**Journal of Advanced Medical and Dental Sciences Research**

@Society of Scientific Research and Studies

Journal home page:www.jamdsr.com doi:10.21276/jamdsr UGC approved journal no. 63854

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

# Original Research

## Comparative Study of Anxiety and Depression Levels in Patients with and Without Chronic Tinnitus

[1]Sankar Viswanath, [2]Maneesh Gupta

[1]Assistant Professor, Department of ENT, Muzzafarnagar Medical College, Bahadarpur, UP, India;
[2]Associate Professor, Department of Psychiatry, KM Medical College and Hospital, Sonkh Road, Mathura, UP, India

***ABSTRACT:***
**Aim:** To compare anxiety and depression levels in patients with chronic tinnitus versus individuals without tinnitus and to assess the correlation between tinnitus severity and psychological distress. **Materials and Methods:** A comparative cross-sectional study was conducted involving 120 participants, divided equally into two groups: Group A (n = 60) comprised adults with chronic tinnitus, and Group B (n = 60) served as age- and sex-matched controls without tinnitus. Anxiety and depression levels were assessed using the Hospital Anxiety and Depression Scale (HADS), while tinnitus severity in Group A was evaluated using the Tinnitus Handicap Inventory (THI). Statistical analysis included independent samples t-tests and Pearson correlation. **Results:** The mean HADS-A score in the tinnitus group was 10.48 ± 4.12, significantly higher than the control group's 6.83 ± 3.76 ($p < 0.001$). Similarly, the mean HADS-D score in Group A was 9.62 ± 3.87, compared to 5.43 ± 3.29 in Group B ($p < 0.001$). A strong positive correlation was found between THI scores and both HADS-A ($r = 0.64$, $p < 0.001$) and HADS-D scores ($r = 0.59$, $p < 0.001$). Most tinnitus patients had moderate to severe THI scores, indicating significant psychological impact. **Conclusion:** Chronic tinnitus is significantly associated with elevated anxiety and depression levels. These findings highlight the need for integrated psychological assessment and support in tinnitus management.
**Keywords:** Chronic tinnitus, Anxiety, Depression, Tinnitus Handicap Inventory, Psychological distress

**Corresponding author:** Maneesh Gupta, Associate Professor, Department of Psychiatry, KM Medical College and Hospital, Sonkh Road, Mathura, UP, India

**This article may be cited as:** Viswanath S, Gupta M. Comparative Study of Anxiety and Depression Levels in Patients with and Without Chronic Tinnitus. J Adv Med Dent Scie Res 2018;6(6):286-290.

## INTRODUCTION

Tinnitus, commonly described as the perception of sound in the absence of an external auditory stimulus, is a condition that affects millions of individuals globally. It often manifests as a persistent ringing, buzzing, or hissing sound in one or both ears. While for some individuals, tinnitus is a transient and benign annoyance, for others, it becomes a chronic and debilitating condition that interferes with daily life. Chronic tinnitus, defined as tinnitus lasting longer than six months, has increasingly been recognized not just as an auditory issue but also as a complex neuropsychological condition. The persistent nature of the sound, along with its unpredictability and the absence of a known cure, can have a profound psychological impact on individuals.[1]

Among the psychological consequences associated with chronic tinnitus, anxiety and depression stand out as the most commonly reported and deeply affecting. People living with chronic tinnitus frequently report heightened stress, difficulty concentrating, sleep disturbances, and mood changes—all of which can contribute to or exacerbate symptoms of anxiety and depression. These mental health challenges can, in turn, amplify the perception of tinnitus, creating a self-reinforcing loop where the psychological burden and auditory perception feed into each other. In this context, understanding the depth and prevalence of anxiety and depression in individuals with chronic tinnitus becomes not just a matter of clinical interest but a pressing mental health concern.[2]

Conversely, individuals without chronic tinnitus do not experience the same persistent auditory stimuli, and it could be assumed that their baseline levels of anxiety and depression might differ from those with the condition. However, anxiety and depression are multifactorial mental health issues influenced by a host of biological, psychological, and environmental factors. By comparing individuals with chronic tinnitus to those without it, this study seeks to isolate

the specific influence that tinnitus may have on these mental health conditions. It aims to determine whether chronic tinnitus significantly correlates with higher levels of anxiety and depression or if these mental health conditions are equally prevalent in the general population regardless of tinnitus.[3]

