PERCEPTUAL WEIGHTAGE OF BRIEF ICF CORE SET FOR HEARING LOSS: PATIENTS' PERSPECTIVES

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CERTIFICATE

This is to certify that this dissertation entitled **"Perceptual Weightage of Brief ICF Core Set for Hearing Loss:Patients' Perspectives"** is a bonafide work submitted as part of fulfilment of the degree of Master of Science (Audiology) of the student with Registration Number P01II24S023008. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

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DECLARATION

This is to certify that this dissertation entitled **"Perceptual Weightage of Brief ICF Core Set for Hearing Loss: Patients' Perspectives"** is the result of my own study under the guidance of Dr. Saransh Jain, Assistant Professor in Audiology, Department of POCD, All India Institute of Speech and Hearing, Mysuru and has not been submitted earlier to any other university for the award of any other Diploma or Degree.

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TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURES

Abstract

Hearing loss affects more than 466 million people worldwide and is one of the leading causes of disability in the world's sensory domain. It is estimated that India alone is home to 63 million people with significant hearing impairment. However, the assessment practices remain heavily audiometric, revealing little about how people function in their day-to-day lives. The Brief International Classification of Functioning, Disability and Health (ICF) Core Set for Hearing Loss provides a systematic framework to describe this broader impact. However, an important question has largely remained unanswered: Do people with hearing loss perceive all 27 categories of this framework as equally important, or do some domains of functioning matter more to them than others?

The aim of this study was to investigate the relative importance (perceptual weightage) of each category of the Brief ICF Core Set among adults with hearing loss and to determine the influence of demographic and audiological factors on these priorities. A cross-sectional design was adopted in 2 phases. In the first phase, 18 adults with bilateral sensorineural hearing loss were interviewed to elicit concepts and to develop contextually relevant scenarios for each ICF category. This was then followed by scene analysis, expert validation, and a demographic appropriateness evaluation. In phase two, the developed digital assessment platform was administered to 150 adults with bilateral sensorineural hearing loss attending audiological services at the All India Institute of Speech and Hearing, Mysuru. Participants rated the perceived impact of hearing.

The results indicated a clear and consistent ranking of functional priorities. The categories rated most highly by the participants were within the Activities and Participation domain, in particular, the use of communication devices and techniques, listening, hearing functions, receiving spoken messages, and conversation. Body Structures received the lowest perceptual

weightage, suggesting that people care much more about the real-world communication implications of hearing loss than its anatomical basis. The Friedman test showed significant differences in ratings across categories, and Kendall's coefficient of concordance indicated substantial agreement among participants in their prioritization patterns.

Among the demographic variables, educational status showed the strongest association with perceptual weightage, followed by residential location. Gender, occupation, and monthly income effects had more limited effects in comparison. Audiological variables had more pervasive effects, with hearing loss severity being the most powerful predictor of perceptual prioritization, followed by hearing loss duration. Use of hearing aids was differentially associated with specific functional domains.

The findings suggest the importance of moving beyond audiometric assessment to patient-centered approaches that capture the individual's experience and value. The study provides context-relevant evidence from the Indian population, a population group under-represented in the ICF validation literature. It offers a validated digital assessment platform that can be meaningfully integrated into clinical practice. Understanding how patients prioritize their functional difficulties can lead to a more personalized, relevant, and effective hearing rehabilitation.

Keywords: hearing loss, Brief ICF Core Set, perceptual weightage, functional prioritization, patient-centered assessment, India, audiological rehabilitation.

CHAPTER I

INTRODUCTION

Hearing loss is one of the most common chronic health conditions worldwide, affecting an estimated 466 million people. This number is expected to reach 900 million by 2050 (WHO, 2021). Hearing impairment is the second most common cause of sensory disability and affects about 6.3% of the population, that is, 63 million people in India (Garg et al., 2009). National Sample Survey Office (2018) reports that hearing disability accounts for 19% of all disabilities in India, with a greater incidence in rural populations and older adults.

1.1 The ICF Framework

Impairments, activity limitations, participation restrictions and contextual factors interact in a complex way to determine an individual's functional outcomes (WHO, 2001). This perspective is consistent with the World Health Organization's International Classification of Functioning, Disability and Health (ICF) framework, which provides a biopsychosocial model for understanding health conditions and their consequences. Functioning is described by the ICF framework as a dynamic interaction between an individual's health condition, body functions and structures, activities and participation, environmental factors, and personal factors (WHO, 2001).

Hearing loss and auditory impairment also affect communication, psychosocial functioning, educational participation, occupational performance, and quality of life. Therefore, understanding hearing loss requires assessment approaches that go beyond audiometric thresholds and consider the broader impact on daily functioning. The ICF model acknowledges that two people with similar levels of hearing loss may have very different functional outcomes in everyday activities, depending on their personal characteristics, social roles, environmental barriers, and facilitators (Meyer et al., 2016). The recognition of disability's multidimensionality led to the

development of condition-specific ICF Core Sets to identify the most relevant functional categories associated with specific health conditions. Such frameworks offer a better understanding of functioning not just in terms of impairment (Danermark et al., 2013; Granberg et al., 2014a).

The ICF Core Sets for Hearing Loss were developed following strict international consensus procedures, including systematic literature reviews, expert surveys, patient focus groups, and empirical studies (Danermark et al., 2013; Granberg et al., 2014). Two versions were developed: the Comprehensive ICF Core Set (117 categories for multidisciplinary assessment) and the Brief ICF Core Set (27 categories) for a minimal standard for describing functioning in adults with hearing impairment (Granberg et al., 2015). The Brief ICF Core Set comprises seven body functions, four body structures, nine activities and participation categories, and seven environmental factors (Granberg, 2015). Although the Brief ICF Core Set provides a standardized framework for describing hearing-related functioning, the relative importance that individuals assign to each category may differ considerably. Clinically prioritized functional difficulties may not correspond to patients' perceived concerns.

Previous studies have demonstrated satisfactory content validity and clinical utility of the Brief ICF Core Set across different populations and clinical settings (Alfakir et al., 2015; Van Leeuwen et al., 2018; Karlsson et al., 2021). Existing evidence supports its applicability for describing functional consequences of hearing loss (Granberg et al., 2014a; Danermark et al., 2013; Bisharyan et al., 2024). Most validation studies, however, have been limited to the assessment of structural validity and clinical representation, and have not understood patient perceived prioritization of individual categories (Karlsson et al., 2021; Cox & Alexander, 2002).

Therefore, an important gap remains regarding how adults with hearing loss themselves prioritize different categories according to their perceived functional impact.

Increasing attention to patient-centered healthcare has created a need to understand how people with hearing loss perceive and prioritise aspects of their functional difficulties. Conventional audiological evaluations are based mainly on objective measurements, e.g., hearing thresholds and speech recognition, which may not fully reflect patients' subjective experiences and preferences. This may lead to a mismatch between the goals of clinical interventions and the aspects of functioning most salient to patients (Hickson et al., 2014). Patient-reported outcome measures have been central to understanding these subjective experiences, but many available measures focus on selected aspects of disability rather than providing a comprehensive representation of functioning across multiple domains (Cox & Alexander, 2002; Noble, 2002).

Perceptual weightage refers to the relative importance or impact individuals assign to different functional experiences when evaluating the overall consequences of a health condition or disability (Doherty & Turner, 1996). Within audiology, investigations of perceptual weighting have largely focused on psychoacoustic phenomena such as the weighting of acoustic cues during speech perception tasks (Alexander & Lutfi, 2004). While these studies have improved the understanding of auditory perception, they provide limited information regarding how individuals prioritize the broader functional consequences of hearing loss in everyday life.

Comparatively little attention has been paid to understanding how individuals assign importance to the different functional consequences of hearing loss in everyday life. Individuals with similar audiological profiles may differ substantially in the relative importance assigned to communication difficulties, psychosocial consequences, environmental barriers, and participation restrictions. Therefore, understanding perceptual weightage patterns may provide clinically

relevant information on patient priorities and assist in developing individualized rehabilitation strategies targeting the concerns patients perceive as most important (Cox & Alexander, 2002; Noble & Hetu, 1994).

Evidence from related health and quality-of-life research suggests that perceptual weightage varies considerably across individuals and may be influenced by demographic characteristics, environmental demands, and sociocultural contexts (Berg, 1989). Previous findings suggest that individuals of different ages and cultural backgrounds may assign varying levels of importance to functional domains depending on life roles, communication demands, and contextual experiences (Lutfi, 1995). This variability emphasises the importance of understanding perceptual prioritisation in adults with hearing loss, especially in culturally diverse groups. The study of the rankings of categories within the Brief ICF Core Set for Hearing Loss may help in gaining a deeper understanding of the functional impact from the patient's perspective and in the design of more personalised and contextually appropriate rehabilitation interventions.

The linguistic, cultural, and socio-economic diversity of India offers unique opportunities and challenges for implementation of the ICF framework (Garg et al., 2009; Ghai, 2002). Studies investigating hearing loss in Indian populations have described various patterns of functional impact that may be different from those described in Western populations. Korada et al. (2012) investigated the psychosocial disability in Indian adults with unilateral sensorineural hearing loss using the Hearing Handicap Inventory for Adults. Their scores were significantly higher on the emotional subscale than on the social subscale. People with higher levels of education also reported greater social handicap from hearing loss, the study found.

Cultural beliefs and societal attitudes to hearing loss and disability may have a significant impact on the experience, interpretation and reporting of functional limitations in India (Ghai,

2002; Ingstad & Whyte, 1995). Cross-cultural study of social representations of hearing loss in India, Iran, Portugal, and the United Kingdom (Manchaiah et al., 2015). They found that participants from India had more positive associations with hearing loss than participants from other countries. The outcomes indicate that cultural settings may affect the comprehension, interpretation and reaction to disability in varied societies.

More recently, Indian studies have explored the use of ICF-related concepts in audiological practice. Akhtar et al. (2024) studied perceptions among people attending hearing camps in rural Assam and identified barriers to hearing-aid adoption, including low awareness, financial constraints, and sociocultural factors. Similarly, research in the Indian population has shown complex relationships between hearing impairment and wider functional outcomes such as cognitive functioning and participation difficulties (Singh et al., 2025).

The Indian population is highly heterogeneous in terms of its educational background, occupational status, socio-economic characteristics, and residential context. Differences in communication demands, social roles, environmental circumstances, and access to healthcare services can affect perceptions and prioritization of hearing-related problems. Thus, understanding perceptual weightage patterns in the Indian context can help develop culturally relevant, patient-centered approaches to hearing rehabilitation.

Demographic Factors Influencing Functional Impact

However, the functional consequences of hearing impairment are not only determined by the audiological impairment. Everyday communication needs and participation in social activities are affected by demographic and contextual factors. The functional consequences of the same degree of hearing loss may be extremely variable in different individuals depending on gender, educational background, occupation, residential setting and socioeconomic characteristics

(Chisolm et al, 2007). These discrepancies are due to the influence of demographic variables on communication environments, coping mechanisms, access to healthcare resources, and participation requirements in day-to-day situations.

In addition, gender differences in hearing loss experience have been described in prior literature. Research has shown that women are more emotionally affected and socially disabled by hearing loss than men with similar audiometric profiles (Kochkin, 2009). These differences may be reflected in the communication styles, social expectations, interpersonal roles, and coping strategies used by men and women (Hickson et al., 2014). Additionally, the cultural expectations of gender roles in different societies may affect the way people perceive, experience and report difficulties with hearing (Ghai, 2002).

Hearing loss may impact functioning and participation differently based on educational background and occupational demands. Higher educational attainment and professional occupations may require more communication within academic, occupational, and social settings. As a result, they may have different experiences of communication breakdowns and of limits on participation than people with less education or whose work involves less complex verbal interaction. Differences in perceptions of the difficulties and psychosocial impact of hearing loss may be related to educational experiences and occupational responsibilities (Korada et al., 2012), as has been hypothesised in previous studies.

Background factors, such as residence and socioeconomic status, may also affect functional experiences following hearing loss. People living in urban and rural settings often experience different communication contexts, healthcare availability, and social support systems. Perceptions and reporting of hearing-related difficulties may differ due to differences in the availability of audiological services, awareness of the need for hearing rehabilitation, and environmental factors.

Socioeconomic factors may also impact access to hearing healthcare resources and assistive technologies and, subsequently, participation experiences and coping patterns (Akhtar et al., 2024).

In conclusion, these findings suggest that demographic variables may contribute significantly to the experience of and the prioritisation of hearing-related difficulties. This variation may be especially apparent in culturally and socially diverse populations, such as in India, where differences in education, occupation, residential settings, and socioeconomic conditions can lead to substantial variations in perceived functional impact. Examining these demographic influences may provide insights into patient-centered functional priorities and inform the development of more individualized approaches to hearing rehabilitation.

Audiological Variables and Functional Prioritization

People with more severe hearing loss report greater communication limitations, reduced participation, and more severe psychosocial consequences (Chisolm et al., 2007). Similarly, the duration of hearing loss may affect patterns of adaptation and change perceptions of disability over time. Some persons may develop compensatory communication strategies with a longer duration of hearing loss, while others may experience cumulative participation restrictions and psychosocial burden. Perceptions of functional impact may also be affected by the use of hearing aids. Prior research indicates that hearing aids can enhance communication skills and alleviate challenges associated with hearing loss. Nevertheless, the perception of benefits can vary depending on usage patterns, listening environments, and individual expectations (Hickson et al., 2014).

While many studies have examined links between audiological characteristics and hearing-related results, there is limited evidence on how these factors influence the relative importance of

categories in the Brief ICF Core Set for Hearing Loss. Knowledge of these relationships may provide insight into patient-centered functional priorities and inform individualized rehabilitation planning.

In summary, evidence supports the notion that demographic and audiological characteristics may be involved in large variations in perceptions and the importance of the consequences of hearing loss among individuals.

1.2 Need for the Study

The present study was designed to address several important gaps in the current literature on hearing loss, functioning, and patient-centered assessment. Additionally, hearing loss has been assessed through audiometric measures and speech perception assessments; however, these may not adequately reflect the broader functional consequences individuals experience in everyday life. Awareness of the multidimensionality of hearing loss and the need for frameworks that move beyond impairment-based assessment to incorporate activity limitations, participation restrictions and contextual factors is growing.

