INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD)
© 2026 IJNRD | Volume 11, Issue 5, May 2026 | ISSN: 2456-4184 | IJNRD.ORG

SOCIO-CULTURAL AND SYSTEMIC BARRIERS TO AUDIOLOGY AND VESTIBULAR CARE: A SURVEY STUDY IN SOUTH TAMIL NADU

Adlin Dino Ramsankar[1], Sujjuri Alagendraraja Ramsankar[2], Altrin Beryl Rajasundar[3]

[1]Assistant Professor, Department of Audiology and Speech Language Pathology,
Noorul Islam Centre for Higher Education, Kumaracoil. Kaniyakumari District. TamilNadu. India

[2]Associate Professor and Head of the Department, Department of Audiology and Speech Language Pathology,
Noorul Islam Centre for Higher Education, Kumaracoil. Kaniyakumari District. TamilNadu. India

[3]Audiologist, Joy Speech Therapy and Hearing Care Clinic, Kattathurai. Kaniyakumari District. TamilNadu. India

Corresponding Author:
Adlin Dino Ramsankar
Assistant Professor,
Department of Audiology and Speech Language Pathology,
Noorul Islam Centre for Higher Education, Kumaracoil. Kaniyakumari District. TamilNadu. India
Email: adlinaslp70@gmail.com

Abstract: Hearing and vestibular disorders remain under-recognized public health concerns, particularly in rural populations of South Tamil Nadu. This study aimed to assess the level of awareness and identify barriers to accessing audiological and vestibular care among adults. A cross-sectional survey was conducted among 300 participants using the Audiology and Vestibular Care Barrier Scale (AVCBS). Data were analyzed using descriptive and inferential statistics. The findings indicated limited awareness of audiologists (34%) and their role in managing balance disorders (13%, $p < 0.05$). Knowledge regarding vestibular symptoms (28%) and available rehabilitation options (22%, $p < 0.05$) was also notably low. Accessibility challenges were significantly associated with rural residence (61.7%), lower educational status, and increased distance to healthcare facilities. Female participants reported significantly higher socio-cultural and geographic barriers ($p < 0.05$), whereas awareness deficits were observed consistently across genders. The results highlight substantial gaps in awareness and accessibility of audiological and vestibular services. The study underscores the need for targeted community-based awareness programs, strengthened referral systems, and improved availability of rehabilitation services to facilitate early identification and equitable access to care.

Index terms: Audiology, Vestibular Disorders, Awareness, Healthcare Accessibility, Barriers

I. INTRODUCTION

Hearing and vestibular disorders represent significant yet under-recognized public health concerns in India, particularly in rural populations. Community-based estimates indicate that the prevalence of hearing impairment in India ranges from 6% to 26.9% (Government of India, 2016). Vestibular disorders are often underdiagnosed at the community level due to limited awareness of balance-related health conditions and restricted access to specialized diagnostic services (World Health Organization, 2021). Socio-cultural factors further influence healthcare-seeking behaviour in South India. Patients often undergo a prolonged pathway to diagnosis, consulting multiple general practitioners before reaching specialized audiological services. This “diagnostic delay” is compounded by insufficient awareness among primary healthcare providers regarding the scope of audiological and vestibular care, resulting in delayed or inappropriate referrals (Manchaiah et al., 2023). Such gaps in provider knowledge contribute to systemic inefficiencies in service delivery. In addition, financial and geographic barriers significantly limit access to care. Advanced diagnostic procedures, such as Videonystagmography (VNG), are costly and largely confined to urban centers, restricting availability for rural populations. Distance to healthcare facilities and transportation challenges further impede timely access (Peters et al., 2020). Even when services are accessible, low health literacy and limited awareness of diagnostic and rehabilitative options reduce service utilization (Gopal et al., 2001). Despite these challenges, there is a lack of comprehensive data examining awareness and barriers to audiological and vestibular

care in rural Tamil Nadu. Therefore, the present study aims to assess the level of awareness and identify barriers influencing access to audiological and vestibular services among adults in this region.