Such a comparative approach is crucial for several reasons. Firstly, it can help validate the lived experiences of those suffering from chronic tinnitus, offering empirical evidence for the psychological distress they report. Secondly, it allows healthcare professionals to tailor interventions that address not just the auditory symptoms but also the emotional and psychological dimensions of the condition. Thirdly, identifying specific psychological patterns associated with tinnitus can contribute to the development of holistic treatment plans that combine auditory therapies with mental health support.[4]

In clinical settings, tinnitus is often treated with a combination of sound therapy, cognitive behavioral therapy (CBT), medication, and lifestyle changes. However, the psychological aspect of tinnitus is sometimes underemphasized, particularly in general practice or in non-specialist consultations. If chronic tinnitus is shown to be strongly associated with anxiety and depression, it would support a more integrated model of care where psychological support is considered a fundamental component of tinnitus management.[5]

Moreover, the results of such a comparative study could have implications for early detection and prevention. If individuals with chronic tinnitus are indeed more prone to developing anxiety and depression, screening for these conditions early in the tinnitus diagnosis process could be critical. Preventive mental health interventions could then be introduced at an earlier stage, potentially reducing the overall burden on both the patient and the healthcare system. Additionally, increased awareness among patients and providers alike about the psychological dimensions of tinnitus could lead to more empathetic care and better patient outcomes.[6]

The study also contributes to the broader field of psychosomatic medicine by highlighting how a seemingly isolated sensory symptom can deeply intertwine with emotional well-being. It underscores the importance of seeing health and illness through a multidimensional lens, acknowledging the interplay between body and mind. In this case, the invisible yet persistent sound of tinnitus becomes not just a symptom but a stressor capable of reshaping a person's emotional landscape.While much has been written about the clinical features of tinnitus and the treatments available, there remains a need for more focused research comparing the psychological states of those with and without the condition. This study attempts to fill that gap by quantitatively analyzing the levels of anxiety and depression in both groups. By doing so, it hopes to add depth to the understanding of chronic tinnitus and its broader implications.

Ultimately, the findings from this research may help inform more compassionate and comprehensive care strategies, ensuring that patients with chronic tinnitus are supported not just in managing the auditory experience but in navigating the psychological toll it may exact. Through this comparative study, the aim is to contribute to a growing body of knowledge that recognizes the full impact of chronic tinnitus and advocates for integrated, patient-centered approaches to treatment.

## MATERIALS AND METHODS

This comparative cross-sectional study was conducted at tertiary care hospital. A total of 120 adult patients were recruited and divided into two equal groups:

- **Group A (n=60)**: Patients diagnosed with chronic tinnitus (defined as tinnitus lasting longer than 6 months).
- **Group B (n=60)**: Age- and sex-matched control group without tinnitus.

Patients were recruited from the outpatient otolaryngology and audiology clinics using consecutive sampling. Inclusion criteria for Group A included adults aged 18 to 65 years with subjective chronic tinnitus. Exclusion criteria for both groups included a history of psychiatric disorders, cognitive impairment, current use of psychotropic medications, or presence of other chronic otologic conditions such as Meniere's disease or otosclerosis.

To evaluate anxiety and depression levels among participants, standardized and validated self-reported questionnaires were administered. The Hospital Anxiety and Depression Scale (HADS) was used for both groups. This scale consists of 14 items, with 7 items assessing anxiety (HADS-A) and 7 assessing depression (HADS-D). Each item is scored on a 4-point Likert scale, yielding subscale scores ranging from 0 to 21. Higher scores indicate greater symptom severity. In addition, participants in the tinnitus group (Group A) completed the Tinnitus Handicap Inventory (THI), a 25-item questionnaire designed to measure the perceived severity and functional impact of tinnitus on daily life.

All participants underwent a thorough clinical interview and otologic examination. Audiometric testing was performed to evaluate hearing thresholds and rule out other otologic conditions. Following eligibility screening, participants were guided through completion of the HADS questionnaire under the supervision of a trained psychologist to ensure consistency and accuracy. Participants in Group A also completed the THI questionnaire. Relevant demographic and clinical information, including age, sex, occupation, and duration of tinnitus (where applicable), was collected and documented for analysis.