The Brief ICF Core Set for Hearing Loss aims to describe functioning in hearing-related domains and has shown good content validity and clinical applicability. Most of the previous studies on the Brief ICF Core Set have focused on validation procedures, clinical utility, and representation of categories in routine practice. Comparatively little has been done to understand how people with hearing loss perceive and rank these categories in terms of their functional importance.

Moreover, people with similar audiological characteristics often report different experiences of disability and participation restriction. Such differences imply that functional

impact may not be determined solely by hearing thresholds but may be influenced by demographic and contextual factors, including educational background, occupation, residential environment, and socioeconomic characteristics. Similarly, audiological variables (e.g., hearing severity, duration of hearing loss, hearing-aid usage patterns) may influence how people interpret and rank hearing-related difficulties. Despite these possibilities, there is relatively little evidence of the influence of demographic and audiological characteristics on perceptual prioritization patterns across categories represented within the Brief ICF Core Set for Hearing loss.

Additionally, India's diverse linguistic, cultural, and socioeconomic landscape may significantly shape experiences of hearing loss. Variations in communication environments, social expectations, access to healthcare resources, and cultural attitudes toward disability may contribute to differences in functional experiences and patient priorities. However, evidence examining patient-perceived functional prioritization patterns within the Indian context remains limited.

Understanding which aspects of functioning were considered most important by individuals with hearing loss may provide clinically meaningful information for patient-centered assessment and rehabilitation planning. Identification of perceptual weightage patterns may facilitate the development of more individualized intervention approaches by aligning rehabilitation priorities with patients' perceived concerns. Therefore, the present study sought to examine the perceptual weight assigned to categories within the Brief ICF Core Set for Hearing Loss and to investigate the influence of demographic and audiological variables on functional prioritization patterns among adults with hearing loss in the Indian context.

1.3 Aims of the Study

The study aimed to assess the perceptual weightage assigned by adults with hearing loss to categories within the Brief ICF Core Set for Hearing Loss and to identify patterns of functional prioritization as perceived by individuals with hearing loss in the Indian context.

1.4 Objectives of the Study

1. To obtain and analyze perceptual ratings for each of the 27 categories of the Brief ICF Core Set for Hearing Loss among adults with hearing loss.
2. To examine the influence of demographic variables, including gender, educational status, occupation, residential location, and monthly income, on the perceptual weightage assigned to Brief ICF Core Set categories.
3. To investigate the influence of audiological characteristics, including hearing severity, hearing-aid usage, and duration of hearing loss, on perceptual weightage patterns across Brief ICF Core Set categories.

1.5 Hypotheses

1. There will be no significant difference in the perceptual weightage assigned by adults with hearing loss across the 27 categories of the Brief ICF Core Set for Hearing Loss.
2. Demographic variables, including gender, educational status, occupation, residential location, and monthly income, will not significantly influence the perceptual weightage assigned to categories of the Brief ICF Core Set for Hearing Loss.

3. Audiological characteristics, including hearing severity, hearing-aid usage, and duration of hearing loss, will not significantly influence perceptual weightage patterns across categories of the Brief ICF Core Set for Hearing Loss.

Chapter II

REVIEW OF LITERATURE

Hearing loss is one of the most common long-term sensory conditions globally and has become a major public health problem due to the serious effects it has on individuals, families, and communities. The World Health Organization (2021) estimated that more than 1.5 billion people globally have some degree of hearing loss, of whom approximately 430 million need rehabilitation services. The number may increase to almost 900 million by 2050. Hearing loss is increasingly prevalent due to factors such as an ageing population, greater exposure to noise at work and during leisure activities, rapid urbanisation, and poor access to hearing health care services, particularly in low- and middle-income countries (Olusanya et al., 2019).

Beyond the reduced audibility, hearing loss can have consequences that can affect communication, psychosocial well-being, educational attainment, occupational functioning and quality of life. It can also affect someone's social life, emotional well-being, education and work (WHO, 2021). Hearing loss is a particularly important public health burden in the Indian context. In India, approximately 63 million people suffer from severe hearing loss, that is close to 6.3 % of the population (Garg et al., 2009). Hearing disability accounts for approximately 19% of all registered disabilities in India (National Sample Survey Office, 2018). Rural populations, the elderly, and lower socioeconomic groups disproportionately bear the burden of disease. These figures are likely to be underestimates as hearing loss is underdiagnosed in many areas of the country and access to diagnostic services is limited.

Several widespread challenges in the health care system further increase the burden of hearing loss in India. The Ministry of Health and Family Welfare (2010) had identified a number of factors that impede timely intervention for hearing loss: low public awareness, late diagnosis,

inadequate rehabilitation services, financial constraints in accessing care, and the social stigma associated with hearing disability. Akhtar et al. (2024) found that the three main barriers to receiving hearing care for people in rural Assam were that treatment was too expensive, many people were unaware of hearing services, and clinics were too far away. More recently, Singh et al. (2025) found strong links between hearing loss and cognitive decline in an Indian cohort, highlighting the broader health implications of untreated hearing impairment.

2.1 The ICF Framework and Its Application to Hearing Loss

The traditional biomedical models focused on pathology and degree of impairment, and were not adequate to explain variations in everyday functioning in individuals with similar hearing thresholds. That was part of the reason for the development of biopsychosocial approaches. The most common biopsychosocial framework developed by the World Health Organization is the ICF (2001). The ICF conceptualises functioning and disability as the interaction between a health condition of an individual and environmental factors (including personal factors) in three interrelated components: body functions and structures, activities and participation, and environmental and personal factors. This model moves beyond a deficit model of disability, to examine the complex interplay between impairment, functional capacity and the environment.

The ICF framework is particularly appropriate for hearing healthcare because people with similar audiometric thresholds often report very different communication difficulties, participation restrictions and psychosocial consequences. It can also affect a person's thinking, communication, emotional life and participation in social life, education and work (Danermark et al, 2013). Standard audiological assessments primarily focus on measuring hearing loss (e.g., pure-tone audiometry and speech recognition) and provide little information on the impact of hearing loss on a person's daily activities and personal experiences.

Meyer et al. (2016) reviewed the application of the ICF framework to audiology and found that audiometric test results explain only a small proportion of the communication difficulties and participation problems reported by people with hearing loss. The gap between hearing test results and listening in daily life highlights the importance of assessment strategies that go beyond clinical testing results and consider how an individual functions in daily life.

Noble and Hétu (1994) found that the effects of hearing loss are determined not only by the hearing loss itself, but also by the communication demands of the environment, the attitudes and behaviours of others in the individual's environment, and other social factors. Hétu et al. (1993) also found that acquired hearing loss can have a serious impact on close relationships, as family members or partners often bear the brunt of communication difficulties. The ICF framework includes these concepts, offering a systematic way to understand and describe various aspects of functioning in everyday life.

Cieza et al. (2016) developed the ICF linking rules to allow researchers and clinicians to systematically link clinical concepts and outcome measures to specific ICF categories. This has allowed comparisons of health-related information across studies and clinical settings. Stamm et al. (2007) found that ICF categories showed strong correlations with models used in occupational therapy and rehabilitation, providing support for the use of ICF in interdisciplinary clinical practice.

2.2 Development and Validation of the ICF Core Sets for Hearing Loss

2.2.1 Development Process

The ICF is a comprehensive and detailed framework; however, with more than 1,400 categories, it is difficult to use in everyday clinical practice. To improve usability, condition-

specific ICF Core Sets have been developed to identify the most relevant categories for each health condition. The ICF Core Sets for Hearing Loss were developed through an elaborate international process, led by Danermark et al. (2013). The process consisted of four major steps: reviewing existing research, gathering opinions from experts worldwide, discussing with people with hearing loss, and conducting clinical studies. All these steps were validated in an international consensus conference where the final Core Sets were approved.

The systematic literature review phase was conducted by Granberg et al. (2014a) to identify ICF categories across body functions, activities, and participation, and environmental factors that were most frequently documented in the hearing loss research literature. The international expert survey reported in Granberg et al. (2014c) collected opinions from audiologists, ear specialists, and rehabilitation professionals across countries on the ICF categories they considered most important in medical practice. Granberg et al. (2014b) attempted to capture the patient perspective through qualitative interviews with adults with hearing loss to identify the functional domains of highest personal importance. Granberg et al. (2014d) extended the use of the ICF categories to developing countries by investigating adults with hearing loss in South Africa. The major categories were similar to those in high income countries, but some results were affected by local social and environmental conditions.

Overall, the preliminary results indicate considerable overlap between stakeholder groups, although clinicians and patients differed in the prioritisation of categories. These differences suggest that functional impact cannot be fully understood solely from professional perspectives and emphasize the importance of patient-derived priorities.

The joint conference combined the results of the four preparatory studies and developed two ICF Core Sets for Hearing Loss. The ICF Core Set is a full set of 117 categories designed for

multidisciplinary teams to use for comprehensive assessment. The Brief ICF Core Set comprises 27 categories and was developed as a basic standard for describing the functioning of adults with hearing loss (Danermark et al., 2013; Granberg, 2015).

The brief Core Set includes seven body functions (such as hearing functions, emotional functions, and attentional functions), four body structures (such as structures of the middle and inner ear), nine activity and participation categories (such as communication, interpersonal relationships, and employment), and seven environmental factors (such as family attitudes, societal attitudes, and health services).

2.2.2 Validation Studies

The Brief ICF Core Set was later shown to be useful and valid in different populations and clinical settings. Alfakir et al. (2015) conducted a pilot study with 49 older adults in an audiology clinic and found that 18 of the 27 Brief Core Set categories were commonly documented in routine clinical records. Their analysis also identified four major factors that accounted for 59.8% of the variation in the ratings, indicating that the Core Set captures distinct aspects of the impact of hearing loss on daily functioning.

Van Leeuwen et al. (2017) validated the Comprehensive and Brief Core Sets using clinical documentation of 176 adult outpatients and identified 23 of 27 Brief Core Set categories addressed in standard clinical records. This study also found associations between help-seeking barriers and the environmental factor categories of the Core Set, indicating its relevance to understanding patterns of service utilization. In another scoping review, Van Leeuwen et al. (2018) systematically reviewed the coverage of ICF domains in the hearing loss literature and confirmed that the Core Sets comprehensively cover the complexity of the impact of hearing loss across domains of

functioning relevant to adults. Validation of the Brief ICF Core Set for Hearing Loss was performed by Karlsson et al. (2020) in an international study across four continents. The study found the Core Set was reliable and relevant for clinical use, but also identified some categories, particularly those relating to thinking and emotional functioning, needed clearer definitions to be used more effectively in practice. Karlsson et al. (2021) developed and validated the Hearing Functioning in Everyday Life Questionnaire (HFEQ), an ICF-based self-report instrument developed for systematic assessment of daily functioning from the patient's perspective. The HFEQ showed good psychometric properties for internal consistency, test-retest reliability and convergent validity with established measures of hearing handicap.

Although validation studies have consistently demonstrated acceptable psychometric properties and clinical relevance, they have largely assessed whether ICF categories are represented in clinical documentation or self-report measures. Limited evidence exists regarding whether individual ICF categories are perceived equally by patients or whether specific domains are considered more impactful than others.

More recently, Bisharyan et al. (2024) provided further support for the use of ICF based assessments in hearing and functioning. Their study showed good results across different clinical settings and demonstrated the successful use of ICF-based tools in routine audiology practice. Taken together, these studies give good evidence for the validity and utility of the Brief ICF Core Set for Hearing Loss across a wide range of populations and healthcare settings. Despite evidence supporting validity and clinical applicability, these studies primarily examined whether categories were represented in documentation or assessment tools. Limited research has explored whether all categories are perceived as equally important by individuals with hearing loss.

2.3 Patient-Centered Assessment and Perceptual Weightage

2.3.1 Patient-Centered Frameworks in Audiology

The focus on patient-centered healthcare is leading to greater recognition of the importance of understanding how people with hearing loss experience and value the functional consequences of their condition. Traditional audiological assessment is diagnostically important but does not necessarily reflect patients' views on which aspects of functioning are most important to them, leading to a disconnect between clinical priorities and patient needs (Hickson et al., 2014). This has led to the development and use of patient reported outcome measures (PROMs) in audiology.

Cox and Alexander (2002) created and validated the International Outcome Inventory for Hearing Aids (IOI-HA), which has seven domains of outcomes: daily use, benefit, residual activity limitations, satisfaction, residual participation restrictions, impact on significant others, and quality of life. Noble (2002) extended the IOI framework to include interventions other than hearing aids, and to include family members and other close people, thus improving its clinical utility.

However, these tools are clinically useful, but they tend to focus on the benefits of hearing aids and offer a narrow range of outcomes. They do not sufficiently cover the broader domains of functioning described in the ICF framework. Chisolm et al. (2007) conducted a systematic review of hearing aid outcomes and quality of life for the American Academy of Audiology. They concluded that many existing assessment measures do not fully capture the wide range of functional and everyday-life effects of hearing loss.

2.3.2 The Concept of Perceptual Weightage

The concept of weighting has been examined in several disciplines and may have different meanings depending on context. In rehabilitation and health research, weighting often refers to the

relative importance individuals assign to different aspects of functioning, disability, or quality of life. Such priorities may vary according to personal characteristics and contextual demands. Perceptual weightage refers to the level of importance people assign to different areas of functioning when judging their overall experience of disability. In psychoacoustics, methods were developed to measure perceptual weights in order to understand how listeners use different sound cues during complex listening tasks. The concept of weighting in healthcare differs somewhat from psychoacoustic cue weighting. In rehabilitation research, weighting may refer to the relative importance individuals assign to different aspects of health, functioning, or quality of life. This weighting reflects subjective prioritisation and may vary according to contextual and personal factors. Berg (1989) provided an important theoretical framework for understanding how people use different sound cues in listening tasks. The study showed that listeners don't treat all sound cues the same but rely more heavily on those they believe are most helpful and trustworthy. This work was extended by Lutfi (1995), who used statistical methods to investigate the different levels of importance that individuals give to these sound cues.