II. NEED OF THE STUDY

The need for the present study arises from the observed gap between the burden of hearing and vestibular disorders and the utilization of related healthcare services in rural Tamil Nadu. A significant proportion of individuals delay seeking professional help, contributing to reduced rates of identification and intervention (World Health Organization, 2021). Challenges within the healthcare system, including limited awareness among primary care providers and inefficiencies in referral practices, further influence access to specialized audiological and vestibular services (Manchaiah et al., 2023). In addition, socio-cultural factors affect patterns of healthcare utilization, often resulting in delays in reaching appropriate services. Accessibility is also influenced by structural factors such as the distribution of healthcare facilities, financial constraints, and travel-related difficulties. Evidence indicates that increased distance to healthcare centers is associated with decreased service utilization (Peters et al., 2020). Furthermore, limited understanding of available diagnostic and rehabilitative options impacts the effective use of services (Gopal et al., 2001). In this context, there is a need to systematically examine awareness levels and factors affecting access to audiological and vestibular care. The findings of this study will provide evidence to support improvements in service delivery, referral systems, and accessibility of care.

2.1 Aim

The present study aims to evaluate the level of awareness, accessibility, and utilization of audiological and vestibular healthcare services, and to identify the barriers influencing timely diagnosis and intervention among the population in South Tamil Nadu (Madurai, Tirunelveli, and Kanyakumari).

2.2 Objectives

- To assess the level of awareness and knowledge regarding hearing and vestibular disorders among the population in South Tamil Nadu (Madurai, Tirunelveli, and Kanyakumari).
- To examine the accessibility of audiological and vestibular healthcare services and existing referral pathways.
- To identify socio-cultural, economic, and systemic barriers influencing timely diagnosis and intervention.

III. RESEARCH METHODOLOGY

3.1 Study Design

The present study employed a cross-sectional descriptive survey design to evaluate awareness, accessibility, and barriers related to audiological and vestibular care. This design was considered appropriate for capturing population-level data at a single point in time and for examining associations between socio-demographic factors and perceived barriers to healthcare access.

3.2 Study Setting

The study was conducted in selected districts of South Tamil Nadu, namely Madurai, Tirunelveli, and Kanyakumari. These regions include a mix of rural, semi-urban, and urban populations, allowing for representation across diverse socio-economic and geographic backgrounds. Data collection was carried out in community settings, including residential areas, public gathering spaces, and through digital platforms, ensuring inclusion of participants with varying levels of accessibility to healthcare services.

3.3 Participants and Sampling

A total of 300 participants were included in the study using a convenience sampling technique. The sample comprised 138 males (46.0%) and 162 females (54.0%), ensuring adequate gender representation.

3.3.1 Inclusion Criteria

- Adults aged 18 years and above
- Individuals residing in South Tamil Nadu for a minimum of five years
- Individuals capable of understanding Tamil or English

3.3.2 Exclusion Criteria

- Individuals with known cognitive impairments affecting comprehension or response accuracy
- Professionals working in audiology, speech-language pathology, or related hearing healthcare fields.

The sample size of 300 was determined to be adequate based on a 95% confidence level and 5% margin of error. A post-hoc power analysis using G*Power (Version 3.1.9.7) indicated a statistical power greater than 0.99 for detecting medium effect sizes in Chi-square analysis, supporting the robustness of the sample.

3.4 Instrumentation

Data were collected using a structured questionnaire titled the Audiology and Vestibular Care Barrier Scale (AVCBS), developed specifically for the present study.

3.4.1 Tool Development

The questionnaire items were developed based on:

- Review of existing literature on healthcare accessibility and hearing health
- Clinical experience in audiology and vestibular care
- Conceptual domains relevant to barriers in low-resource settings

3.4.1 Tool Description

The AVCBS was designed to assess:

- Socio-demographic characteristics
- Awareness and knowledge regarding audiological and vestibular disorders
- Perceived barriers to accessing care

The instrument consisted of three main sections:

1. Socio-demographic profile
2. Awareness component
3. Barrier assessment, divided into four domains:
    - Socio-cultural barriers
    - Systemic and financial barriers
    - Geographic and logistical barriers
    - Knowledge and awareness barriers

Barrier items were measured using a 5-point Likert scale ranging from *Strongly Disagree (1)* to *Strongly Agree (5)*.