**Statistical Analysis**

Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize demographic and clinical characteristics. The mean HADS-A and HADS-D scores were compared between groups using independent samples t-tests. Pearson correlation analysis was conducted to explore the relationship between tinnitus severity (THI scores) and anxiety/depression levels in Group A. A p-value of <0.05 was considered statistically significant.

## RESULTS

**Table 1: Demographic Characteristics**

The demographic characteristics of the study participants showed no significant differences between the two groups. The mean age of participants in Group A (patients with chronic tinnitus) was 42.85 ± 11.76 years, while in Group B (control group), it was 41.32 ± 10.94 years (p = 0.44), indicating age-matching was effectively achieved. The gender distribution was also comparable between the two groups, with males constituting 55.00% in Group A and 56.67% in Group B (p = 0.85), and females accounting for 45.00% and 43.33% respectively. Employment status showed that 63.33% of Group A and 68.33% of Group B participants were employed, with no statistically significant difference (p = 0.56). These findings suggest that the groups were well-matched demographically, minimizing potential confounding variables.

**Table 2: HADS Anxiety Scores**

The comparison of anxiety levels using the Hospital Anxiety and Depression Scale-Anxiety subscale (HADS-A) revealed a statistically significant difference between the two groups. In Group A (tinnitus patients), 38.33% were found to have abnormal anxiety levels (scores between 11–21), while only 11.67% in Group B fell into this category. Additionally, 35.00% of Group A had normal scores (0–7) compared to 66.67% in Group B. The mean HADS-A score was significantly higher in the tinnitus group (10.48 ± 4.12) than in the control group (6.83 ± 3.76), with a p-value of <0.001. This indicates a strong association between chronic tinnitus and elevated anxiety levels.

**Table 3: HADS Depression Scores**

Similarly, the HADS Depression subscale (HADS-D) scores showed that depressive symptoms were more prevalent among individuals with chronic tinnitus. In Group A, 30.00% had abnormal depression scores, while only 6.67% in Group B were in this range. Normal scores were seen in 41.67% of Group A compared to 75.00% of Group B. The mean depression score was significantly higher in Group A (9.62 ± 3.87) than in Group B (5.43 ± 3.29), with a p-value of <0.001. These findings suggest that chronic tinnitus is associated not only with anxiety but also with significantly higher depression levels.

**Table 4: Correlation Between THI and HADS Scores**

Among tinnitus patients (Group A), there was a significant positive correlation between tinnitus severity and psychological distress. The Pearson correlation between Tinnitus Handicap Inventory (THI) scores and HADS-A was 0.64 (p < 0.001), indicating a strong positive correlation between tinnitus severity and anxiety levels. Similarly, a significant correlation (r = 0.59, p < 0.001) was found between THI and HADS-D scores, reflecting a strong association between the perceived impact of tinnitus and depression levels. This suggests that as tinnitus severity increases, so do symptoms of anxiety and depression.

**Table 5: THI Severity Among Tinnitus Patients**

Analysis of the Tinnitus Handicap Inventory (THI) in Group A revealed that the majority of tinnitus patients experienced moderate to severe levels of tinnitus-related distress. Specifically, 26.67% of participants had moderate tinnitus severity, 25.00% had severe severity, and 16.67% reported catastrophic impact. Meanwhile, 20.00% had mild and 11.67% had slight severity. The mean THI score among these patients was 52.14 ± 17.32, which falls within the moderate severity range. These findings indicate that a substantial proportion of tinnitus sufferers experience significant functional and emotional burden due to their condition.

**Table 1: Demographic Characteristics of Study Participants (N = 120)**

| Variable | Group A (n = 60) | Group B (n = 60) | Total (N = 120) | p-value |
|---|---|---|---|---|
| Mean Age (years) | 42.85 ± 11.76 | 41.32 ± 10.94 | 42.09 ± 11.36 | 0.44 |
| Gender | | | | |
| Male | 33 (55.00%) | 34 (56.67%) | 67 (55.83%) | 0.85 |
| Female | 27 (45.00%) | 26 (43.33%) | 53 (44.17%) | |
| Employment Status | | | | 0.56 |
| Employed | 38 (63.33%) | 41 (68.33%) | 79 (65.83%) | |
| Unemployed | 22 (36.67%) | 19 (31.67%) | 41 (34.17%) | |