These methods were used by Alexander and Lutfi (2004) for comparing the listening strategies of people with hearing loss and those with normal hearing. Their research found hearing ability affects the way people prioritise different sound cues. Doherty and Turner (1996) also used statistical techniques to investigate how listeners use different aspects of speech sounds in speech perception. They found that people weight different sound clues differently, and that hearing loss can affect these patterns of listening.

In health preference research and quality-of-life work, similar concepts have been studied outside of psychoacoustics. Research on patient priorities indicates that individuals often weigh communication, emotional function, and participation restrictions quite differently in judging the

overall impact of chronic conditions. However, these approaches have rarely been applied specifically to ICF categories in hearing loss populations. While formal psychoacoustic techniques for quantifying perceptual weights are common in speech and hearing science, the conceptual counterpart, i.e., the notion that individuals differentially weight different functional domains, has been relatively neglected in the context of ICF-based functional assessment. Cox and Alexander (2002) suggested that patients give different weights to different outcome domains when judging the overall benefit of hearing aids, but did not formalize this into a separate assessment concept. Noble and Hétu (1994) also noted that different effects of hearing loss may be perceived as more important by people according to their social roles, communication needs, and daily environments, but did not develop formal methods to measure these differences.

Kochkin (2009) reviewed 25 years of MarkeTrak survey data and found that the emotional and social impacts of hearing loss varied by factors such as age, gender, and hearing loss severity, suggesting that different groups may assign varying levels of importance to different functional difficulties. Chisolm et al. (2007) also emphasised the inclusion of patient priorities in selection of outcome measures and clinical decision-making. But they observed a gap between clinical practice and what patients themselves consider important.

2.4 Hearing Handicap and Patient Priority Measures

To assess perceived hearing related difficulties and functional consequences, a number of self-report instruments have been developed. Instruments include the Hearing Handicap Inventory for Adults (HHIA), Hearing Handicap Inventory for Elderly (HHIE), Speech, Spatial, and Qualities of Hearing Scale (SSQ), and Abbreviated Profile of Hearing Aid Benefit (APHAB), which assess communication difficulties and psychosocial effects. While these measures are good

at capturing the patient experiences, they are largely domain-specific and do not provide a comprehensive assessment of broader functioning across ICF components. Moreover, these measures usually assume an equal contribution of the questionnaire domains and rarely investigate whether patients attach different values to some areas of functioning.

2.5 Sociocultural and Demographic Influences on Functional Impact

2.5.1 Occupational Demands

Age is an important determinant of which functional domains are prioritised by persons with hearing loss. Younger working adults tend to value communication at work, career growth and social interaction with friends and colleagues more. But older people tend to value safety, communication with family members, and clarity of health information (Chisolm et al., 2007; Noble & Hétu, 1994). According to Hickson et al. (2014) the effectiveness of using hearing aids may depend on age and this is related to users' confidence in using the device, their motivation and the personal goals they set in their daily lives. These age-related differences in general suggest that different age groups may value aspects of the ICF framework differently, which is important to take into account when planning personalised hearing rehabilitation.

2.5.2 Gender Differences

Many studies have reported gender differences in the functional impact of hearing loss . Kochkin (2009) found that women with hearing loss had higher emotional distress and social handicap than the men with similar audiometric profiles, perhaps associated with gender differences in social communication roles, emotional expression and help-seeking behaviour. Hickson et al. (2014) reported that gender influences not only the perceived impact of hearing loss but also the factors leading to successful rehabilitation outcomes. Ghai (2002) also noted that

gender interplays with cultural expectations to shape the experience of disability and that the experience of women in many Indian communities is doubly-disadvantaged by gender norms and the stigma of disability.

2.5.3 Cultural and Sociocultural Factors

The cultural context has a strong influence on how people conceptualise, experience and report functional limitations associated with disability. Üstün et al. (2003) emphasised that the ICF framework is universally applicable, but should be interpreted in the context of cultural differences in the meanings and implications of disability in societies. Cross-cultural research has documented a wide variation in the relative importance of different functional domains, with some cultural traditions emphasising the autonomy and independent functioning of the individual. Others, on the other hand, focus on community integration, collective decision-making and interdependence (Ingstad & Whyte, 1995).

A cross-cultural study on social representations of hearing loss in India, Iran, Portugal and the United Kingdom was conducted by Manchaiah et al. (2015). Indian participants had significantly more positive associations with hearing loss than participants from other countries, and exhibited different patterns of stigma, coping and family involvement. The authors suggested that these differences may be due to cultural norms around interdependence in families, acceptance of disability, and religious or spiritual explanations for health conditions. The results suggest that the perceptual weightage of ICF domains for Indian adults may be a reflection of culturally specific priorities that are not captured in the studies done in the western high-income contexts.

In India, family-oriented decision-making systems, collectivistic cultural values, socioeconomic inequalities, and linguistic diversity can influence the experience and meaning of hearing loss. Hence, the relative importance of different aspects of functioning may differ from

that observed in Western health care settings. These are highly relevant factors in the experience of hearing loss and its management in everyday life (Ghai, 2002; Ingstad & Whyte, 1995). Religious and spiritual beliefs can affect how people view disability, look for help, handle stress, and talk about their limitations. This is further compounded by India's linguistic diversity, in which a person may be proficient in his mother tongue but may have difficulties in official/dominant languages, which may affect the experience and rating of language-related areas in the ICF framework (Manchaiah et al., 2015).

The functional and psychosocial consequences of hearing loss in India are being studied to identify patterns of consequences useful for ICF based assessment. Korada et al. (2012) employed the Hearing Handicap Inventory for Adults to study adults with unilateral sensorineural hearing loss. They found that emotional difficulties were more frequently reported than social difficulties and that the level of education of a person influenced the level of social difficulty experienced. These results suggest that the emotional consequences of hearing loss may be particularly salient in the Indian context, and education may play a role in shaping how individuals experience its effects in different spheres of life. Garg et al. (2009) reviewed the burden, prevention, and control of deafness in India, highlighting that existing services are inadequate to address the magnitude of the problem and that culturally appropriate approaches to assessment and rehabilitation are needed. The National Sample Survey Office (2018) data indicated that the burden of hearing disability was significantly higher among the rural population and the population with lower levels of education. Akhtar et al. (2024) further demonstrated convergence of economic, geographic and cultural barriers to hearing healthcare in rural Indian communities. Singh et al. (2025) reported additional evidence of associations between hearing loss and cognitive decline in an Indian cohort. This

finding underscores the interconnectedness of sensory, cognitive and functional domains that the ICF framework uniquely captures.

2.6 Audiological Variables Influencing Functional Impact

2.6.1 Hearing Severity

It is the most important factor in determining the functional consequences of hearing loss. Audiometric thresholds are a measure of the degree of auditory impairment, but increasing severity of hearing loss is often associated with more general difficulties beyond reduced audibility. People with more severe hearing loss tend to experience more communication breakdowns, less participation in social and work activities, emotional problems, and poorer quality of life. These consequences are reflected in various domains of the ICF framework. These domains are body functions, activities and participation, and environmental factors.

Chisolm et al. (2007) conducted a Systematic review of hearing aid outcomes and quality of life. They found that more severe hearing loss was associated with more activity limitation, participation restriction and poorer health-related quality of life. The authors pointed out that hearing loss affects communication efficiency, social relationships and psychosocial well-being, which indicates the multidimensional nature of auditory disability. Similarly, Hickson et al. (2014) noted that more severe hearing impairment is associated with increased self-reported communication problems and greater restrictions in daily activities, which may negatively influence emotional functioning and social participation.

The World Health Organization (2021) also recognizes that untreated hearing loss may lead to significant communication difficulties, social isolation, educational disadvantages, reduced employment opportunities, and psychological consequences. These effects closely correspond to

several categories within the Brief ICF Core Set for Hearing Loss, particularly those related to hearing functions, listening, conversation, employment, community life, emotional functioning, and environmental support systems. The ICF framework, therefore, provides an appropriate structure for understanding how increasing hearing severity may influence functioning across multiple dimensions of daily life rather than solely affecting auditory sensitivity.

2.5.2 Duration of Hearing Loss

People may also experience and perceive functional difficulties differently, depending on the duration of their hearing loss. While the degree of hearing impairment is a measure of the severity of hearing loss, the duration of hearing loss may be an independent factor influencing adaptation, coping strategies, communication behaviours, and participation patterns.

Noble and Hétu (1994) argued that the impact of hearing loss changes as individuals experience repeated communication difficulties in various social and occupational settings. Extended communication difficulties can lead to a build-up of participation restrictions, increased listening effort, communication fatigue and reduced confidence in social interactions. Some individuals may gradually withdraw from demanding communication situations, resulting in less social engagement and more psychosocial burden.

At the same time, the literature on psychosocial adaptation suggests that individuals can develop compensatory strategies to reduce some of the functional consequences of hearing loss . They may involve visual cues, changes to the environment, communication repair strategies, and greater use of social support. Therefore, two people with similar hearing thresholds but different durations of hearing loss may perceive and prioritise functional difficulties differently. Length of hearing loss may therefore influence disability perceptions independent of hearing severity, explaining differences in functional experiences between individuals.

The ICF framework may reflect duration-related effects of the condition in body functions, activities and participation and environmental factors. Long-term hearing loss can affect emotional functioning, interpersonal relationships, communication participation, educational and occupational engagement, and interactions with environmental support systems. Therefore, the duration of hearing loss is an important factor in understanding the patient perception of functional impact.

2.5.3 Hearing-Aid Usage

Adults with hearing loss are frequently prescribed hearing aids, which play a significant role in reducing communication difficulties and enhancing engagement in everyday activities. However, the functional benefits of hearing-aid use are more than increased audibility, and may affect how people perceive and prioritise the effects of hearing loss.

The International Outcome Inventory for Hearing Aids (IOI-HA) was designed by Cox and Alexander (2002) to measure outcomes associated with hearing-aid use in the domains of daily use, benefit, residual activity limitations, residual participation restrictions, satisfaction, quality of life and impact on significant others. Their findings underscored the importance of considering patient-reported outcomes when assessing hearing aid benefit, as improvements in hearing ability may not always translate into perceived functional benefit. Hickson et al. (2014) suggested that hearing aid outcomes are highly variable between individuals and this variability can be related to factors such as communication needs, expectations, motivation, self-efficacy and environmental factors. While some report substantial improvements in communication, social participation, and emotional well-being after hearing-aid use, others still experience restrictions in participation and difficulties in communication despite amplification.

Therefore, hearing aid use may affect perceptions of communication difficulties, environmental barriers and participation restrictions. Amplification influences opportunities for communication and interactions in everyday environments so the functional impact experienced by hearing aid users may differ from non-users. The use of hearing aids may impact on the ICF categories of listening, conversation, communication technologies, family relationships, community participation, environmental support and health care services.

Even though amplification may be beneficial, the experiences of patients vary widely, making it important to consider hearing-aid use along with other demographic and audiological factors when investigating functional outcomes. Understanding how hearing-aid use influences perceptions of functioning may contribute to more individualized and patient- centered approaches to hearing rehabilitation.

2.7 Rationale for the Present Study

The literature review above identifies critical gaps that the present study is poised to address. First, the Brief ICF Core Set for Hearing Loss has been developed and validated through rigorous international processes, but the vast majority of validation studies have been conducted in high-income Western countries (Granberg et al., 2014a, 2014b, 2014c; Karlsson, 2020). India, which bears a disproportionate share of the world's burden of hearing loss, is grossly under-represented in this literature. The applicability of ICF Core Set priorities to the Indian sociocultural context cannot be assumed without direct empirical investigation (Olusanya et al., 2019).

Second, the validation studies conducted to date have primarily focused on the content validity and clinical utility of the Core Sets (Alfakir et al., 2015; Granberg et al., 2014a, 2014c; Van Leeuwen et al., 2017, 2018). While patient experiences contributed to Core Set development,

little evidence exists regarding the relative salience patients assign to individual ICF categories. Whether all categories contribute equally to perceived disability remains unknown. Although the patient perspective has been integrated into the development process (Granberg et al., 2014b), no study has systematically investigated how patients themselves attribute differential importance, i.e., perceptual weighting, to the 27 categories of the Brief Core Set. This is a major shortcoming in patient-centered assessment, as knowledge of patients' priorities is essential for designing rehabilitation strategies that address individuals' most pressing functional concerns (Cox & Alexander, 2002; Noble, 2002).

Third, individuals with hearing loss are well known to be heterogeneous with regard to demographic and audiological factors. However, few studies have investigated the effect of gender, educational status, occupation, residential location, monthly income, severity of hearing loss, duration of hearing loss and hearing-aid use on perceptual prioritisation patterns (Manchaiah et al., 2015). Awareness of these patterns is vital for the development of targeted, subgroup-specific rehabilitation strategies that are aligned with the functional concerns of different patient populations and clinical priorities.

Fourth, the Indian healthcare context presents both opportunities and challenges for the use of the ICF framework which needs to be studied in detail. The diversity in languages, joint-family systems, socio-economic backgrounds and cultural perceptions of disability in India may have a profound impact on people’s experiences and the prioritisation of the effects of hearing loss (Garg et al., 2009; Ghai, 2002; Ingstad & Whyte, 1995). Evidence from Indian patients is essential for designing hearing care services that are truly appropriate to local needs.

This study fills these gaps by providing a systematic analysis of the importance ratings of the 27 categories of the Brief ICF Core Set for Hearing Loss among Indian adults with hearing

loss. The results can help develop more patient-centered hearing assessment methods and rehabilitation programs that are better suited to the real-life needs of Indian adults with hearing loss. Findings may additionally contribute toward refining future ICF-based assessment frameworks by identifying domains with consistently greater perceived relevance across demographic and audiological subgroups.