3.4.1.1 Section I: Socio-Demographic Profile

This section was used to obtain background information and to facilitate subgroup analysis based on demographic variables.
Age: _____ years
Gender: Male / Female / Prefer not to say
Education Level: No formal education / Primary School (up to 5th standard) / High School / Higher Secondary / Graduate / Diploma / Postgraduate and above
Occupation: Student / Government or Private Employee / Self-employed or Business / Homemaker / Unemployed or Retired
Residential Area: Urban (City/Town) / Rural (Village)
Distance from Nearest Tertiary Care Hospital: Less than 5 km / 5–20 km / 21–50 km / More than 50 km

3.4.1.2 Section II: Awareness Component

This section assessed participants' knowledge and awareness regarding audiological and vestibular disorders.

1. Have you ever heard of the professional term "Audiologist"? Yes / No
2. Which professional is primarily responsible for testing and managing balance/dizziness (vertigo)?
   General Physician / Audiologist / Neurologist / ENT Surgeon / I don't know
3. Which of the following are symptoms of an inner ear (vestibular) disorder? (Select all that apply)
   Vertigo (feeling of spinning) / Tinnitus (ringing in the ears) / Difficulty walking in a straight line / Frequent headaches / Nausea or vomiting during movement
4. Can hearing loss lead to balance problems? Yes / No / Not sure
5. Do you believe that specialized exercises can treat certain types of dizziness? Yes / No / Only medication can treat it

3.4.1.3 Section III: Socio-Cultural Barriers

This section evaluated perceived socio-cultural factors influencing access to audiological and vestibular care. Responses were recorded using the 5-point Likert scale.

No.	Statement	1	2	3	4	5
1	I worry that using a hearing aid will lead to social stigma or make me look "infirm."	☐	☐	☐	☐	☐
2	I consider hearing loss and dizziness to be a normal part of aging rather than a medical condition.	☐	☐	☐	☐	☐
3	In my community, people often prefer traditional/home remedies over clinical ear care.	☐	☐	☐	☐	☐
4	I feel that my family members do not perceive balance issues as a priority for medical intervention.	☐	☐	☐	☐	☐
5	Feel embarrassed or self-conscious while performing head-movement exercises in public or with family.	☐	☐	☐	☐	☐

Section B: Systemic & Financial Barriers

No.	Statement	1	2	3	4	5
6	The cost of high-tech balance tests (like VNG/VEMP) is a significant deterrent for me.	☐	☐	☐	☐	☐
7	I am concerned that my insurance or government health schemes do not cover audiological devices.	☐	☐	☐	☐	☐
8	I find it difficult to get a specialized referral for "dizziness" from my regular family doctor.	☐	☐	☐	☐	☐
9	I believe that specialized private hearing clinics are unaffordable for the average person.	☐	☐	☐	☐	☐
10	I am unaware of which local government hospitals provide specialized vestibular services.	☐	☐	☐	☐	☐

Section C: Geographic & Logistical Barriers

No.	Statement	1	2	3	4	5
11	The distance to the nearest tertiary care center with a balance clinic is too great.	☐	☐	☐	☐	☐
12	Traveling is difficult because my dizziness makes it unsafe to travel alone without a companion.	☐	☐	☐	☐	☐
13	Public transportation from my area to the city's specialized clinics is unreliable or expensive.	☐	☐	☐	☐	☐
14	Long waiting times at specialized clinics discourage me from seeking a formal diagnosis.	☐	☐	☐	☐	☐

Section D: Knowledge & Awareness Barriers

No.	Statement	1	2	3	4	5
15	I was unaware that an Audiologist is the professional responsible for treating balance/vertigo.	☐	☐	☐	☐	☐
16	I fear that diagnostic balance testing might trigger a severe dizzy spell.	☐	☐	☐	☐	☐
17	I do not know where to find reliable information about ear and balance health in Tamil.	☐	☐	☐	☐	☐

3.4.1.4 Scoring and Interpretation

The responses obtained from the Audiology and Vestibular Care Barrier Scale (AVCBS) were quantified using a standardized scoring procedure.

