

PATIENT SATISFACTION IN THE POPULATION USING HEARING AIDS WITH TINNITUS MASKERS

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ORIGINAL ARTICLE

Background: The perception of sound when there are no stimuli is known as tinnitus. It sounds like a ringing, buzzing, or hissing sound in your ear. This study shows that hearing aids with tinnitus masker approach is one of several strategies employed by audiologists to treat tinnitus with hearing aids. **Objective:** To determine the Patient satisfaction in the population using hearing aids with tinnitus maskers. **Methodology:** A cross-sectional observational study was conducted on the common audiological approaches used for tinnitus management on a sample of 101 with a non-probability purposive sampling technique. This study was conducted through a Survey form (Self-structured questionnaire) in Jinnah Hospital. This study lasted 6 Months from June 2023 to November 2023. A self-structured questionnaire was used to accumulate the data. Data was analyzed through (SPSS) version 24.0 package. **Results:** Among the 101 patients, 86 (85.1%) using the tinnitus masker in their hearing aids improved their sleep quality, 80 (79.2%) noticed an improvement in their overall hearing quality with their hearing aids, and 15 (14.9%) found other methods or treatment for managing your tinnitus. **Conclusion:** The result of this study concluded that Most patients perceive a noticeable

change in their quality of life and better sleep when they use a hearing aid with a tinnitus masker.

INTRODUCTION

A person who experiences tinnitus hears sound without an external source of sound. Treatment for tinnitus can be challenging due to its strong correlation with emotions and the central nervous system. A variety of reasons can cause it. Acoustic treatment is crucial for the treatment of tinnitus.¹ When a patient is fitted with hearing aids, the aim is to either mask the tinnitus using a tinnitus program in the hearing aids or to provide the patient with appropriate amplification, which for some people can improve their tinnitus.² Most patients who experience both tinnitus and hearing loss state that the frequency and frequency characteristics of their hearing loss correspond with the tinnitus, and that the tinnitus intensity is typically less than 10 dB above the patient's hearing threshold at that frequency. While their pure-tone audiometric thresholds are

normal, some patients with central auditory processing disorders who have trouble understanding speech in noisy environments report having tinnitus.³ Two primary types of tinnitus have been identified: (1) stable tinnitus that is typically characterized as a high-pitched "whistling," typically observed in patients with acoustic trauma, presbycusis, and other lesion-type deafness; and (2) fluctuating tinnitus that is typically found in patients with active, variable deafness, such as Meniere's disease or Meniere's-like syndrome, and is typically described as a low-pitched "buzzing."⁴ For over twenty years, there has been a notable surge in the quantity and caliber of research studies examining the phenomenon of subjective tinnitus. Conversely, objective tinnitus, also known as vibratory tinnitus, is a perceptible, acoustic-like

sensation that is amenable to physical measurement.⁵ To manage objective tinnitus with optimal therapeutic outcomes, etiologic factors should be carefully assessed. For the correct diagnosis and treatment of each type of objective tinnitus, a thorough history taking, a thoughtful physical examination to identify potential causes, and audiologic, medical, and radiological evaluations are required.^{6, 7} Tinnitus is a severe problem. When considered to continue more than five minutes at a time, it has been found to affect 12–30% of the population; 3–31% of them report having bothersome tinnitus. Both aging and hearing loss are recognized risk factors. For instance, the prevalence of clinically unpleasant tinnitus is thought to increase with age and may reach 70–85% in those with hearing loss.⁸ Since sound generators and hearing aids cannot be used at the same time, combination hearing aids could be a preferable option in some situations. From here on, these are referred to as combo devices.⁹

Tinnitus masking differs from masking external sounds in that it requires a great deal of individual variability in terms of frequency content and sensation level. The use of dynamic sounds—their intensity changing over time—like music and rain, has been shown to reduce annoyance more than non-dynamic sounds.¹⁰ High-frequency hearing loss (HFHL) has been treated using frequency-lowering hearing aids (HAs), although the effectiveness of these devices in treating tinnitus has not received much attention. The purpose of this randomized double-blind experiment was to compare and evaluate the tinnitus suppression effects of frequency-lowering HAs vs conventional type HAs in patients with HFHL.¹¹

The majority of tinnitus sufferers (85–96%) have some degree of hearing loss, indicating that the impact of tinnitus on people's quality of life is stronger regardless of the amount of hearing loss.¹² Very limited data is available regarding the focus on patient satisfaction in the population using hearing aids with tinnitus maskers at the national level.