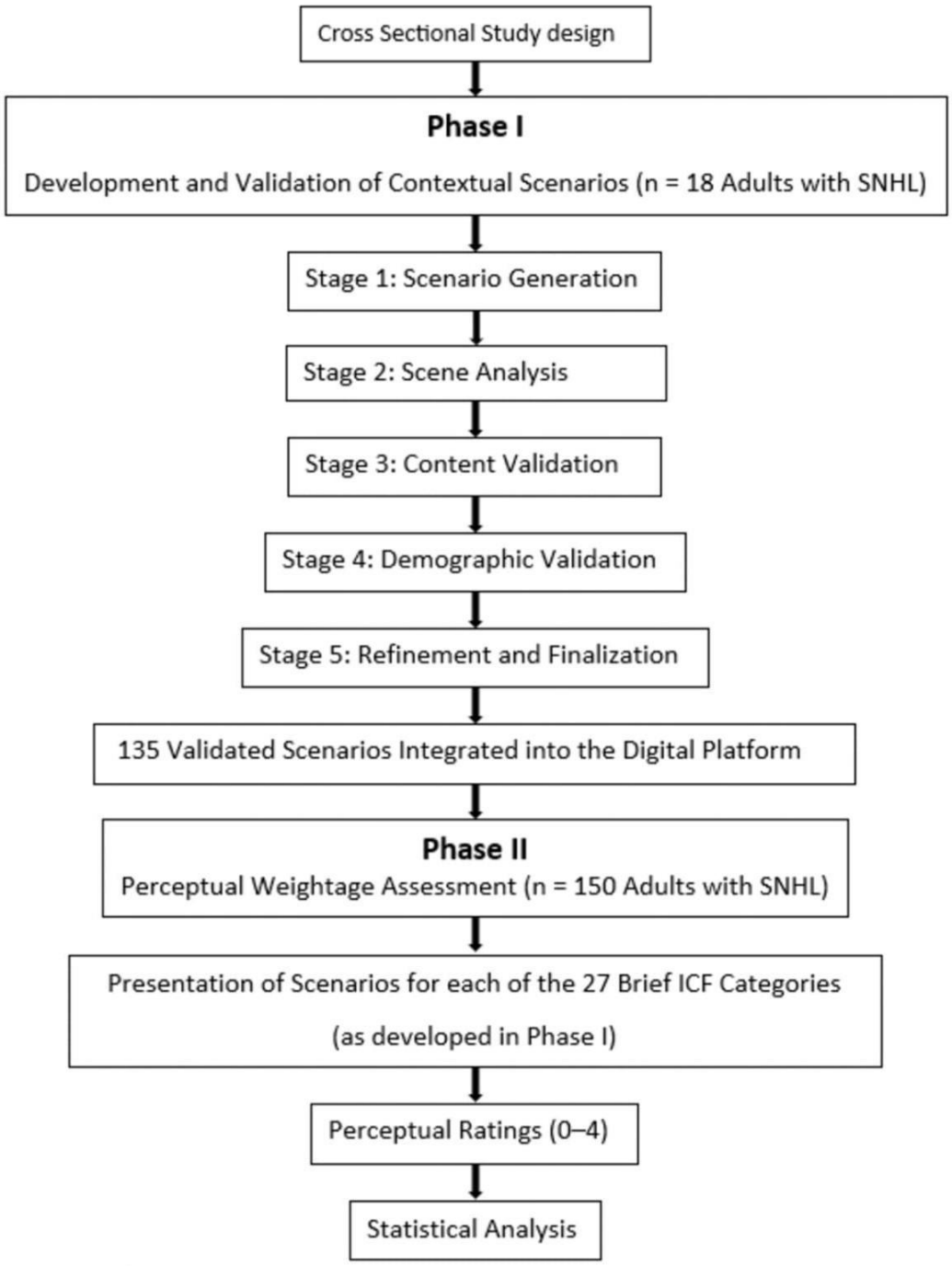
Chapter III

METHODS

The present study employed a two-phase cross-sectional observational design to investigate the perceptual weightage assigned to categories within the Brief ICF Core Set for Hearing Loss. Phase I involved developing and validating contextual scenarios for the digital assessment platform. Phase II involved administration of the finalized platform to adults with hearing loss to assess perceptual ratings across ICF categories and examine relationships with demographic and audiological variables. This design facilitated the contextual adaptation of ICF content prior to evaluating perceptual prioritization patterns in the Indian population. Figure 3.1. shows the flowchart outlining the phases involved in the present study.

Figure 3.1

Overall Study Design and Flow of Procedures



3.1 Phase I: Development and Validation of Contextual Scenarios

The concept elicitation phase included 18 adults with bilateral sensorineural hearing loss. We recruited participants using stratified purposive sampling procedures to ensure representation across diverse demographic and experiential profiles relevant to hearing-related functioning. Stratification was performed into nine cells based on age and educational status: young adults (18–39 years), middle-aged adults (40–59 years), and older adults (≥60 years), and primary, secondary, and graduate-level education. Two participants were recruited for each cell. Additional heterogeneity was preserved across gender, residential background (urban/rural), and occupational status.

Participants were eligible if they

1. were native Kannada speakers within 18-75 years of age;
2. had bilateral sensorineural hearing loss with pure-tone average thresholds between 26 and 90 dB HL;
3. showed sufficient cognitive and linguistic capacity to participate in semi-structured interviews.

Exclusion criteria included individuals with unilateral hearing loss, conductive or mixed hearing loss, neurological disorders, significant cognitive impairment, or severe psychiatric conditions.

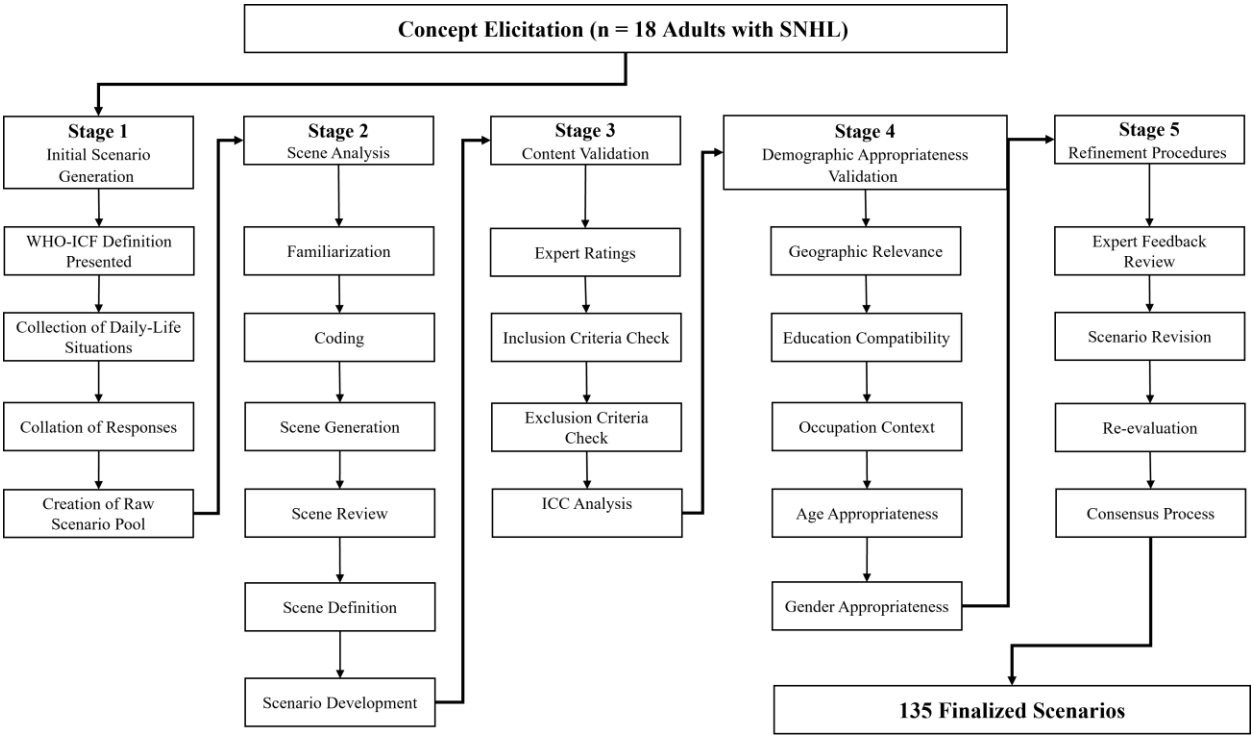
A stratified purposive sampling framework was adopted to maximize variability of lived experiences and facilitate representation of contextual hearing-related functioning across demographic and sociocultural backgrounds.

Procedures for scenario development and validation were conducted prior to the main study to ensure the digital assessment platform was content-relevant and contextually appropriate. The

flowchart below (Figure 3.2) provides an overview of the Stages involved in the development and validation of the contextual scenarios.

Figure 3.2

The stages involved in developing and validating the contextual scenarios



3.1.1 Stage 1: Initial Scenario Generation

Eighteen adults with bilateral sensorineural hearing loss who took part in the concept elicitation phase were asked to provide real-life situations that relate to the categories included in the Brief ICF Core Set for Hearing Loss. The official WHO-ICF definitions of the Brief ICF Core Set categories were presented to each participant, who was then asked to identify realistic, detailed situations from daily life that exemplify the corresponding functional domains within the ICF framework. Participants were invited to describe hearing-related situations they experienced in their daily activities, interpersonal interactions, work settings, and environmental contexts. These descriptions were recorded and subsequently used as a qualitative data set for scenario

development. The answers obtained were the basis for generating contextualized scenarios to be incorporated into the digital assessment platform.

A stratified sampling framework was used to optimize diversity of real-world experiences and improve representation of contextual hearing-related functioning across demographic and sociocultural backgrounds. The ecological validity and contextual relevance of the scenarios developed were enhanced by this approach.

Example: b126 – Temperament and Personality Functions

Step	Procedure	Example / Outcome
1. Presentation of the WHO-ICF Definition	Participants were presented with the official WHO-ICF definition of the target sub-domain and asked to describe relevant real-life situations.	"General mental functions related to the constitutional disposition and personality characteristics of an individual." Prompt: "Can you describe real-life situations from your daily routine where hearing-related difficulties may influence your feelings, behavior, confidence, or reactions?"
2. Collection of Raw Situations	Participants from diverse demographic backgrounds described hearing-related situations encountered in everyday life.	Young rural farmer: "When there are lots of people talking at the village meeting, I get annoyed because I can't understand properly." Middle-aged urban professional: "I get frustrated when discussions occur at the office, and colleagues do not repeat information." Young homemaker: "I feel bad when family members think I ignored them because I did not hear them." Older adult: "I avoid social gatherings because I feel embarrassed when I cannot follow conversations."
3. Collation of Responses	Responses were recorded, reviewed, and grouped across demographic profiles. Similar situations reflecting common experiences were retained.	A pool of hearing-related situations involving frustration, reduced confidence, embarrassment, withdrawal from conversations, and altered social participation was compiled for further analysis.
4. Progression to Stage 2	The compiled qualitative dataset was prepared for thematic analysis.	Responses were coded, categorized, and analyzed using Braun and Clarke's thematic analysis framework to develop representative contextual scenarios.

3.1.2 Stage 2: Scene Analysis

Qualitative responses obtained during the scenario generation stage were analyzed using the six-stage framework of Braun and Clarke (2006):

1. Familiarising yourself with the data by reading it repeatedly.
2. Generating initial codes.
3. Searching for themes.
4. Reviewing themes.
5. Defining and naming themes.
6. Writing the report.

The responses were analysed by two independent researchers (post-graduate audiologists), who developed initial codes, identified emerging themes and refined the categories of scenes. The scene analysis identified common situational elements, contextual factors and functional challenges across participant narratives within each demographic profile. The research team then created representative scenario descriptions based on the identified themes, including relevant contextual factors and potential impacts on hearing-loss-related functioning for each pairing of an ICF category with a target demographic profile. This process ensured that the scenarios developed had ecological validity and reflected the contextual experience of different demographic groups.

Example

Step 1: Raw responses from participants: Participants were given the WHO-ICF definition of the target sub-domain and asked to describe situations in their daily lives that would be reflected in the domain.

b126 – Temperament and Personality Functions: Sample responses from young rural farmers, professionals, homemakers, and older adults were:

"I get annoyed when I don't understand conversations at family gatherings."

"I get frustrated when people repeat things a lot."

"I stay away from social situations because talking is hard."

"I feel less secure when I misinterpret other people."

Step 2: Initial coding: Two researchers independently reviewed responses and developed initial codes.

Table 3.1

Initial coding of raw statement

Raw Statement	**Initial Codes**
become irritated during conversation	emotional frustration
avoid social situations	withdrawal behaviour
less confident	reduced self-confidence

Step 3: Scene identification: Similar conceptual codes were grouped into broader scenes.

b126 Temperament and Personality Functions

Codes:

- frustration
- withdrawal
- reduced confidence
- emotional reactions

Theme: Emotional and personality responses to communication difficulties

Step 4: Scene review and refinement: Researchers reviewed the scenes and removed overlapping or ambiguous content.

For instance, “emotional distress” and “feeling sad” were scrutinized for possible overlap with emotional functions (b152) rather than stable temperament or personality-related characteristics. Responses potentially indicative of temporary motivational changes were also examined to avoid overlap with energy and drive functions (b130). Scenes that stressed stable personality-related characteristics, such as reduced confidence, social withdrawal tendencies, and changes in disposition towards communication situations, were retained after review.

Step 5: Representative scenario development: Scenes were translated into scenarios relevant to the context.

Example: b126 Temperament and Personality Functions

Young rural farmer: *"In village meetings and family meetings, you often have difficulty understanding what they are saying. You get frustrated with constant misunderstandings, and so you start to avoid discussions.”*

Step 6. Use on the digital platform: The finalized scenarios were integrated into a customized digital platform and matched to participants based on demographic characteristics.

3.1.3 Stage 3: Content Validation

Content was validated by a panel of 10 qualified audiologists and speech-language pathologists with at least 3 years of clinical experience. The experts were chosen on the basis of their professional expertise and knowledge of clinical assessment and rehabilitation of hearing impairment and communication disorders. All experts received the official WHO-ICF definitions for the target sub-domains, as well as the full lists of inclusion and exclusion criteria for each category prior to the validation process. This was done to keep conceptual consistency and provide a standardised evaluation framework.