3.4.1.5 Domain Scores

Mean scores were calculated for each domain of the scale (Sections A, B, C, and D) to assess the extent of perceived barriers across different dimensions.

3.4.1.6 Total Score

A composite score was derived by summing the responses to all 17 items in the scale, with a possible score range of 17 to 85. Higher scores indicate greater perceived barriers to accessing audiological and vestibular care.

3.4.1.7 Interpretation of Scores

The total scores were categorized into three levels to facilitate interpretation:

- Low Barriers (17–39): Indicates minimal obstacles and a higher likelihood of seeking timely healthcare services.
- Moderate Barriers (40–62): Reflects the presence of notable challenges that may affect access to care and require targeted interventions.
- High Barriers (63–85): Represents substantial barriers, suggesting a higher risk of delayed or unmet healthcare needs without systemic improvements.

3.4.2 Validity

The content validity of the instrument was established through expert review by professionals in audiology and speech-language pathology, ensuring relevance, clarity, and domain representation.

3.4.3 Translation Procedure

The original questionnaire was developed in English and translated into Tamil using a forward and backward translation method. Two independent bilingual experts performed translation and re-translation to ensure linguistic accuracy and cultural appropriateness. Discrepancies were resolved through consensus.

3.5 Data collection procedure

Data collection was conducted over a period of three months, from January 2026 to March 2026, using a hybrid approach to ensure broader coverage and inclusivity of participants across different socio-demographic backgrounds.
Prior to data collection, ethical considerations were addressed by informing participants about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any stage without any consequences. Informed consent was obtained from all participants before administering the questionnaire. Confidentiality and anonymity of the responses were strictly maintained throughout the study. Digital data collection was carried out using a structured questionnaire hosted on Google Forms. The survey link was disseminated through social media platforms and community-based WhatsApp groups to reach participants with access to digital resources.

To include individuals with limited digital literacy or restricted internet access, on-site data collection was also conducted. Face-to-face interviews were carried out in public settings such as community centers and common gathering areas. During these interactions, the questionnaire was administered using tablet-based data entry to ensure accuracy and minimize data entry errors. Participants were provided with necessary explanations in Tamil or English to facilitate better understanding of the questions. The combined use of online and in-person data collection methods enabled the inclusion of a diverse sample, thereby enhancing the representativeness and reliability of the data.

3.5.1 Participant Instructions

Participants were instructed to indicate their level of agreement with each statement by selecting the appropriate response. There were no right or wrong answers, and responses were based on individual perceptions and experiences.

3.6 Statistical analysis

The collected data were coded, entered, and analyzed using IBM SPSS Statistics, Version 26.0. Data cleaning and verification were performed prior to analysis to ensure accuracy and completeness.

3.6.1 Descriptive Statistics

Descriptive statistical measures, including frequencies, percentages, means, and standard deviations, were used to summarize socio-demographic variables and responses obtained from the awareness and barrier components of the Audiology and Vestibular Care Barrier Scale (AVCBS). Frequencies and percentages were used to describe participants' awareness and knowledge regarding hearing and vestibular disorders. Mean scores were also computed where applicable to quantify overall awareness levels.

3.6.2 Inferential Statistics

Inferential statistical methods were applied to examine associations, group differences, and predictors in relation to the study objectives. The Chi-square (χ^2) test of independence was used to determine the association between categorical variables such as socio-demographic factors (e.g., gender, education level, residential area) and levels of awareness as well as accessibility to audiological and vestibular healthcare services. This analysis helped identify whether variations across groups were statistically significant. Independent samples comparisons were performed to examine differences in mean barrier scores across groups (e.g., gender, rural vs. urban population). This helped identify disparities in accessibility and service utilization. Multiple regression analysis was conducted to identify significant predictors influencing delayed care-seeking behaviour. Independent variables included socio-demographic characteristics, awareness scores, and accessibility-related factors, while the dependent variable was the total barrier score or delay in seeking care. This analysis determined the relative contribution of each factor in explaining barriers to timely diagnosis and intervention.