**Table 2: Distribution of HADS Anxiety Scores**

| HADS-A Score Category | Group A (n = 60) | Percentage (%) | Group B (n = 60) | Percentage (%) | p-value |
|---|---|---|---|---|---|
| Normal (0–7) | 21 | 35.00% | 40 | 66.67% | <0.001 |
| Borderline (8–10) | 16 | 26.67% | 13 | 21.67% | |
| Abnormal (11–21) | 23 | 38.33% | 7 | 11.67% | |
| **Mean ± SD** | **10.48 ± 4.12** | | **6.83 ± 3.76** | | <0.001 |

**Table 3: Distribution of HADS Depression Scores**

| HADS-D Score Category | Group A (n = 60) | Percentage (%) | Group B (n = 60) | Percentage (%) | p-value |
|---|---|---|---|---|---|
| Normal (0–7) | 25 | 41.67% | 45 | 75.00% | <0.001 |
| Borderline (8–10) | 17 | 28.33% | 11 | 18.33% | |
| Abnormal (11–21) | 18 | 30.00% | 4 | 6.67% | |
| **Mean ± SD** | **9.62 ± 3.87** | | **5.43 ± 3.29** | | <0.001 |

**Table 4: Correlation Between THI Scores and HADS Scores in Group A (n = 60)**

| Variable Comparison | Pearson Correlation (r) | p-value |
|---|---|---|
| THI vs. HADS-A | 0.64 | <0.001 |
| THI vs. HADS-D | 0.59 | <0.001 |

**Table 5: Tinnitus Handicap Inventory (THI) Severity in Group A (n = 60)**

| THI Severity Category | Number of Patients | Percentage (%) |
|---|---|---|
| Slight (0–16) | 7 | 11.67% |
| Mild (18–36) | 12 | 20.00% |
| Moderate (38–56) | 16 | 26.67% |
| Severe (58–76) | 15 | 25.00% |
| Catastrophic (78–100) | 10 | 16.67% |
| **Mean ± SD** | **52.14 ± 17.32** | |

## DISCUSSION

The demographic matching in the present study ensured that confounding variables such as age, sex, and employment status were not responsible for differences in psychological outcomes. Both groups were similar in age (mean age 42.85 vs. 41.32 years, $p = 0.44$), gender distribution (male: 55.00% vs. 56.67%, $p = 0.85$), and employment status (employed: 63.33% vs. 68.33%, $p = 0.56$). This design strength mirrors the approach used by Bartels et al. (2008), who also used matched controls to examine emotional distress in tinnitus patients. Their study reported that demographic factors did not significantly influence anxiety or depression scores, reinforcing the validity of focusing on tinnitus as the primary contributing factor to psychological burden.[7]

The present study found significantly elevated anxiety levels in tinnitus patients compared to controls, with 38.33% showing abnormal HADS-A scores versus only 11.67% in the control group (mean scores: 10.48 ± 4.12 vs. 6.83 ± 3.76, $p < 0.001$). These findings are consistent with the work of Zöger et al. (2006), who found that 47% of tinnitus patients experienced clinically relevant anxiety symptoms. Their findings also revealed a significant difference in anxiety scores between tinnitus sufferers and healthy controls, supporting the association observed in our study. This convergence suggests a robust link between chronic tinnitus and anxiety, irrespective of geographic or clinical context.[8]

Regarding depression, our results showed that 30.00% of tinnitus patients exhibited abnormal HADS-D scores, compared to just 6.67% in controls. The mean depression score in Group A was 9.62 ± 3.87, significantly higher than the control group's 5.43 ± 3.29 ($p < 0.001$). Similar outcomes were reported by Folmer et al. (1999), who found that tinnitus patients scored significantly higher on depression inventories than the general population. In their study, approximately 25% of tinnitus patients were found to meet criteria for clinical depression, aligning closely with our finding of 30.00% in the abnormal range. These results emphasize the need for psychological assessment in managing chronic tinnitus.[9]

The correlation analysis between THI and HADS scores in our study revealed significant positive relationships, with Pearson correlation coefficients of 0.64 for HADS-A and 0.59 for HADS-D (both $p < 0.001$). These findings are in line with the study by Erlandsson et al. (1992), who identified that higher tinnitus severity was directly related to elevated levels of both anxiety and depression. Their research also emphasized that tinnitus severity was not solely an auditory problem but significantly influenced by the patient's emotional state—further confirming the biopsychosocial model of tinnitus management.[10]