To assess the intended ICF sub-domain, experts systematically reviewed each scenario. They rated its appropriateness on a 5-point scale (0–4) according to the WHO-ICF coding framework for disability severity. On this scale, a score of 0 indicated that the scenario was not appropriate. A score of 4, in contrast, indicated that the scenario was highly appropriate and optimally represented the intended sub-domain. Intermediate scores indicated varying levels of conceptual relevance and adequacy as judged by experts.

The explicit listing of inclusion criteria for each category was used to determine whether the scenario adequately represented the sub-domain, and experts indicated whether each criterion was adequately represented in the scenario. Likewise, exclusion criteria were provided, and experts identified whether any content outside the conceptual boundaries of the target domain was unintentionally incorporated. This procedure provided a systematic way to assess both content relevance and domain specificity.

Inter-rater reliability was assessed by calculating the Intraclass Correlation Coefficient (ICC) to quantify agreement between experts. The analysis yielded an ICC of 0.89, indicating excellent inter-rater reliability and high consistency among evaluators. The results supported the reliability and robustness of the content validation procedure. Scenarios were considered eligible for progression to the subsequent Stage only if all predefined criteria were satisfied:

1. mean appropriateness rating of at least 3.0,
2. at least one of the representations of the required eligibility criteria, and
3. no exclusion criteria.

Scenarios meeting these criteria were retained for validation of demographic appropriateness, and those that did not meet one or more criteria were revised or discarded based on expert feedback.

Example: b126 – Temperament and Personality Functions

Validation Component	Outcome
Scenario	"During a village meeting or family gathering, you often find it difficult to understand conversations. Because of repeated misunderstandings, you feel less confident and gradually avoid participating in discussions."
Inclusion criteria represented	Introversion, Confidence
Inclusion criteria not represented.	Extraversion, Agreeableness, Conscientiousness, Psychic stability, Emotional stability, Openness to experience, Optimism, Novelty seeking, Trustworthiness
Exclusion criteria present	None
Exclusion criteria absent	Intellectual functions (b117), Energy and drive functions (b130), Psychomotor functions (b147), Emotional functions (b152)
Expert ratings (0–4 scale)	4, 4, 3, 4, 3, 4, 4, 3, 4, 4 (Rating from 10 experts)
Mean appropriateness score	3.7
Decision	Retained
Justification	The scenario adequately represented personality-related responses to communication difficulties while avoiding content outside the conceptual scope of b126.

3.1.4 Stage 4: Demographic Appropriateness Validation

The same expert panel evaluated the appropriateness of each scenario for its intended target profile on five important demographic dimensions: geographic location relevance, compatibility with educational background, occupational context accuracy, suitability of age-appropriate activities, and gender-specific considerations.

Each scenario was systematically assessed to establish whether the contextual situations adequately represented the characteristics and real-life experiences associated with the intended demographic profile. The evaluation process confirmed that the scenarios were culturally appropriate, contextually meaningful, and reflective of the daily functional experiences of the target population.

All five demographic dimensions were rated on the same five-point (0–4) scale used in the previous validation procedures. A score of 0 meant "Not appropriate or no relevance" and a score of 4 meant "Highly appropriate or fully relevant". Intermediate scores suggested differing degrees of contextual appropriateness and demographic relevance.

Experts independently assessed each scenario for the degree to which it reflected the targeted participant characteristics on the specified demographic dimensions. Appropriateness of the scenarios for progression to the next stage of validation was assessed using mean ratings for each demographic dimension.

Scenarios with a mean rating of ≥3.0 on all five dimensions were deemed sufficiently appropriate to move forward to refinement and finalisation. Scenarios that did not meet one or more criteria were reviewed, revised and re-evaluated before being considered for inclusion in the assessment platform. This validation process ensured that the final scenarios remained demographically matched, contextually realistic and representative of the intended participant groups.

Example: b126 – Temperament and Personality Functions

Component	**Evaluation**	**Result**
Intended Target Profile	Demographic profile	Older female homemaker with primary education from a rural village
Proposed Scenario	Context evaluated	"You find it increasingly difficult to follow conversations at family get-togethers and so gradually lose confidence and do not join in discussions with relatives."
Geographic Location Relevance	Appropriate for a rural context	✓ (Family gatherings are common in rural communities)
Educational Compatibility	Appropriate for the primary education level	✓ (No advanced literacy or educational demands)
Occupational Context	Appropriate for the homemaker role	✓ (Reflects domestic and family interactions)

Component	Evaluation	Result
Age-Appropriate Activities	Suitable for older adults	✓ (Family-centered participation relevant to older adults)
Gender Appropriateness	Suitable for female participants	✓ (Reflects social experiences commonly encountered by female homemakers)
Expert Ratings	Mean appropriateness score (0–4 scale)	3.7
Validation Decision	Retained/Rejected	Retained
Rationale	Expert consensus	The scenario accurately reflected the intended demographic profile and realistically portrayed the social experiences of the target population.

Note. Experts independently rated demographic appropriateness on a 0-4 scale across five dimensions: geographic location relevance, educational compatibility, occupational context, age appropriateness, and gender appropriateness. Scenarios were retained when the mean rating was ≥ 3.0 across all dimensions.

3.1.5 Stage 5: Refinement Procedures

Scenarios that did not meet the required inclusion/exclusion criteria or were scored low by experts (mean rating ≤ 2.5) were iteratively refined before being considered for final inclusion into the assessment platform. Detailed initial analysis of the expert feedback comments was performed to identify specific deficiencies for each scenario. The identified concerns were categorised into the following: content validity, demographic inappropriateness, contextual irrelevance, and linguistic clarity.

Appropriate changes were made in the scenarios based on the comments and suggestions of the experts, without compromising the authenticity of the theme and context of the original scenarios. The revision process involved improving wording, enhancing context descriptions, ensuring appropriate demographics and clarifying functional situations related to hearing loss.

The revised scenarios were then reviewed by a subsample of 10 expert validators using the same standardised validation procedures and rating scales as in previous Stages. The scenarios were accepted only at the end, when all pre-defined validation criteria were satisfied.

Where there was consistent disagreement between experts (coefficient of variation > 0.30) facilitated consensus meetings of representative expert subgroups were held to resolve inconsistencies in interpretation and scoring.

This cycle of review, refinement, and re-evaluation was repeated for up to three revision cycles. Scenarios that did not meet validation criteria after three rounds of revision were excluded and replaced with alternative scenarios derived from thematic analysis data.

Example: b126 – Temperament and Personality Functions

Component	Evaluation	Outcome
Original Scenario	Scenario submitted for review	"When the family gets together, you get sad and upset emotionally because you cannot understand the conversations."
Problems Identified	Content validity	The scenario emphasized emotional reactions rather than personality characteristics
	Inclusion criteria issue	Confidence and constitutional response patterns were insufficiently represented
	Exclusion criteria issue	Emotional functions (b152) were inadvertently included
	Linguistic clarity	Wording was overly generalized
Expert Recommendation	Feedback provided	"The scenario seems to be pointing to emotional distress rather than stable personality traits."
Revised Scenario	Modified version	"Ongoing communication problems at family gatherings sap your confidence and lead you to pull away from conversations with others."
Re-evaluation Outcome	Mean rating before revision	2.4
	Mean rating after revision	3.8
Final Decision	Retained/Rejected	Retained
Rationale	Expert consensus	The revised scenario adequately represented personality-related responses, particularly reduced confidence and social withdrawal, while avoiding overlap with emotional functions.

After content validation, demographic appropriateness assessment, and refinement, the finalized scenarios were integrated into the digital assessment platform. We kept only scenarios satisfying all predefined validation criteria. The final scenario set was sufficiently relevant to the content, appropriately demographic, contextually realistic, and consistent across the Brief ICF Core Set categories. These validated scenarios were then used to evaluate the perceptual weightage during the main study. We integrated 135 finalized scenarios into the platform.

3.2 Phase II: Perceptual Weightage Assessment

Phase II of the study consisted of 150 adults with bilateral sensorineural hearing loss. Participants were recruited from the outpatient and extension audiology services at AIISH using stratified purposive sampling. The participants were introduced to the final digital Brief ICF Core Set assessment platform. One contextually relevant scenario matched to participant demographic characteristics was automatically presented for each of the 27 Brief ICF categories. Factors considered in scenario matching included age, education, occupation, residential background, and gender. Participants used a five-point Likert rating scale to rate the extent to which hearing loss affected them in each situation:

0 – Not at all affected

1 – Mildly affected

2 – Moderately affected

3 – Severely affected

4 – Completely affected

An additional option, "Not Applicable," was provided. This option resulted in alternative scenarios being presented for the same ICF category. All answers were automatically registered in the digital platform.

Table 3.8

Distribution of participants across Phase II

Variable	Categories	n
Hearing severity	Mild-moderate	77
	Moderately severe-Severe	73
Duration	≤ 5 years	105
	> 5 years	45
Hearing aid use	Yes	38
	No	112
Education	Primary	60
	Secondary	51
	Graduate and above	39
Occupation	Agriculture	33
	Professional	39
	Homemaker	49
	Others	29
Income	Below ₹10,000	84
	₹10,000–25,000	42
	Above ₹25,000	24
Location	Rural	57
	Semi-urban	31
	Urban	61
Gender	Male	92
	Female	58

3.3 Data Analysis

Data from the digital assessment platform were exported to the Statistical Package for the Social Sciences (SPSS) version 26.0 for statistical analysis. Descriptive statistics including frequencies, percentages, means and standard deviations were calculated for demographic and audiological variables. The perceptual weightage scores of individual Brief ICF Core Set

categories and the four major ICF domains (Body Functions, Body Structures, Activities and Participation and Environmental Factors) were summarised using similar descriptive measures.

The mean scores of perceptual weightage were computed for each of the 27 Brief ICF Core Set categories and used to create a rank order of perceived functional impact. Domain-level summaries were then created by averaging scores across categories within each of the four major ICF domains. Friedman test was used to study the differences in perceptual weightage across categories. Kendall's coefficient of concordance (Kendall's W) was calculated to estimate the magnitude of the observed effect and to determine the degree of agreement among participants.

Demographic variables such as gender, educational status, occupation, residential location and monthly income were analyzed for their influence on perceptual weightage patterns using chi square tests of association. Chi-square tests of association were also performed to assess the association of audiological characteristics such as hearing severity, hearing-aid usage, and duration of hearing loss with perceptual weighting patterns. Separate analyses were conducted for each Brief ICF category to explore whether perceptual rating distributions were different according to demographic variables and audiological characteristics.

3.4 Ethical Considerations

Participants were informed about the aims, procedures, and voluntary nature of participation before enrolment. Written informed consent was obtained before participation. Ethical approval was obtained from the Institutional Ethics Committee of the All India Institute of Speech and Hearing (Approval No.: SH/IRB/M.4/AUD.21/2025-2026).

Chapter IV

RESULTS

The present study aimed to assess the perceptual weightage assigned by adults with hearing loss to categories within the Brief ICF Core Set for Hearing Loss and examine the influence of demographic and audiological variables on functional prioritization patterns.

4.1 Perceptual Weightage Across Brief ICF Categories

Descriptive statistics were computed for all 27 Brief ICF categories. Mean scores were arranged from highest to lowest to identify patterns of functional prioritization in Table 4.1

Table 4.1

Rank order of brief ICF core set for hearing loss categories based on mean perceptual weightage scores among adults with hearing loss.

Rank	Domain*	Sub-domain	Mean Score
1	AP	d360 – Using communication devices and techniques	2.42
2	AP	d115 – Listening	2.31
3	BF	b230 – Hearing functions	2.28
4	AP	d310 – Receiving spoken messages	2.25
5	BS	s260 – Structure of inner ear	2.13
6	AP	d350 – Conversation	2.13
7	AP	d850 – Remunerative employment	2.09
8	BF	b140 – Attention functions	1.94
9	EF	e250 – Sound	1.89
10	EF	e125 – Products and technology for communication	1.89
11	AP	d820 – School education	1.85

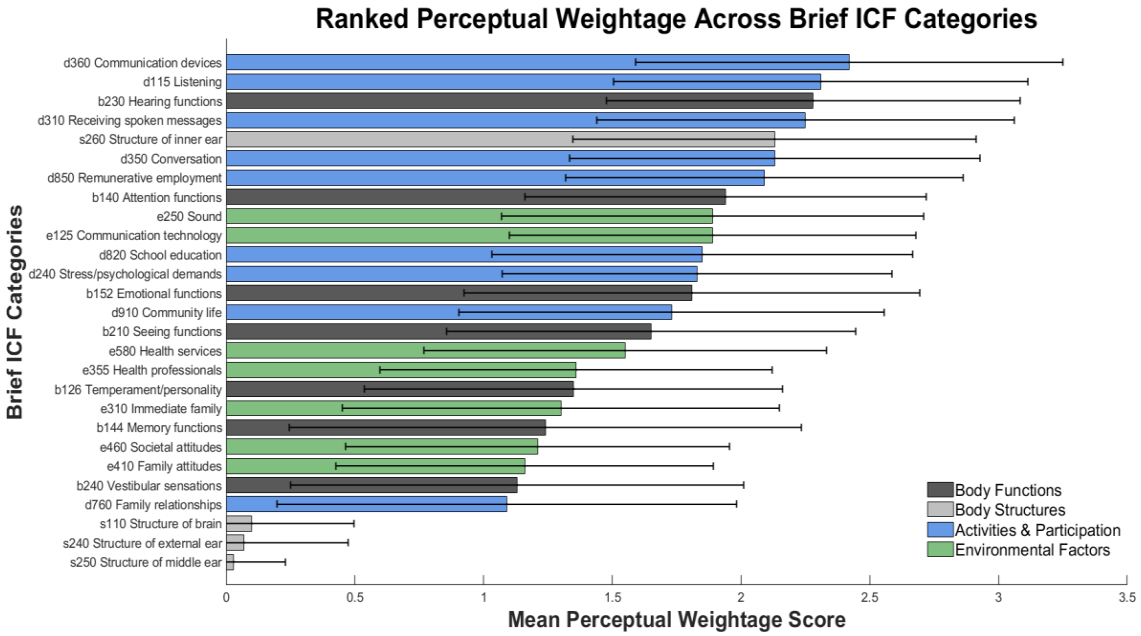
12	AP	d240 – Handling stress and psychological demands	1.83
13	BF	b152 – Emotional functions	1.81
14	AP	d910 – Community life	1.73
15	BF	b210 – Seeing functions	1.65
16	EF	e580 – Health services, systems, and policies	1.55
17	EF	e355 – Health professionals	1.36
18	BF	b126 – Temperament and personality functions	1.35
19	EF	e310 – Immediate family	1.30
20	BF	b144 – Memory functions	1.24
21	EF	e460 – Societal attitudes	1.21
22	EF	e410 – Individual attitudes of immediate family members	1.16
23	BF	b240 – Sensations associated with hearing and vestibular function	1.13
24	AP	d760 – Family relationships	1.09
25	BS	s110 – Structure of the brain	.10
26	BS	s240 – Structure of the external ear	.07
27	BS	s250 – Structure of the middle ear	.03

Note. Higher mean scores indicate greater perceived impact of hearing loss within the corresponding ICF category. Categories are arranged in descending order of mean perceptual weightage scores.
*AP = Activity and participation; BFF = Body function; EF = Environmental factors; BS = Body structures.