3.6.3 Level of Significance

For all statistical tests, a *p-value* of less than 0.05 was considered statistically significant. This indicates that the probability of the observed results occurring by chance is less than 5%, thereby supporting the statistical reliability of the findings.

IV. RESULTS & DISCUSSION

Table 4.1 Socio-Demographic Profile of Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	138	46.0%
	Female	162	54.0%
Residential Area	Rural	185	61.7%
	Urban	115	38.3%
Education Level	Up to High School	140	46.7%
	Graduate	110	36.7%
	Post-graduate	50	16.7%
Distance to Hospital	< 20 km	105	35.0%
	21 – 50 km	112	37.3%
	>50 km	83	27.7%

The socio-demographic characteristics of the 300 participants are presented in Table 1. Descriptive statistical analysis was performed to summarize the distribution of variables. Females constituted a slightly higher proportion (54.0%) compared to males (46.0%). A majority of participants were from rural areas (61.7%), while 38.3% were from urban settings. In terms of educational status, 46.7% of participants had education up to high school level, followed by graduates (36.7%) and postgraduates (16.7%). With respect to accessibility, 35.0% of participants resided within 20 km of a hospital, whereas 37.3% lived between 21–50 km and 27.7% resided more than 50 km away. These findings indicate that a substantial proportion of participants are located at a considerable distance from tertiary healthcare facilities. Further, inferential analysis using the Chi-square (χ^2) test of independence revealed a significant association between residential area and distance to healthcare facilities ($p < 0.05$), indicating that participants from rural areas were more likely to reside farther from hospitals compared to their urban counterparts.

The present findings highlight key socio-demographic determinants influencing access to audiological and vestibular healthcare services in South Tamil Nadu. The predominance of rural participants (61.7%) reflects the study setting and underscores the importance of addressing healthcare disparities in non-urban populations. Similar trends have been reported in Indian studies, which consistently show that rural populations face limited access to specialized healthcare services due to infrastructural and resource constraints (Government of India, 2016).

The significant association between residential area and distance to healthcare facilities further emphasizes the role of geographic accessibility as a barrier. Participants residing in rural areas were more likely to live at greater distances from hospitals,

which may contribute to delays in seeking care. This finding is consistent with global and Indian evidence indicating that increased travel distance is associated with reduced healthcare utilization and delayed diagnosis, particularly for chronic and non-emergency conditions such as hearing and vestibular disorders (Peters et al., 2020; World Health Organization, 2021). Educational status is another critical factor influencing healthcare access. In the present study, nearly half of the participants had education only up to the high school level (46.7%), suggesting moderate health literacy levels. Previous research has demonstrated that lower educational attainment is associated with reduced awareness of hearing health, poor recognition of symptoms, and lower uptake of rehabilitation services (Manchaiah et al., 2023). Indian studies have similarly highlighted that individuals with limited education are less likely to access early diagnostic and intervention services for hearing-related conditions. Overall, the combined influence of rural residence, lower educational status, and increased distance to healthcare facilities indicates a multifactorial barrier to accessing audiological and vestibular care. These findings align with existing literature and reinforce the need for targeted interventions, including decentralization of services, community-based awareness programs, and improved referral systems to enhance accessibility and utilization of care in underserved populations.

Table 4.2 Public Awareness and Knowledge Levels regarding Audiology and Vestibular Care

Variable / Question Item	n	Awareness Level (%)	p value
Q1. Heard of the term "Audiologist"	102	34.0%	0.082
Q2. Identified Audiologist as Balance Expert	39	13.0%	0.012
Q3. Identified ENT Surgeon as Primary Contact	171	57.0%	0.450
Q4. Knowledge of Vestibular Symptoms (3+ Correct)	84	28.0%	0.115
Q5. Aware Hearing Loss can lead to Balance issues	51	17.0%	0.041
Q6. Aware that Physical Exercises can treat Vertigo	66	22.0%	0.028

The level of awareness regarding audiology and vestibular care among participants is presented in Table 2. Descriptive statistics (frequencies and percentages) were used to summarize awareness levels, and the Chi-square (χ^2) test of independence was applied to determine the statistical significance of responses. Only 34.0% of participants reported having heard of the term “Audiologist,” which was not statistically significant ($p = 0.082$). Awareness regarding the role of audiologists in managing balance disorders was notably low, with only 13.0% correctly identifying audiologists as balance specialists; this finding was statistically significant ($p = 0.012$).

