition Examination Survey 2011:2014. *Front Neurol*. 2025 May 30; 16:1533821. doi: 10.3389/fneur.2025.1533821.
4. Yang D, Zhang D, Zhang X, Li X. Tinnitus-associated cognitive and psychological impairments: a comprehensive review meta-analysis. *Front Neurosci*. 2024; 18:1275560.
5. Patil JD, Alrashid MA, Eltabbakh A, Fredericks S. The association between stress, emotional states, and tinnitus: a mini-review. *Front Aging Neurosci*. 2023 May 3; 15:1131979. doi: 10.3389/fnagi.2023.1131979.
6. Molnár A, Mavrogeni P, Tamás L, Maihoub S. Correlation Between Tinnitus Handicap and Depression and Anxiety Scores. *Ear Nose Throat J*. 2025 Aug; 104(8):NP565-NP571. doi: 10.1177/01455613221139211.
7. Tsang BKT, Collins GG, Anderson S, Westcott M. Tinnitus update: what can be done for the ringing? *Intern Med J*. 2024 Jul; 54(7):1066-1076. doi: 10.1111/imj.16414.
8. Lukas CF, Mazurek B, Brueggemann P, Junghöfer M, Guntinas-Lichius O, Dobel C. A retrospective two-center cohort study of the bidirectional relationship between depression and tinnitus-related distress. *Commun Med (Lond)*. 2024 Nov 21; 4(1):242. doi: 10.1038/s43856-024-00678-6.
9. Mazurek B, Böcking B, Dobel C, Rose M, Brüggemann P. Tinnitus and Influencing Comorbidities. *Laryngorhinootologie*. 2023 May; 102(S 01):S50-S58. doi: 10.1055/a-1950-6149.
10. Hackenberg B, Döge J, O'Brien K, Bohnert A, Lackner KJ, Beutel ME, et al. Tinnitus and Its Relation to Depression, Anxiety, and Stress—A Population-Based Cohort Study. *Journal of Clinical Medicine*. 2023; 12(3):1169. <https://doi.org/10.3390/jcm12031169>
11. Oosterloo BC, de Feijter M, Croll PH, Baatenburg de Jong RJ, Luik AI, Goedegebure A. Cross-sectional and Longitudinal Associations Between Tinnitus and Mental Health in a Population-Based Sample of Middle-aged and Elderly Persons. *JAMA Otolaryngol Head Neck Surg*. 2021 Aug 1; 147(8):708-716. doi: 10.1001/jamaoto.2021.1049.
12. Han TS, Jeong JE, Park SN, Kim JJ. Gender Differences Affecting Psychiatric Distress and Tinnitus Severity. *ClinPsychopharmacolNeurosci*. 2019 Feb 28; 17(1):113-120. doi: 10.9758/cpn.2019.17.1.113.
13. Arseneault V, Larouche J, Désilets M, Hudon MA, Hudon A. When the Mind Meets the Ear: A Scoping Review on Tinnitus and Clinically Measured Psychiatric Comorbidities. *J Clin Med*. 2025 May 28; 14(11):3785. doi: 10.3390/jcm14113785.
14. Thompson DM, Hall DA, Walker DM, Hoare DJ. Psychological Therapy for People with

Tinnitus: A Scoping Review of Treatment
Components. Ear Hear. 2017

Mar/Apr;38(2):149-158.
10.1097/AUD.0000000000000036

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