The highest perceptual weightage scores were observed for communication activities and hearing-related functioning. “Using communication devices and techniques” (d360), “Listening” (d115), and “Hearing functions” (b230) received the highest mean ratings. Categories associated with body structures demonstrated comparatively lower perceptual weightage scores, with structures of the external and middle ear receiving the lowest ratings (Figure 4.1).

Figure 4.1

Ranked perceptual weightage across Brief ICF categories. Error bars represent ±1 standard deviation. Categories are arranged in descending order of mean scores, with higher scores indicating a greater perceived impact of hearing loss



4.2 Comparison Across Major ICF Domains

Domain-level averages were computed by combining category scores within each major ICF domain. Table 2 presents the mean perceptual weightage scores across the four major ICF domains.

Table 4.2

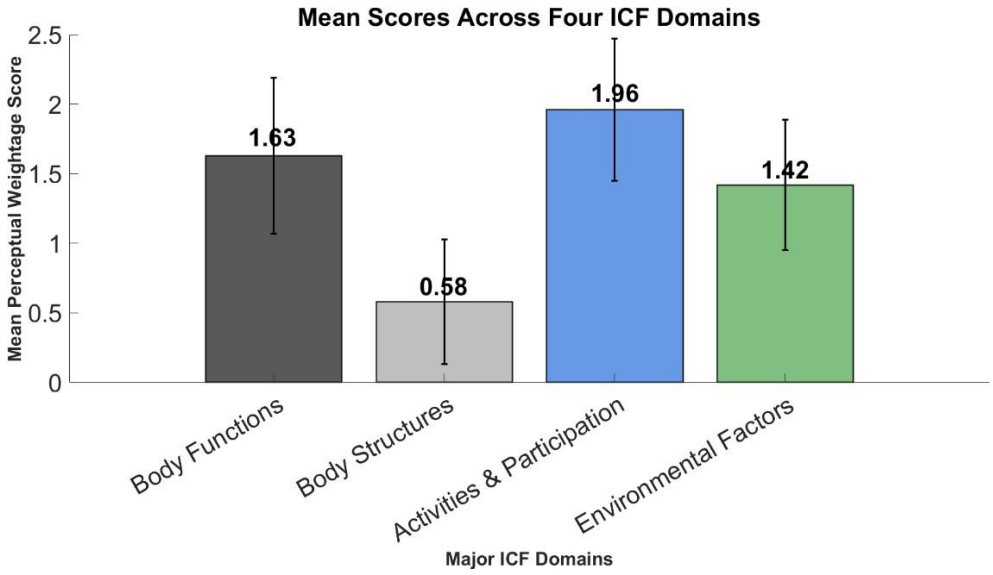
Mean perceptual weightage across major ICF domains.

Domain	Mean	SD
Activities and Participation	1.97	.51
Body Functions	1.63	.56
Environmental Factors	1.42	.47
Body Structures	.58	.45

Participants assigned the highest perceptual importance to Activities and Participation (Mean = 1.97, SD = .51), followed by Body Functions (Mean =1.63, SD = .56) and Environmental Factors (Mean = 1.42, SD = .47). Body Structures demonstrated the lowest perceived impact (Mean = .58, SD = .45). Figure 2 represents the mean perceptual weightage scores across the four major ICF domains, with error bars indicating ±1 standard deviation.

Figure 4.2

Mean perceptual weightage scores across the four major ICF domains. Error bars represent ±1 standard deviation



There was a statistically significant difference in perceptual ratings across the Brief ICF categories, χ^2 (26) = 2042.39, p < .001. Kendall's W indicated a large effect size (W = .524), suggesting significant agreement in prioritization patterns across participants. Therefore, the hypothesis that there will be no significant difference in the perceptual weightage given by adults with hearing loss across the 27 categories of the Brief ICF Core Set for Hearing Loss is rejected.

4.3 Influence of Demographic Variables on Perceptual Weightage

The effect of demographic variables on the perceptual weight given to various Brief ICF Core Set categories was examined using Chi-square tests of association between perceptual weightage scores and gender, residential area, educational status, occupation, and monthly income. The results are presented in Table 4.3.

Table 4.3

Influence of demographic variables on perceptual weightage scores

Domain	Sub-domain	Gender		Location		Education		Occupation		Income	
		χ^2	p	χ^2	p	χ^2	p	χ^2	p	χ^2	p
Body Functions	b126 Temperament & personality	2.100	.552	7.620	.267	2.274	.893	7.871	.547	7.626	.267
	b140 Attention	1.653	.799	17.592	.025*	14.346	.073	8.496	.745	14.545	.069
	b144 Memory	19.948	.001*	9.761	.282	24.968	.002*	57.052	<.001*	10.630	.224
	b152 Emotional functions	2.830	.587	15.017	.059	6.060	.641	13.565	.329	11.500	.175
	b210 Seeing functions	2.400	.494	8.210	.223	4.951	.550	16.881	.051	6.106	.411
	b230 Hearing functions	5.036	.284	9.438	.307	19.753	.011*	17.019	.149	9.168	.328
	b240 Vestibular/hearing sensations	10.064	.039*	13.927	.084	13.827	.086	18.169	.111	23.582	.003*
Body Structures	s110 Structure of brain	3.824	.281	9.769	.135	7.404	.285	17.993	.035*	3.759	.709
	s240 Structure of external ear	4.877	.181	6.949	.326	4.066	.668	7.150	.622	10.454	.107
	s250 Structure of middle ear	1.715	.424	3.410	.492	2.706	.608	4.235	.645	3.298	.509

	s260 Structure of inner ear	4.730	.316	11.332	.184	15.426	.051	10.233	.596	14.254	.075
Activities & Participation	d115 Listening	4.622	.328	12.291	.139	18.798	.016*	17.699	.125	15.023	.059
	d240 Handling stress & psychological demands	2.123	.547	16.349	.012*	29.592	<.001*	12.722	.176	12.034	.061
	d310 Receiving spoken messages	7.745	.101	15.821	.045*	21.673	.006*	17.151	.144	8.266	.408
	d350 Conversation	7.427	.115	12.320	.137	27.578	.001*	20.323	.061	8.275	.407
	d360 Using communication devices & techniques	2.421	.659	13.019	.111	7.240	.511	13.143	.359	13.046	.110
	d760 Family relationships	12.503	.006*	7.687	.262	6.583	.361	19.384	.022*	8.464	.206
	d820 School education	5.170	.270	13.235	.104	11.138	.194	15.037	.239	12.414	.134
	d850 Remunerative employment	3.956	.266	14.859	.021*	21.015	.002*	11.160	.265	5.032	.540
	d910 Community life	3.883	.274	13.391	.037*	21.536	.001*	19.030	.025*	7.217	.301
Environmental Factors	e125 Products & technology for communication	7.952	.047*	8.738	.189	19.935	.003*	12.453	.189	9.115	.167
	e250 Sound	7.506	.111	8.112	.423	16.408	.037*	18.042	.114	7.057	.530

e310 Immediate family	2.394	.495	7.086	.313	4.837	.565	6.345	.705	7.370	.288
e355 Health professionals	.371	.946	13.302	.038*	12.788	.047*	10.256	.330	9.715	.137
e410 Individual attitudes of immediate family members	6.059	.109	6.752	.344	4.156	.656	17.173	.046*	6.466	.373
e460 Societal attitudes	3.491	.322	6.512	.368	5.536	.477	19.744	.020*	6.635	.356
e580 Health services, systems and policies	.531	.912	28.369	<.001*	13.136	.041*	19.887	.019*	13.039	.042*

*Significant at $p < .05$

Several categories also showed significant relationships with residential location. Significant associations were observed for attention functions (b140; $\chi^2 = 17.592$, $p = .025$), handling stress and psychological demands (d240; $\chi^2 = 16.349$, $p = .012$), receiving spoken messages (d310; $\chi^2 = 15.821$, $p = .045$), remunerative employment (d850; $\chi^2 = 14.859$, $p = .021$), community life (d910; $\chi^2 = 13.391$, $p = .037$), health professionals (e355; $\chi^2 = 13.302$, $p = .038$), and health services, systems, and policies (e580; $\chi^2 = 28.369$, $p < .001$). Residential factors had the strongest association with health services and policies, indicating that environmental and contextual experiences associated with hearing loss may differ by residential background.

The effect of occupation was significant only for a small number of categories Significant associations were observed for structure of the brain (s110; $\chi^2 = 17.993$, $p = .035$), family relationships (d760; $\chi^2 = 19.384$, $p = .022$), community life (d910; $\chi^2 = 19.030$, $p = .025$), individual attitudes of immediate family members (e410; $\chi^2 = 17.173$, $p = .046$), societal attitudes (e460; $\chi^2 = 19.744$, $p = .020$), and health services, systems, and policies (e580; $\chi^2 = 19.887$, $p = .019$). The findings suggest that occupational roles may contribute to social participation and environmental experiences in relation to hearing-related functioning.

Monthly income demonstrated significant associations with only two categories: vestibular/hearing-related sensations (b240; $\chi^2 = 23.582$, $p = .003$) and health services, systems, and policies (e580; $\chi^2 = 13.039$, $p = .042$). This finding shows that income has a small effect on how people prioritize different perceptions.

Similarly, gender showed selective effects across categories. Significant associations were observed for memory functions (b144; $\chi^2 = 19.948$, $p = .001$), vestibular/hearing-related sensations (b240; $\chi^2 = 10.064$, $p = .039$), family relationships (d760; $\chi^2 = 12.503$, $p = .006$), and products and

technology for communication (e125; $\chi^2 = 7.952$, $p = .047$). There were no significant gender differences for the other categories.

Taken together, these results suggest that perceptual weightings are influenced by demographic characteristics in a category-specific manner, with educational status and residential location displaying more general influences than gender, occupation, and monthly income. The communication, psychosocial participation, and environmental support domains were particularly sensitive to demographic variation. Therefore, the hypothesis that demographic variables, such as educational status and residential location, will not have a significant effect on the perceptual weight given to categories of the Brief ICF Core Set for Hearing Loss is rejected, while the hypothesis for gender, occupation, and income is accepted.

4.4 Influence of Audiological Variables on Perceptual Weightage Patterns

Chi-square tests of association were conducted between perceptual weighting scores and audiological characteristics, including severity of hearing loss, hearing aid use, and duration of hearing loss, to assess the effect of audiological factors on perceptual weighting of Brief ICF Core Set categories. The results are summarized in Table 4.4

Hearing severity had the greatest and most pervasive effect on patterns of perceptual weightings of the audiological variables tested. The results showed significant associations in almost all categories of Body Functions, Activities and Participation and Environmental Factors. Particularly large effects were observed for hearing functions (b230; $\chi^2 = 87.474$, $p < .001$), listening (d115; $\chi^2 = 80.116$, $p < .001$), sound (e250; $\chi^2 = 78.270$, $p < .001$), structure of inner ear (s260; $\chi^2 = 72.607$, $p < .001$), communication devices and techniques (d360; $\chi^2 = 63.853$, $p < .001$), and remunerative employment (d850; $\chi^2 = 62.021$, $p < .001$).These findings suggest that greater

hearing severity was associated with a more widespread functional impact across communication, participation, and environmental domains.

The duration of hearing loss was also significantly associated with a large number of Brief ICF categories. Significant associations were identified for temperament and personality functions (b126; $\chi^2 = 15.881$, $p = .001$), attention functions (b140; $\chi^2 = 26.202$, $p < .001$), emotional functions (b152; $\chi^2 = 39.388$, $p < .001$), hearing functions (b230; $\chi^2 = 23.028$, $p < .001$), listening (d115; $\chi^2 = 39.365$, $p < .001$), receiving spoken messages (d310; $\chi^2 = 34.283$, $p < .001$), conversation (d350; $\chi^2 = 33.974$, $p < .001$), school education (d820; $\chi^2 = 41.077$, $p < .001$), community life (d910; $\chi^2 = 31.987$, $p < .001$), communication technology (e125; $\chi^2 = 31.440$, $p < .001$), and sound (e250; $\chi^2 = 34.902$, $p < .001$). These findings suggest that long-term exposure to hearing loss may impact perceptions of communication problems and psychosocial functioning.

Table 4.4

Influence of audiological variables on perceptual weightage scores.