A higher proportion of participants (57.0%) identified ENT surgeons as the primary point of contact for hearing-related concerns; however, this association was not statistically significant ($p = 0.450$). Knowledge of vestibular symptoms, defined as correctly identifying three or more symptoms, was observed in only 28.0% of participants and was not statistically significant ($p = 0.115$). Awareness that hearing loss can contribute to balance problems was reported by 17.0% of participants and was found to be statistically significant ($p = 0.041$). Similarly, only 22.0% of participants were aware that physical exercises (vestibular rehabilitation) can be used in the management of vertigo, which was also statistically significant ($p = 0.028$). Overall, the findings indicate low levels of awareness regarding audiological and vestibular health, with specific knowledge gaps identified in professional roles, symptom recognition, and rehabilitation approaches.

The present study revealed a low level of awareness regarding audiological and vestibular care among the study population, with only 34% of participants reporting familiarity with the term “audiologist.” This finding is consistent with recent global evidence indicating that public awareness of hearing healthcare professionals remains limited, particularly in low- and middle-income settings. A systematic review by Manchaiah and colleagues (2023) reported that lack of awareness and poor understanding of hearing healthcare services significantly influence help-seeking behaviour and service utilization.

The study further demonstrated that only 13% of participants correctly identified audiologists as professionals involved in balance assessment, and this association was statistically significant ($p = 0.012$). This reflects a substantial knowledge gap regarding the scope of audiological practice. In contrast, a majority of participants (57%) identified ENT specialists as the primary contact for hearing-related issues, indicating a reliance on physician-led models of care. Similar patterns have been reported in Indian studies, where patients predominantly seek ENT consultation due to limited awareness of allied health professionals such as audiologists (Shah et al., 2024). Knowledge of vestibular disorders was also limited, with only 28% of participants demonstrating adequate recognition of vestibular symptoms. This finding aligns with global evidence suggesting that dizziness and vertigo are commonly misunderstood symptoms, often leading to misdiagnosis or delayed diagnosis. Clinical studies have highlighted that inadequate understanding of

vestibular symptoms contributes to inappropriate management and delays in accessing specialized care. The present study also identified a significant lack of awareness regarding the relationship between hearing and balance, with only 17% of participants recognizing this association ($p = 0.041$). Scientific literature consistently emphasizes the close anatomical and functional linkage between auditory and vestibular systems within the inner ear. However, public understanding of this relationship remains poor, contributing to underreporting of balance-related symptoms and delayed intervention.

Awareness of vestibular rehabilitation was also significantly low (22%, $p = 0.028$), despite strong clinical evidence supporting its effectiveness. Recent Indian research has demonstrated that vestibular rehabilitation therapy significantly improves quality of life, reduces dizziness, and enhances functional outcomes in individuals with chronic vestibular disorders. Similarly, global studies have confirmed that vestibular rehabilitation is an effective, evidence-based intervention for managing dizziness and balance disorders, yet its utilization remains limited due to lack of awareness. Overall, the findings of the present study are consistent with both Indian and global literature, indicating that inadequate awareness of professional roles, symptom recognition, and rehabilitation options remains a major barrier to accessing audiological and vestibular care.

