Knowledge, Practices and Perceptions of Audiologists in Addressing the Mental Health Needs of Older Adult Clients

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Abbreviations

APA: American Psychiatric Association

CBT: Cognitive Behavioural Therapy

COVID-19: Coronavirus Disease of 2019

CPD: Continuing Professional Development

DAS: Dementia Attitudes Scale

GDS: Geriatric Depression Scale

HIC: High-income countries

KLLD-R: Knowledge of Late-Life Depression Scale – Revised

LMIC: Lower-middle income countries

MMSE: Mini-Mental State Exam

MoCA: Montreal Cognitive Assessment

MoCA-HI: Hearing Impaired Montreal Cognitive Assessment

NICE: The National Institute for Health and Care Excellence

WHO: World Health Organization

Glossary

Mental disorder: “A mental disorder is a syndrome characterised by clinically significant disturbance in an individual’s cognition, emotion regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning” (American Psychiatric Association (APA), 2013, p. 20)

Depressive disorders: Mental disorders characterised by “sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual’s capacity to function” (APA, 2013, p. 155)

Dementia: Significantly diminished cognitive function, compared to previous function, in at least one of the following cognitive domains: “complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition” (APA, 2013, p. 602). Also termed “major neurocognitive disorder” (APA, 2013, p. 591).

Older adult: An individual aged 60 and above (Government Gazette, 2008).

Population ageing: “A rising median age of the population due to decline in fertility rates and/or increasing life expectancy” (Tunzi & Simo-Kengne, 2020, pp. 261).

Mild cognitive impairment: Cognitive decline that exceeds that which would be expected for normal age-related cognitive changes, but not at a level which significantly impairs daily activities (Sanford, 2017).

Hearing-impaired, deaf and Deaf: someone who is hearing-impaired has any degree of hearing loss; deaf (lowercase ‘d’) can describe someone with (almost) no residual hearing; a person who is Deaf is part of the Deaf community and culture and uses sign language as their main form of communication (British Deaf Association, n.d.).

Patient/client: the terms “patients” and “clients” are used interchangeably. In this study, the term “client” is used more frequently than “patient” as the survey used in data collection, originating from a different, prior study, used the word “client”.

Third-party disability: disability experienced by family members because of their significant other’s health impairment (Nandurkar & Shende, 2020).

Social approaches: mental health management strategies aimed at improving social outcomes. For example, facilitating peer support; working with the family (Bennett, Meyer, Ryan & Barr et al., 2020).

Abstract

Background: Mental disorders are prevalent in older adults. The most frequent mental disorders in older adults are depression and dementia, which have both been related to hearing loss. Audiologists, as hearing care professionals, may play an important role in early identification, referral, and management of these disorders. Small studies from high-income countries suggested that audiologists lack knowledge and skills related to addressing mental health needs. This study explored a broader spectrum of settings for audiologists' knowledge, practices, and perceptions regarding addressing mental health needs.

Methodology: Explanatory sequential mixed methods design with a multi-national sample of audiologists. The first phase was a survey (*n* = 50) to obtain predominantly quantitative data. The second phase was online focus groups (*n* = 13) to obtain rich, qualitative data and enable triangulation.

Results and Discussion: The majority of audiologists responded to mental health needs of their older adult clients and most believed that a better understanding of clients' psychosocial status would positively affect audiological care (86%; *n* = 43). Despite audiologists displaying knowledge of the impact of hearing loss on mental well-being, action related to the additional burden of hearing loss is not operationalised. Addressing psychosocial needs, including screening behaviours and referral destinations, lacked uniformity. Facilitators and barriers to providing mental health services in the audiological setting are described.

Conclusions: Audiologists treat their clients holistically and recognise that clients' needs extend beyond their hearing loss. Knowledge enhancement and protocol development may help audiologists to address mental health needs in an evidence-based way.

Literature Review

Introduction

The prevalence of mental disorders has been rising globally, increasing demand for mental health resources, and consequently placing strain on healthcare systems (World Health Organization (WHO), 2019). Older adults are at risk for developing mental disorders, particularly depression and dementia (WHO, 2017), which are leading causes of disability worldwide (WHO, 2020). Depression and dementia are among the mental disorders associated with hearing loss in older adults (Lawrence et al., 2020; Loughrey et al., 2018). Thus, audiologists, as hearing care professionals (Government Gazette, 2012), are likely to encounter mental health concerns when interacting with their older adult clients and may be able to collaborate with mental health professionals in the early detection and intervention of mental disorders (Bennett, Meyer, Ryan & Barr et al., 2020). However, few studies, with small sample sizes, predominantly conducted in Australia, have examined how audiologists respond to their clients' mental health needs. This multi-national study aimed to expand on the current research exploring audiologists' knowledge, perceptions and practices related to their older adult clients' mental health needs.

Hearing loss and mental health in ageing populations

Due to ageing populations (WHO, 2018), it is increasingly important to identify the health needs of older adults (Anand, 2015; WHO, 2017). As populations age, public health expenditure increases due to the high prevalence of comorbidities in older adults (Tunzi & Simo-Kengne, 2020). It is essential for public health authorities to plan for the financial challenges which result from ageing populations (Tunzi & Simo-Kengne, 2020). The life expectancy of older adults is rising largely due to a decline in chronic diseases, such as cardiovascular and respiratory diseases, and an improvement in curative healthcare services (BMJ, 2022). Despite increased life expectancy, older adults continue to face health challenges that can result in disability, contributing to a rise in demand for healthcare services and increased health expenditure (BMJ, 2022). Services that prevent disability and improve quality of life in older adults are necessary to alleviate the financial burden of disability on healthcare systems (BMJ, 2022).