Domain	Sub-domain	Hearing Severity		Hearing Aid Usage		Duration	
		χ^2	p	χ^2	p	χ^2	p
Body Functions	b126 Temperament & personality	28.323	<.001*	2.820	.420	15.881	.001*
	b140 Attention	48.328	<.001*	10.072	.039*	26.202	<.001*
	b144 Memory	23.127	<.001*	3.678	.451	19.750	.001*
	b152 Emotional functions	33.344	<.001*	10.847	.028*	39.388	<.001*
	b210 Seeing functions	35.516	<.001*	8.721	.033*	13.150	.004*
	b230 Hearing functions	87.474	<.001*	10.839	.028*	23.028	<.001*
	b240 Vestibular/hearing sensations	12.398	.015*	6.902	.141	2.026	.731
Body Structures	s110 Structure of brain	11.772	.008*	4.308	.230	9.250	.026*
	s240 Structure of external ear	5.925	.115	2.121	.548	2.679	.444
	s250 Structure of middle ear	.955	.620	1.039	.595	.810	.667
	s260 Structure of inner ear	72.607	<.001*	26.190	<.001*	40.552	<.001*
	d115 Listening	80.116	<.001*	19.335	.001*	39.365	<.001*

	d240 Handling stress	42.190	<.001*	7.613	.055	24.942	<.001*
	d310 Receiving spoken messages	56.404	<.001*	10.879	.028*	34.283	<.001*
	d350 Conversation	52.461	<.001*	16.241	.003*	33.974	<.001*
Activities & Participation	d360 Using communication devices and techniques	63.853	<.001*	21.363	<.001*	26.113	<.001*
	d760 Family relationships	15.692	.001*	21.369	<.001*	16.602	.001*
	d820 School education	54.377	<.001*	12.318	.015*	41.077	<.001*
	d850 Remunerative employment	62.021	<.001*	15.374	.002*	29.464	<.001*
	d910 Community life	60.854	<.001*	12.781	.005*	31.987	<.001*
	e125 Communication technology	55.887	<.001*	1.609	.657	31.440	<.001*
	e250 Sound	78.270	<.001*	13.846	.008*	34.902	<.001*
	e310 Immediate family	39.278	<.001*	8.653	.034*	17.697	.001*
Environmental Factors	e355 Health professionals	46.876	<.001*	12.019	.007*	9.379	.025*
	e410 Family attitudes	33.584	<.001*	5.493	.139	9.698	.021*
	e460 Societal attitudes	22.611	<.001*	10.209	.017*	3.968	.265
	e580 Health services	22.392	<.001*	3.980	.264	2.809	.422

*Significant at $p < .05$

Hearing-aid usage demonstrated selective effects across categories. Significant associations were observed for attention functions (b140; $\chi^2 = 10.072$, $p = .039$), emotional functions (b152; $\chi^2 = 10.847$, $p = .028$), hearing functions (b230; $\chi^2 = 10.839$, $p = .028$), structure of inner ear (s260; $\chi^2 = 26.190$, $p < .001$), listening (d115; $\chi^2 = 19.335$, $p = .001$), conversation (d350; $\chi^2 = 16.241$, $p = .003$), using communication devices and techniques (d360; $\chi^2 = 21.363$, $p < .001$), family relationships (d760; $\chi^2 = 21.369$, $p < .001$), community life (d910; $\chi^2 = 12.781$, $p = .005$), sound (e250; $\chi^2 = 13.846$, $p = .008$), and health professionals (e355; $\chi^2 = 12.019$, $p = .007$).

Collectively, audiological variables significantly affect perceptual weighting patterns, with hearing loss severity being the most important, followed by duration. The effects of hearing-aid use were more selective. Hearing-related body functions, communication-related activities, and environmental support categories showed the greatest audiologic variation.

Table 5 summarizes the main findings across the study objectives. Hence, the hypothesis that audiological characteristics, including hearing severity, hearing-aid use, and duration of hearing loss, will not significantly influence perceptual weightage patterns across categories of the Brief ICF Core Set for Hearing Loss is rejected.

Table 4.5

Summary of key findings across study objectives

Objective	Area Examined	Major Findings	Null Hypotheses
Objective 1	Perceptual weightage across Brief ICF categories	The highest perceptual weightage scores were observed for d360 – Using communication devices and techniques (Mean = 2.42), d115 – Listening (Mean = 2.31), and b230 – Hearing functions (Mean = 2.28). Categories related to Body Structures received the lowest ratings. Activities and Participation demonstrated the highest overall domain score (Mean = 1.97), whereas Body Structures showed the lowest score (Mean = 0.58). The Friedman test demonstrated significant differences in perceptual ratings across Brief ICF categories, χ^2 (26) = 2042.39, $p < .001$. Kendall's W (.524) indicated a large effect size and substantial agreement in functional prioritization patterns.	Rejected
Objective 2	Influence of demographic variables	Demographic variables had selective effects on patterns of perceptual weightage. Educational status showed the maximum number of significant associations, followed by residential location. Communication activities, domains of psychosocial participation, and categories of environmental support were particularly sensitive to demographic variation. There were relatively few significant associations for occupation, gender, and income.	Rejected for education and resident location.
Objective 3	Influence of audiological variables	Audiological characteristics were more strongly associated with perceptual weight patterns than demographic variables. The most consistent and pervasive associations across categories were found for severity of hearing loss, followed by duration of hearing loss, whereas hearing aid use had relatively specific effects.	Rejected

Overall, the findings suggest that adults with hearing loss assigned greater perceptual importance to communication and participation-related aspects of functioning. Furthermore, perceptual prioritization patterns appeared to be influenced by both demographic and audiological characteristics, with audiological variables demonstrating comparatively broader effects.

Chapter V

DISCUSSION

The aim of this study was to explore the relative importance of categories within the Brief ICF Core Set for Hearing Loss as perceived by adults with hearing loss, and to investigate the effect of demographic and audiological factors on functional prioritization patterns. The findings provide an overview of the functional priorities perceived by patients in the Indian context and make an important addition to the ever-expanding pool of patient-centered audiological literature.

5.1 Perceptual Weightage Across Brief ICF Categories

The primary aim of the present study was to examine the perceptual weightage assigned by adults with hearing loss to categories within the Brief ICF Core Set for Hearing Loss and to identify patterns of functional prioritization in the Indian context. The results demonstrated clear differences in the perceived importance of ICF categories, indicating that not all aspects of hearing-related functioning were considered equally impactful. Rather, a distinct hierarchy of functional priorities emerged, reflecting the aspects of hearing loss that participants found most impactful in their daily lives.

The 27 Brief ICF categories with the highest perceptual weightage were d360 – Using communication devices and techniques, followed by d115 – Listening, b230 – Hearing functions, and d310 – Receiving spoken messages. These findings suggest that participants primarily perceived hearing loss as a condition that interfered with their ability to communicate effectively in everyday situations. Communication activities depend on individuals' ability to understand spoken messages, engage in conversations, and use communication technologies to remain involved in social, educational, and occupational activities. Consequently, problems in these areas

may be more directly and more frequently experienced than impairments related to underlying body structures or physiological mechanisms.

The salience of communication-related categories is consistent with previous evidence that the most meaningful consequences of hearing loss are often experienced as disruptions to everyday communication rather than awareness of auditory impairment itself (Hickson et al., 2014; Noble & Hetu, 1994). Although hearing loss is a sensory deficit, its real-life effects are typically manifested in problems with speech perception (Aldè et al., 2025) and talking (Marks, 2025), social interactions (Podury et al., 2023), and the performance of social and work roles (Dobie & Hemel, 2004). The present findings therefore support the ICF framework's (World Health Organization, 2001) biopsychosocial view of disability as an interaction between health conditions, activities, participation, and contextual factors, rather than as a purely physiological deficit.

Importantly, the finding that d360 – Using communication devices and techniques was ranked the highest overall. This observation may reflect the growing importance of technology-mediated communication in contemporary society. Mobile phones, video-calling platforms, public address systems, and digital communication technologies have become part of everyday life (Goggin, 2025). Therefore, difficulties in the effective use of these communication channels may have serious consequences for social participation (Palmer et al., 2016), work (Kamal Bahrain et al., 2023), education (Brinia et al., 2022), and access to services (Chang et al., 2025). The high priority of this category highlights the growing importance of assistive technologies and communication support systems in hearing rehabilitation.

The high rank of d115 – Listening and d310 – Receiving spoken messages similarly underscores the importance of auditory communication in day-to-day functioning. Effective

listening is a foundation for many daily activities, such as communication at work, participation in education, family communication, and community engagement (Tennant et al., 2026). Challenges in these domains can result in breakdowns in communication, reduced participation, and increased listening effort and may contribute to psychosocial consequences associated with hearing loss (McNeice et al., 2024).

On the other hand, the lowest perceptual weightage scores were assigned to categories related to Body Structures, particularly s110 – Structure of the brain, s240 – Structure of the external ear, and s250 – Structure of the middle ear. The findings indicate that participants were less concerned with anatomical structures and more interested in the practical, everyday consequences of hearing loss. Most people are unlikely to be aware of the structural abnormalities directly or to interpret their hearing difficulties in terms of anatomy. Instead, their experiences are largely defined by the functional limitations and restrictions of participation that derive from their hearing impairment (Pryce et al., 2025). This finding further supports the usefulness of patient-centered assessment approaches beyond structural and physiological measures.

5.2 Domain-level prioritization patterns

The analysis of the four main ICF domains showed that the mean perceptual weight was highest for Activities and Participation, followed by Body Functions, Environmental Factors, and Body Structures. This hierarchy of domains offers an important insight into the way adults with hearing loss think about the impact of their condition.

The Activities and Participation domain was the most salient, suggesting that participants largely understood that hearing loss affects communication, social participation, education, employment, and community participation (Heffernan et al., 2015). Some of the highest-ranking

categories in this domain include listening, receiving spoken messages, conversation, communication technologies, remunerative employment, and community life. Together the findings suggest that adults with hearing loss attach a high value to consequences that are directly related to their participation in life activities and societal roles.

The high rank of Body Functions is explained by the appreciation of hearing-related impairments, attention requirements, emotional consequences and other psychological factors of hearing loss. Environmental Factors were in the middle, which reflects that the participants acknowledged the importance of communication technologies, good environments, healthcare services, and social support systems, but also considered these factors as less important than direct communication difficulties.

The consistently low rank order of Body Structures supports the view that anatomic abnormalities are usually less salient to patients than their functional consequences. Structural pathology may be clinically important for diagnosis and treatment planning, but it appears to play a relatively small role in patients' subjective perceptions of disability.

5.3 Consistency of perceptual prioritization patterns

The Friedman test revealed statistically significant differences in the perceptual ratings of the 27 Brief ICF categories, indicating that participants did not consider all categories equally important. Furthermore, Kendall's coefficient of concordance revealed moderate-to-large agreement among participants in their prioritization of categories. These observations suggest that the ranking pattern observed was not random but rather a relatively consistent hierarchy of perceived functional impact across the sample.

Participants agreed well on the categories most affected by hearing loss, even though there was variability in their demographic and audiological characteristics. This consistency supports the validity of the observed prioritization pattern and suggests that communication-related activities and participation restrictions are central concerns for adults with hearing loss. This finding supports the potential utility of perceptual weightage approaches in identifying patient-centered priorities for assessment and rehabilitation planning (Feder et al., 2019).

The results of Objective 1 generally indicate that adults with hearing loss tend to rate communication effectiveness and participation-related functioning as more important than structural or anatomical aspects of hearing impairment. These results emphasize the importance of using patient-centered approaches that address practical communication problems and participation outcomes in the assessment and management of hearing loss.

5.4 Influence of Demographic Variables on Perceptional Weightage

The second objective of the present study was to examine the effect of demographic variables like gender, educational status, occupation, place of residence, and monthly income on the perceptual weightage given to categories of the Brief ICF Core Set for Hearing Loss. Results showed that demographic variables exerted selective rather than universal effects on perceptual prioritization patterns. While some categories were strongly associated with demographic characteristics, others seemed relatively consistent across different groups. These findings suggest that there are common experiences of certain aspects of hearing-related functioning across individuals, but demographic variables may affect the perceived importance of specific functional experiences (Bonetti, 2026).

Among the demographic variables studied, educational status was the most strongly associated across Brief ICF categories. Significant relationships were found for categories related to memory functions, hearing functions, listening, stress and psychological demands, receiving spoken messages, conversation, remunerative employment, community life, communication technology, sound, health professionals, and health services.

The results of the present study suggest that educational background may influence the perception of the functional consequences of hearing loss in communication, participation and environmental domains (Blazer et al., 2016).

The correlation between educational status and the communication categories can be explained by variations in the communication requirements experienced in everyday life. Individuals with different educational backgrounds often have different occupational, social, and informational environments, which may affect the extent to which they perceive communication difficulties as disruptive (Kaçar & Okan, 2026). Previous studies have suggested that educational experiences also affect communication expectations, health literacy, access to information, and use of healthcare resources, which in turn influence views of disability and rehabilitation needs (Piao et al., 2023). However, the present findings show an association, not directionality, and do not allow conclusions about whether higher or lower educational attainment is associated with greater perceived impact.

The second most important demographic factor was residential location, which had important associations with attention functions, handling stress and psychological demands, receiving spoken messages, remunerative employment, community life, health professionals, and health services, systems, and policies. The association was strongest for health services and

policies. These results indicate that environmental and contextual experiences surrounding hearing loss may differ across residential backgrounds (Chan et al., 2017).

These variations may be due to differences in communication environments, availability of audiological services, transportation facilities, and social support networks. Communication difficulties may occur in complex occupational and social settings for urban dwellers, while rural dwellers may face barriers to accessing hearing healthcare and rehabilitation services (Whitcomb & Joseph, 2024). Previous research in India has found geographic variation in access to hearing healthcare and hearing-aid use, especially in rural areas (Akhtar et al., 2024). The present findings provide support for the notion that the residential context may be important in how individuals perceive and prioritize hearing-related functional difficulties.

The impact of occupation was mostly evident in social participation and environmental experiences, including family relationships, community life, attitudes of immediate family members, attitudes of society, and health services and policies. Occupational roles often determine communication demands, social interactions, workplace responsibilities, and opportunities for participation. Hence, people from different professions might face different communication challenges and environmental obstacles (Hussein El Kout et al., 2025). Findings suggest that occupational context may impact perceptions of participation restrictions and environmental support systems associated with hearing loss.

Fewer significant associations were found for monthly income, with significant relationships only for sensations related to hearing and vestibular function, and for health services, systems, and policies. This finding may suggest that income has a relatively limited effect on overall perceptual prioritization patterns compared to educational status or residential location. However, access to healthcare services, assistive technologies, and rehabilitation resources is often

determined by financial capacity, which may explain the observed association with health-service-related categories (Soltani et al., 2024).