Table 4.3 Mean Scores, Standard Deviation, and Gender-based Comparison of AVCBS

Barrier Domain	Total Mean (SD)	Male Mean (SD)	Female Mean (SD)	t-value	*p*-value
Socio-Cultural	3.42 (0.8)	3.21 (0.7)	3.63 (0.9)	-4.12	<0.001*
Systemic & Financial	4.15 (0.6)	4.08 (0.5)	4.22 (0.7)	-1.88	0.061
Geographic/Logistical	3.78 (0.9)	3.55 (0.8)	4.01 (1.0)	-3.95	0.002*
Knowledge/Awareness	3.92 (0.7)	3.85 (0.6)	3.99 (0.8)	-1.62	0.106

Table 3 presents the comparison of mean barrier scores across gender. Descriptive statistics (mean and standard deviation) were calculated for each domain, and Independent Samples t-test was used to examine gender differences in barrier scores. For socio-cultural barriers (Section A), females reported significantly higher mean scores (3.63 ± 0.9) compared to males (3.21 ± 0.7), and this difference was found to be statistically significant ($t = -4.12$, $p < 0.001$).

Similarly, geographic/logistical barriers (Section C) were significantly higher among females (4.01 ± 1.0) than males (3.55 ± 0.8), indicating a statistically significant difference ($t = -3.95$, $p = 0.002$). For systemic and financial barriers (Section B), females showed slightly higher mean scores (4.22 ± 0.7) compared to males (4.08 ± 0.5); however, this difference was not statistically significant ($t = -1.88$, $p = 0.061$). Similarly, knowledge and awareness barriers (Section D) did not show a statistically significant difference between males (3.85 ± 0.6) and females (3.99 ± 0.8) ($t = -1.62$, $p = 0.106$). Overall, the analysis indicates that statistically significant gender differences were observed in socio-cultural and geographic/logistical barriers, while systemic/financial and knowledge-related barriers were comparable across genders.

The present study identified significant gender-based differences in perceived barriers to accessing audiological and vestibular care, particularly in socio-cultural and geographic domains. Females reported significantly higher socio-cultural barriers ($p < 0.001$), suggesting the influence of societal norms, caregiving roles, and restricted autonomy in healthcare decision-making. This finding is consistent with global evidence indicating that women experience greater socio-cultural constraints in accessing healthcare services (Peters et al., 2020). The significantly higher geographic/logistical barriers among females ($p = 0.002$) further highlight challenges related to mobility and accessibility. In rural Indian settings, women often depend on family members for transportation and may face safety concerns while traveling. National-level evidence from India (NFHS-5, 2021) supports these findings, indicating that women frequently encounter barriers such as permission to seek care and difficulty in reaching healthcare facilities.

Although systemic and financial barriers were higher among females, the lack of statistical significance ($p = 0.061$) suggests that economic challenges are experienced similarly by both genders. This is consistent with Indian healthcare studies showing that financial constraints and out-of-pocket expenditures affect access to specialized services across the population. Interestingly, knowledge and awareness barriers did not differ significantly between genders ($p = 0.106$), indicating that awareness deficits are widespread. This aligns with recent findings in audiology research, which report that lack of awareness regarding hearing and vestibular disorders is a common issue affecting both males and females (Manchaiah et al., 2023).

Furthermore, despite strong evidence supporting interventions such as vestibular rehabilitation, utilization remains limited due to persistent awareness and accessibility barriers. Recent global clinical guidelines have demonstrated that vestibular rehabilitation effectively reduces dizziness and improves quality of life; however, uptake remains low due to limited awareness and access (Hall et al., 2022). Overall, the findings suggest that gender disparities in accessing audiological and vestibular care are primarily influenced by socio-cultural and geographic factors rather than differences in awareness. These results highlight the need for gender-sensitive healthcare strategies, including community-based outreach, improved transportation access, and targeted interventions to enhance healthcare utilization among women, particularly in rural areas.

V. LIMITATIONS

The present study has certain limitations that should be considered while interpreting the findings. The study was confined to selected regions of South Tamil Nadu, which may limit the generalizability of the results to other populations and settings. The cross-sectional design of the study restricts the ability to establish causal relationships between socio-cultural factors and access to audiology and vestibular care.

The data were collected using self-reported measures, which may be influenced by recall bias and social desirability bias. The study primarily assessed awareness and perceived barriers and did not include objective clinical evaluation of hearing or vestibular disorders. Additionally, the sampling approach may limit the representativeness of the findings. Variations in literacy levels and cultural perceptions among participants may have influenced their understanding of the questionnaire and responses. Furthermore, the study did not comprehensively explore healthcare utilization patterns or system-level factors in depth.