MATERIAL AND METHODS

Study Design: It was a cross-sectional observational study.

Sampling Technique: Non-probability convenient sampling technique.

Settings: Data was collected from the University of Lahore Teaching Hospital, Fatima Memorial Hospital Lahore, and Services Hospital Lahore.

Duration of Study: The Duration of this study was 6 Months from October 2022 to March 2023 after the approval from the Research Committee.

Sample Size: The sample size was calculated based on prevalence; the sample size was calculated at 101 by using a 95% confidence level and 5% confidence interval, through an online sample size calculator.¹³

Inclusion criteria

Patients with the age of 50 to 75 years old population were included.

Exclusion criteria

Patients with conductive hearing loss, ear infections, and other comorbid factors like smoking, cardiac disease, and hepatic disease were excluded.

Data collection procedure

Identification of the prevalence of hearing loss among the population suffering from tinnitus. Patients who had tinnitus were interviewed with the help of a questionnaire. The data collected was first transferred to an SPSS spreadsheet. It was then processed and statistical analysis was done using SPSS version 24.0 package. Data was analyzed through frequencies and percentages

RESULTS

Patients with ages 20-35 are 46 (45.5%) in number, patients with ages 36-50 are 25 (24.8) in number, and patients with age 50 and are 30 (29.7%) in number. There were 60 (59.4%) male patients and 41 (40.6%) female patients. Most of patients were using hearing aids with tinnitus masker 96 (95.0%) and 5 (5.0%) were not using

hearing aids with a tinnitus masker. Patients who felt significant improvement were 87 (86.1%) and 14 (13.9%) did not feel any improvement. Patients who found their hearing aid more beneficial with a tinnitus masker were 92 (91.1%), and the patients who found their hearing aid without a tinnitus masker were 9 (8.9%). Patients who were satisfied with their hearing aid 88 (87.1%), and 13 (12.9%) were not satisfied with their hearing aids. Patients who witnessed sleep quality improve using a tinnitus masker in their hearing aid were 86 (85.1%) and patients who witnessed no

change using a tinnitus masker in their hearing aid were 12 (11.9%) and patients whose sleep quality worsened using tinnitus masker in their hearing aid were 3 (3%). Patients who used other methods or treatment for managing their tinnitus were 15 (14.9%) and 86 (85.1%) patients who didn't use other methods or treatments for managing their tinnitus. Patients who noticed an improvement in their overall hearing quality using hearing aids were 80 (79.2%) and 10 (9.9%) patients didn't noticed an improvement in their overall hearing quality with their hearing aids.

Table 1: Demographic analysis of participants

Variables	Sub Variables	Frequency (Percentage %)
Age	20-35	46 (45.5%)
	36-50	25 (24.8%)
	50 plus	30 (29.7%)
Gender	Male	60 (59.4%)
	Female	41 (40.6%)

Table 2: Findings of questionnaire answered by patients

Variables		Frequency (f) Percentage (%)
Are you using your hearing aid with a tinnitus masker?	Yes	96 (95.0%)
	No	6 (5.0%)
Do you feel any difference between using a hearing aid and with tinnitus masker?	Yes	87 (86.1%)
	No	14 (13.9%)
How do you find your hearing aid more beneficial with or without a tinnitus masker?	With tinnitus masker	92 (91.1%)
	Without tinnitus masker	9 (8.9%)
Are you satisfied with your hearing aid?	Yes	88 (87.1%)
	No	13 (12.9%)
How has using the tinnitus masker in your hearing aids impacted your sleep quality?	Improved Sleep quality	86 (85.1%)
	No change	12 (11.9%)

	Worsened Sleep Quality	3(3.0%)
Have you tried other methods or treatments for managing your tinnitus?	Yes	15 (14.9%)
	No	86 (85.1%)
Have you noticed an improvement in your overall hearing quality with your hearing aids?	Yes	80 (79.2%)
	No	21 (20.9%)
Do you intend to use tinnitus maskers in the future? Do you anticipate continued use, or are you considering alternative treatments or solutions in the future?	Yes	79 (78.2%)
	No	22 (21.8%)