Specific associations were also found for gender with memory functions, sensations related to hearing and vestibular function, family relationships, and communication products and technology. These findings suggest that there may be differences in how men and women perceive aspects of hearing-related functioning. Previous studies have documented gender differences in communication roles, social expectations, coping strategies, and help-seeking patterns (Hickson et al., 2014). However, the present study does not allow conclusions about the direction or magnitude of these differences, and the findings should therefore be interpreted as evidence of association rather than of a greater or lesser impact in either gender.

5.5 Demographic variability in functional prioritization

In combination, the results suggest that demographic characteristics are a source of variation in how adults with hearing loss perceive and prioritize functional difficulties. Educational level and residential location had a stronger impact than gender, occupation, or monthly income, suggesting that contextual experiences and environmental opportunities may be important factors in shaping perceptions of hearing-related disability.

Importantly, the demographic effects were strongest for communication-related activities, participation domains and environmental factors rather than anatomical or structural domains . This pattern is consistent with the biopsychosocial model of disability proposed by the ICF framework which states that functioning is affected not only by health conditions but also by personal and environmental factors. Thus, the results highlight the need to consider the demographic context when assessing patient priorities and planning rehabilitation interventions.

The present findings may be particularly relevant in the Indian context where there is considerable diversity in educational opportunities, occupations, income levels, residential environments and access to health care services. The diversity of social and cultural settings in India results in a wide variation in communication needs, opportunities for social participation and availability of rehabilitation services. Thus, people with similar audiometric profiles may experience and prioritise hearing-related difficulties differently depending on their demographic circumstances.

Educational attainment was strongly associated with residence in this study, which may be reflective of broader social determinants of health that influence opportunities for communication and access to support services. The findings highlight the importance of culturally and contextually relevant approaches to hearing rehabilitation. Audiometric results may be inadequate alone to justify rehabilitation programs because they may not reflect important demographic characteristics that affect patients' experiences and priorities. The inclusion of patient-centered assessments considering the demographic context could thus potentially pave the way for a more personalised and relevant rehabilitation planning.

5.6 Influence of Audiological Variables on Perceptual Weightage

The third aim of the present study was to assess the effect of audiological characteristics on perceptual weightings in the categories of the Brief ICF Core Set for Hearing Loss. Audiological characteristics included hearing severity, hearing-aid use and duration of hearing loss. The results showed that audiological variables significantly influenced patterns of perceptual prioritisation, with hearing severity having the greatest effect. Audiological features demonstrated

wider and more consistent associations across several ICF categories than demographic factors, emphasising the central role of auditory impairment in shaping the lived experience of hearing loss.

Hearing severity had the most pervasive and strong effect among the audiological variables tested across Brief ICF categories. Almost all domains of Body Functions, Activities and Participation and Environmental Factors showed significant associations. Especially for the hearing functions, listening, sound, structure of the inner ear, communication devices and techniques, remunerative employment, community life and receiving spoken messages, strong associations were found. These findings indicate that the consequences of increased hearing severity are broader and more functionally significant than auditory perception (Bonetti, 2026).

The breadth of effects of hearing severity is consistent with previous findings that greater hearing loss is related to increased communication difficulties, participation restrictions, psychosocial effects and poorer quality of life (Chisolm et al., 2007; Hickson et al., 2014). Despite being of sensory origin, the consequences of hearing loss affect many aspects of daily functioning (Alde et al., 2024). Individuals with more severe hearing loss often struggle with understanding speech, communicating, participating in social situations and activities, completing work-related tasks, and acquiring information in everyday settings (Wilson-Menzfeld et al., 2025). Thus, the degree of hearing loss seems to influence not only auditory functioning but also more general areas of activity and participation in the framework of the ICF.

Strong associations with communication-related categories such as listening, receiving spoken messages, conversation, and communication technologies further show the centrality of effective communication to individuals with hearing loss. These results are consistent with Objective 1 which found that communication related categories were the highest ranked areas of

perceived impact. In short, the results indicate that the main pathway by which hearing severity affects everyday functioning is via communication difficulties.

Another important finding was that the duration of hearing loss also had a significant effect on perceptual weighting patterns. There were strong associations for many domains including temperament and personality functions, attention functions, emotional functions, hearing functions, listening, receiving spoken messages, conversation, school education, community life, communication technology and sound. These findings suggest that the duration of hearing loss might affect the perception of functional impact (Wettstein et al., 2025).

The relationship between duration of hearing loss and perceived disability is likely to be complex. People with long-term hearing loss may develop compensatory communication strategies and adaptive coping mechanisms (Newton & Shah, 2013). Prolonged communication difficulties may also contribute to cumulative restrictions in participation, emotional consequences, and changes in patterns of social engagement (Palmer et al., 2019). Previous literature has suggested that long-standing hearing loss may contribute to increased listening effort, communication fatigue, social withdrawal, and reduced opportunities for participation (Motala et al., 2024). The current results lend support to the idea that the functional effects of hearing loss may develop gradually and influence multiple domains of everyday functioning.

Associations were also observed between hearing aid use and multiple Brief ICF categories, including attention functions, emotional functions, hearing functions, structure of the inner ear, listening, conversation, communication devices and techniques, family relationships, community life, sound, and health professionals. The results suggest that hearing-aid users and non-users may differ in their perception of hearing-related functional impact across a range of communication and participation domains (Cumming et al., 2026).

However, the present findings should be taken with caution. The cross-sectional design of the study does not allow for causal conclusions about the effects of hearing aid use. The associations observed may be differences in functional experiences between hearing-aid users and non-users rather than direct benefits attributable to amplification per se. Individuals who use hearing aids may differ from non-users in hearing severity, communication demands, participation in rehabilitation, or awareness of hearing difficulties. However, the significant associations identified suggest that hearing aid use is associated with perceptions and prioritization of the functional consequences of hearing loss.

5.7 Audiological factors and functional prioritization

An important finding of the present study is that audiological variables had a broader impact on perceptual weightage patterns than demographic variables. Demographic characteristics were selectively associated with specific categories, while hearing severity and duration of hearing loss were associated with a much larger proportion of the Brief ICF categories. This pattern suggests that while contextual and demographic factors contribute to the individual variability in perceived disability, the severity and persistence of the auditory impairment remain the basic determinants of functional impact.

These results are consistent with the conceptual basis of the ICF framework. The ICF focuses on functioning and disability, which are health outcomes resulting from interactions among health conditions, personal factors, and environmental factors. The present results suggest that the underlying health-related basis for many functional limitations is hearing severity. In contrast, demographic and environmental characteristics may modify the experience and prioritization of those limitations. Thus, both audiological and contextual effects are relevant,

although the effect of audiological features appears to be more dominant in the general pattern of perceptual prioritization.

Combined, the results of the present study suggest that adults with hearing loss are more concerned about communication- and participation-related consequences than about structural or anatomical aspects of impairment. Furthermore, both demographic and audiological characteristics affected perceptual prioritization patterns, but audiological variables had a more extensive and consistent influence across Brief ICF categories. The findings highlight the relevance of patient-centered, contextually relevant approaches to hearing assessment and rehabilitation within the Brief ICF Core Set for Hearing Loss.

Chapter VI

SUMMARY AND CONCLUSION

Hearing loss is one of the most common sensory impairments and has significant consequences for communication, social participation, emotional well-being, occupational functioning, and overall quality of life. Although frameworks such as the Brief ICF Core Set for Hearing Loss provide a comprehensive approach to describing hearing-related functioning, relatively little attention has been given to understanding how individuals with hearing loss themselves perceive and prioritize different aspects of functioning. Such information is important for developing patient-centered rehabilitation strategies that address the concerns individuals consider most relevant in their daily lives. The present study was undertaken to assess the perceptual weightage assigned by adults with hearing loss to categories within the Brief ICF Core Set for Hearing Loss and to identify patterns of functional prioritization in the Indian context.

The study also examined the influence of selected demographic and audiological variables on perceptual weightage patterns. A two-phase cross-sectional study design was employed. In Phase I, contextually relevant scenarios corresponding to the Brief ICF Core Set categories were developed and validated through concept elicitation, thematic analysis, expert review, and demographic appropriateness evaluation. In Phase II, the finalized digital assessment platform was administered to 150 adults with bilateral sensorineural hearing loss recruited from the audiological services of the All India Institute of Speech and Hearing, Mysuru. Participants rated the perceived impact of hearing loss across the 27 categories of the Brief ICF Core Set for Hearing Loss using a five-point rating scale. Patterns of functional prioritization were identified from the resulting perceptual weightings, and the effects of demographic and audiological variables were explored.

6.1 Perceptual Weightage Across Brief ICF Categories

The results indicated that adults with hearing loss did not value the categories of the Brief ICF Core Set for Hearing Loss equally. Nevertheless, a hierarchy of functional priorities emerged, one different from the other.

The categories with the highest perceptual weight were those related to communication and participation, indicating that participants conceptualised hearing loss mainly in terms of its effects on everyday communication and social participation. Activities and Participation was the highest priority domain, followed by Body Functions and Environmental Factors; The least perceptually weighted was Body Structures.

Categories related to communication, in particular communication devices and techniques, listening, hearing functions, receiving spoken messages and conversation were consistently reported as the most important aspects of hearing related functioning. People found categories related to the anatomical structures of the auditory system less interesting, suggesting that people are more interested in the functional consequences of hearing loss than in its structural basis.

6.2 Influence of Demographic Variables on Perceptual Weightage Patterns

Demographic variables had selective effects on patterns of perceptual weightings.

Among demographic variables, educational status was most strongly related to perceptual weightings across Brief ICF categories, followed by residential location. Gender, occupation, and monthly income had fewer, more specific category associations.

The results suggest that educational background and residential context may influence the perception and priority of communication problems, participation restrictions, environmental barriers and health care-related factors in hearing loss**.**These findings emphasize the importance

of considering demographic diversity in assessing patient priorities and designing rehabilitation services.

6.3 Influence of Audiological Variables on Perceptual Weightage Patterns

Demographic variables had a lesser effect on the perceptual weightage patterns than audiological variables. The most influential audiology factor was hearing severity, with extensive links across communication, participation and environmental domains. Perceptual prioritisation patterns were also strongly influenced by the length of hearing loss, whereas hearing-aid use showed more selective associations across specific categories.

The results indicate that the extent and duration of hearing loss are important factors in understanding how people experience the effects of hearing loss in their daily lives. The results also show that audiological characteristics need to be considered along with demographic and contextual factors for the interpretation of patient priorities and the planning of rehabilitation interventions.

6.4 Conclusion

From the findings of the present study the following conclusions may be drawn:

1. The categories of the Brief ICF Core Set for Hearing Loss demonstrated a clear and consistent hierarchy of perceptual weightings for adults with hearing loss.
2. Communication and participation categories were perceived as more important than anatomical structure categories, suggesting that hearing loss is experienced more in terms of its impact on everyday functioning than in terms of awareness of structural impairment.

3. The domain of activities and participation got the highest overall perceived weightage, highlighting the importance of communication and participation in the lived experience of hearing loss.

4. The areas most affected by hearing loss were considered to be communication-related categories, especially the use of communication devices and techniques, listening, hearing functions, receiving spoken messages and conversation.

5. The demographic variable most closely associated with perceptual weightage patterns was educational status, followed by residential location, indicating the role of social and contextual factors in the perception and prioritization of hearing-related difficulties.

6. Audiological characteristics had wider influences on perceptual weightage patterns than demographic variables.

7. Severity of hearing was the most important audiological factor, followed by duration of hearing loss, highlighting the important role of audiological status in shaping the perceived functional impact.

8. Use of hearing aids was related to perceptual weightage patterns in certain functional domains, indicating differences in perception of hearing-related functioning between hearing-aid users and non-users.

9. The findings support the importance of patient-centered assessment approaches that incorporate individual perceptions of functional impact alongside traditional audiological measures.

10. The contextualized digital assessment platform developed in the present study provides a clinically useful approach for identifying patient-perceived functional priorities among adults with hearing loss in the Indian context.

6.5 Clinical Implications

The findings of the present study have important implications for audiological assessment and rehabilitation. The results indicate that adults with hearing loss place the greatest importance on communication effectiveness and participation-related functioning. Therefore, rehabilitation planning should extend beyond audiometric assessment and incorporate patient-perceived functional priorities. The perceptual weightage approach may help audiologists identify the domains most important to individual patients, thereby facilitating personalized goal setting and intervention planning. The findings also support integrating ICF-based frameworks into routine clinical practice, enabling rehabilitation services to address communication difficulties, participation restrictions, and environmental barriers in a more comprehensive and patient-centered manner.

Moreover, the observed effects of demographic and audiological variables suggest that rehabilitation strategies should be based on individual characteristics and contextual circumstances rather than on audiometric findings alone.

6.6 Future Directions

The present study is one of the few studies that has systematically explored perceptual prioritisation across all categories of the Brief ICF Core Set for Hearing Loss in Indian context. One of the key strengths of the study was the development and validation of a culturally appropriate digital assessment platform, developed using a structured approach that included concept elicitation, thematic analysis, expert validation and assessment of demographic suitability. The presence of participants with a diverse demographic background, along with the concurrent

consideration of demographic and audiological factors, led to a comprehensive understanding of the factors that influence perceptual weightage patterns in adults with hearing loss. .

When interpreting the results, some limitations need to be considered. The cross-sectional design precludes any inference on causal relationships and the evolution of perceptual priorities over time. Participants were recruited from one tertiary-care institution using purposive sampling procedures, which may limit generalisability of findings. Furthermore, the study was limited to adults with bilateral sensorineural hearing loss, and the ratings of perception relied on self-reported judgements which can be influenced by individual response tendencies and subjective interpretations.

Future research should be longitudinal and multicentric to study the stability of the perceptual weightage patterns over time and across populations. Further studies with patients with unilateral, conductive or mixed hearing loss, auditory processing disorder and cochlear implants would be helpful to generalise the results. Future studies should also explore the relationship between perceptual weightage patterns and rehabilitation outcomes and the influence of personal factors such as personality traits, self-efficacy, health literacy, coping strategies and illness perceptions. Such efforts may lead to more individualised, culturally relevant and patient-centred approaches to hearing assessment and rehabilitation.

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