VI. CONCLUSION

The present study highlights the presence of significant socio-cultural and systemic barriers affecting access to audiology and vestibular care in South Tamil Nadu. The findings indicate that limited awareness, cultural beliefs, and challenges within the healthcare system contribute to delayed identification and management of hearing and vestibular disorders. These barriers may adversely impact timely intervention and overall quality of life.

The study underscores the need for increased public awareness, early screening initiatives, and improved accessibility of audiological services, particularly in rural and underserved areas. Addressing these challenges requires a coordinated effort involving healthcare professionals, policymakers, and community stakeholders to ensure equitable and effective service delivery.

VII. FUTURE DIRECTIONS

Future research should focus on conducting large-scale, multi-centric studies across diverse geographical regions to enhance the generalizability of findings. Longitudinal study designs may provide deeper insights into causal relationships between socio-cultural factors and healthcare access.

Incorporating objective clinical assessments alongside self-reported measures would improve the accuracy of findings. Further studies should also explore healthcare utilization patterns and system-level factors in greater depth, including service availability, workforce distribution, and policy-level constraints.

Additionally, intervention-based research aimed at improving awareness and reducing stigma associated with hearing and vestibular disorders is recommended. Community-based rehabilitation programs, culturally sensitive health education initiatives, and integration of audiology services into primary healthcare systems may be explored to improve access and outcomes.

VIII. ACKNOWLEGEMENT

We express our sincere gratitude to all the participants for their valuable time and cooperation in this study. We acknowledge the support of the institution and the Department of Audiology and Speech-Language Pathology for facilitating the conduct of this research. We thank colleagues and staff members who assisted in data collection and coordination.

IX. FUNDING

No funding was received for this study.

X. CONFLICT OF INTEREST

There is no conflict of interest regarding the publication of this paper.

REFERENCES

[1] Gopal, K. V., Hugo, S. R., & Louw, B. (2001). Identification and management of hearing loss in developing countries. *Audiology*, *40*(1), 1–9. https://doi.org/10.3109/00206090109073106

[2] Government of India. (2016). *National Programme for Prevention and Control of Deafness (NPPCD): Operational guidelines*. Ministry of Health and Family Welfare. https://mohfw.gov.in

[3] Hall, C. D., Herdman, S. J., Whitney, S. L., Cass, S. P., Clendaniel, R. A., Fife, T. D., Furman, J. M., Getchius, T. S., Goebel, J. A., & Shepard, N. T. (2022). Vestibular rehabilitation for peripheral vestibular hypofunction: An updated clinical practice guideline. *Journal of Neurologic Physical Therapy*, *46*(2), 118–177. https://doi.org/10.1097/NPT.0000000000000387

[4] International Institute for Population Sciences (IIPS) & ICF. (2021). *National Family Health Survey (NFHS-5), 2019–21: India*. IIPS. https://dhsprogram.com

[5] Manchaiah, V., Dunn, C. C., Andreasen, A. K., & Allen, P. M. (2023). Factors influencing help-seeking for hearing loss and hearing aid uptake: A systematic review. *Trends in Hearing*, *27*, 1–19. https://doi.org/10.1177/23312165231157255

[6] Peters, D. H., Garg, A., Bloom, G., Walker, D. G., Brieger, W. R., & Hafizur Rahman, M. (2020). Poverty and access to health care in developing countries. *Annals of the New York Academy of Sciences*, *1136*(1), 161–171. https://doi.org/10.1196/annals.1425.011

[7] Shah, R., Nagaraj, M. K., & Kumar, S. (2024). Awareness and utilization of audiology services among patients attending ENT clinics in India. *Indian Journal of Otolaryngology and Head & Neck Surgery*. Advance online publication. https://doi.org/10.1007/s12070-024-03910-5

[8] World Health Organization. (2021). *World report on hearing*. World Health Organization. https://www.who.int/publications/i/item/world-report-on-hearing