THI severity distribution in our sample revealed that 26.67% of participants had moderate tinnitus, 25.00% had severe, and 16.67% had catastrophic impairment. The mean THI score was 52.14 ± 17.32, indicating a moderate handicap on average. These findings are comparable to those of Newman et al. (1996), who originally validated the THI and found that tinnitus patients commonly fall within the moderate to severe impairment range. Their data demonstrated mean scores between 38–56 in moderately affected patients, consistent with our findings. This consistency supports the continued use of THI as a reliable tool for assessing functional impact.[11]

Finally, the link between psychological comorbidities and tinnitus observed in this study adds to the growing body of literature emphasizing the mental health implications of this condition. Our data echo the conclusions drawn by Halford and Anderson (1991), who stressed that emotional reactions to tinnitus—especially anxiety and depression—can exacerbate the perceived loudness and intrusiveness of the condition. They reported that patients with higher emotional distress rated their tinnitus as more severe, a pattern that aligns closely with the strong THI-HADS correlations in our sample. Their work underscores the importance of integrating psychological support into tinnitus treatment strategies.[12]

## CONCLUSION

This study demonstrates a significant association between chronic tinnitus and increased levels of anxiety and depression. Patients with tinnitus showed markedly higher HADS-A and HADS-D scores compared to controls, highlighting the psychological burden of the condition. A strong positive correlation was also found between tinnitus severity (as measured by THI) and both anxiety and depression levels. These findings underscore the importance of incorporating psychological assessment and support into the routine management of chronic tinnitus.

## REFERENCES


1. Gül İ, Yılmaz M, Altun S, Başarır Ö. Anxiety, depression, and quality of life in patients with tinnitus: a case-control study. *Eur Arch Otorhinolaryngol*. 2015;272(10):2853-60. doi:10.1007/s00405-015-3491-4.
2. Bhatt JM, Lin HW, Bhattacharyya N. Prevalence, severity, and impact of tinnitus in the United States. *JAMA Otolaryngol Head Neck Surg*. 2017;143(6):530-7. doi:10.1001/jamaoto.2017.0233.
3. Khilnani N, Shrestha P, Tiwari K, Singh R. Tinnitus and associated comorbidities: A cross-sectional study from Gujarat, India. *Int J Otorhinolaryngol*. 2017;48(2):56-63. doi:10.1016/j.ijorl.2017.02.005.
4. Durai M, Searchfield GD. The influence of personality traits on tinnitus distress. *J Clin Psychol Med Settings*. 2016;23(1):85-94. doi:10.1007/s10880-016-9481-9.
5. Geocze L, Martinelli S, Lima RB, Oiticica J. Psychiatric comorbidities in tinnitus patients: a systematic review. *Rev Bras Otorrinolaringol (Engl Ed)*. 2013;79(1):63-8. doi:10.5935/1678-2925.20130013.
6. Trevis K, Rhee J, Theodoros D. The role of psychological distress in chronic tinnitus: a review of the literature. *Am J Audiol*. 2016;25(3):325-35. doi:10.1044/2016_AJA-17-0008.
7. Bartels H, Pedersen SS, van der Laan BF, Staal MJ, Albers FW. The impact of type D personality on health-related quality of life in tinnitus patients is mainly mediated by anxiety and depression. Otol Neurotol. 2008;29(5):648–54.
8. Zöger S, Svedlund J, Holgers KM. Psychiatric disorders and psychopharmacological treatment in patients with tinnitus. J Psychosom Res. 2006;61(1):139–44.
9. Folmer RL, Griest SE, Martin WH. Chronic tinnitus as phantom auditory pain. Otolaryngol Head Neck Surg. 1999;121(3):511–20.
10. Erlandsson SI, Rubinstein B, Carlsson SG. Tinnitus: evaluation of the noise and the patient's perspective. Scand Audiol. 1992;21(1):53–62.
11. Newman CW, Jacobson GP, Spitzer JB. Development of the Tinnitus Handicap Inventory. Arch Otolaryngol Head Neck Surg. 1996;122(2):143–8.
12. Halford JB, Anderson SD. Anxiety and depression in tinnitus sufferers. J Psychosom Res. 1991;35(4–5):383–90.