DISCUSSION

According to the current study's findings, out of the 101 patients, 86 (85.1%) using the tinnitus masker in their hearing aids improved their sleep quality, while 12 (11.9%) did not use the tinnitus masker in their hearing aids improved their sleep quality. In comparison A study in 2020 according to the results of the study, 33% of our subjects with persistent tinnitus found relief via maskers without receiving any kind of counselling. 38-75% of the responsive group reported better quality of life in the areas of hearing, sleep, concentration, and thoughts and emotions. For a large number of individuals seeking treatment for bothersome tinnitus, maskers are still considered clinically beneficial equipment.¹⁴ According to the current study's findings, out of the 101 patients, 15 (14.9%) found other methods or treatments for managing tinnitus, while the remaining 86 (85.1%) did not find other methods or treatments for managing tinnitus. In comparison in a 2018 survey, 78.8% of participants in the Husain et al. questionnaire research expressed unhappiness with their tinnitus therapy. They even stated that drug therapy was starting to take precedence over counseling and the use of hearing aids.¹² Over the course of an 18-month study examined 150 tinnitus patients (50 of whom used hearing aids, 50 of whom used in-the-ear sound generators, and 50 of whom did

not use any devices). They discovered that those who used ear-level devices performed better than those who did not.¹⁴ Over the first six weeks of using a hearing aid, 50% of patients reported improvement in their tinnitus. Patients also showed an average 10% improvement. This masking can be partial, lessening the intensity of the tinnitus, or total, covering it up completely.¹⁵ Although there is currently no known treatment for tinnitus, there are several therapy alternatives available for people whose quality of life is significantly impacted by the condition. These consist of tinnitus maskers, therapy, and hearing aids. Counseling is crucial to the management of tinnitus.¹⁶ Amplification may be beneficial for up to 90% of tinnitus patients, based on estimations. The benefit might come from a reduction in the stress associated with hearing loss, which is often associated with tinnitus, or from the amplification of background noise that either masks or attenuates the tinnitus. Tinnitus retraining therapy and tinnitus masking therapy both include the use of hearing aids as a key therapeutic tool.¹⁷ An additional categorization scheme considers the psychological and functional effects of tinnitus, which is crucial for people with persistently bothersome tinnitus.¹⁸ The THI scores decline when there is progress. This instrument is well-liked and well-regarded

across the world. It was translated into several tongues. The THI translation into Telugu (THIT) was applied in this investigation. Telugu was used, which allowed for simpler comprehension and more dependability. Before fitting the hearing aids and after two months of proper use, we recorded the THIT scores for each participant.¹⁹ According to the current study's findings, out of the 101 patients, 80 (79.2%) noticed an improvement in their overall hearing quality with hearing aids, while the remaining 10 (9.9%) did not notice an improvement in their overall hearing quality with their hearing aids. In comparison, a study reported THI score discrepancies between the groups who received counseling alone and counseling in addition to using a hearing aid were divided into the following categories: >30 stands for extremely much; 10–30 for considerable; 1–10 for a little; and <1 for not at all. 51 patients (85%) in the helped group said the aids were "helpful to some degree," while 9 patients (15%) said they were "not helpful at all." The corresponding figures for the non-aided group were 41 (73%) and 15 (28%).¹ According to the current study's findings, out of the 101 patients, 92 (79.2%) noticed that hearing aids are more beneficial, while the remaining 9 (8.9%) did not notice that hearing aids were more beneficial. In comparison, a study done in all three groups, at three and six months—three months after HA removal—the THI score and most of the other outcomes demonstrated a significant improvement over their baseline values. Patients who saw improvements in the THI score of 20% or more for each of the three groups had incidence rates of 71.0, 72.7, and 74.3% at three months, and 54.8, 51.6, and 59.4% at six months. At three and six months, there were no appreciable variations in the major or ancillary variables across the various types of hearing aids.²⁰

CONCLUSION

The result of this study concluded that Most patients perceive a noticeable change in their quality of life and better sleep when they use a hearing aid with a tinnitus masker.

RECOMMENDATIONS

More research is needed to assess Patient satis-

faction in the population using hearing aids with tinnitus maskers. A follow up study should be undertaken to confirm Patient satisfaction in the population using hearing aids with tinnitus maskers.

Author's contribution

NFR: Idea conception, write up, data collection

SAB: Write up, analysis

MA: Literature search, write up

NA: Data collection

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