Hearing loss, dementia and depression are all major causes of disability in older adults (Haile et al., 2021; Cai et al., 2023; Mattiuzzi & Lippi, 2020; BMJ, 2022). Each of these disorders is highly prevalent in older adults. For example, about one third of older adults experience hearing loss (WHO, 2023). In epidemiological research, the most rapidly increasing cause of disability in older adults was dementia (Mattiuzzi & Lippi, 2020). Globally, over one third of older adults had depression (Cai et al., 2023). There is a complex interplay among hearing loss, depression and dementia with each health condition potentially influencing the others (Brewster et al., 2021). For instance, a systematic review found that hearing impairment was associated with a small, but statistically significant increased odds of depression in the older adult population (OR = 1.47, 95% CI = 1.31-1.65) (Lawrence et al., 2020). Similarly, there is growing evidence supporting an association between hearing loss and cognitive decline in older adults (Raymond et al., 2021; Loughrey et al. 2018; Thomson et al., 2017). Moreover, it has been suggested that psychosocial factors, namely social isolation and loneliness, may mediate the relationship between hearing impairment and memory problems (Goodwin et al., 2023).

Although further research is needed to determine the exact mechanisms accounting for the triad of hearing loss, depression and dementia (Brewster et al., 2021; Yang et al, 2023), it is important for health professionals that treat individuals with these conditions to acknowledge that one may be a risk for the other so that preventative measures may be put in place. Preventive care in the older adult population has been shown to improve economic growth (Wang, 2018). For example, as mental health problems may result in earlier retirement (Wilson et al., 2020), early identification and treatment of mental disorders may prevent premature exits from the workforce, positively impacting productivity and the economy. Primary health care services for older adults had been largely focused on physical rather than mental health (Frost et al., 2019). However, mental disorders have a negative impact on the quality of life of older adults and increase the risk for physical decline (Cai et al., 2023). Encouragingly, there is a positive shift towards acknowledging the importance of addressing the mental health needs of older adults. For example, the US Preventative Services Task Force (2023) recommends screening older adults for depression in primary health care settings. The intertwined relationship between psychosocial function, cognitive decline and hearing impairment supports the notion that audiologists should play a role in addressing the mental health needs of their clients. Current practices of audiologists in responding to mental health needs are discussed next.

Audiologists' responses to mental health needs

Concerningly, audiologists may be inappropriately detecting, addressing, and referring older adult clients with comorbid depression, for example, by unnecessarily referring clients for specialised mental health services or failing to detect pathological mental health symptoms (Bennett, Meyer, Ryan & Eikelboom, 2020). A cross-sectional survey explored the knowledge, beliefs, and practices of 95 Australian audiologists in addressing the mental health needs of their older adult clients (Bennett, Meyer, Ryan & Barr et al., 2020). Two thirds of the audiologists in the study reported that they lacked the confidence and skills necessary to provide psychosocial counselling services to their clients (Bennett, Meyer, Ryan & Barr et al., 2020). Furthermore, half of the participants reported that they did not know when to refer audiology patients for mental health services nor to whom to refer (Bennett, Meyer, Ryan & Barr et al., 2020). Interestingly, almost all (96%) of the sample of audiologists reported that they wanted to improve their knowledge and skills related to mental health services (Bennett, Meyer, Ryan & Barr et al., 2020) which might reflect deficiencies in audiology training. At the same time, eagerness to improve audiologists' skill sets regarding mental health concerns signals a willingness to engage with these issues. The study had limitations in that the sample was relatively small and self-selected with an exploratory design, suggesting that the results cannot be generalised beyond the study sample (Bennett, Meyer, Ryan & Barr et al., 2020). However, given that the role of audiologists includes health promotion and disease prevention, it seems that an opportunity to screen for mental wellness is being missed.

In a subsection of the above-mentioned survey research, 83 of the participants completed questions relating to three Case Vignettes: two depicting cases of clinical depression, and one control with symptoms of grief and loneliness (Bennett, Meyer, Ryan & Eikelboom, 2020). When asked to identify whether the Cases were consistent with a mental disorder, most participants (96%) correctly identified that the first Case depicting clinical depression was consistent with a mental disorder and almost two thirds correctly identified that the other Case of clinical depression was consistent with a mental disorder (Bennett, Meyer, Ryan & Eikelboom, 2020). However, almost half the audiologists incorrectly indicated that the control Case was consistent with a mental disorder (Bennett, Meyer, Ryan & Eikelboom, 2020), mistaking a normal emotional response to loss as pathologic. The findings suggest that audiologists' empathy and willingness to help is present, but accuracy in identifying the symptoms of depression is not. Consequently, reported referral behaviours were inappropriate, for example referring when unnecessary or not following recommended referral pathways (Bennett, Meyer, Ryan & Eikelboom, 2020). Interestingly, only one participant reported that they would have used a screening scale to help with identifying the possible presence of a mental disorder, which may suggest that there is not a uniform procedure for audiologists to detect risk factors for mental health disorders which alludes back to lack of training (Bennett, Meyer, Ryan & Eikelboom, 2020).

In another Australian study, interviews were conducted with 15 audiology professionals to identify barriers and facilitators to providing informational counselling on mental health in an audiology clinic (Bennett et al., 2022). Lack of knowledge about mental health proved to be a barrier for such counselling (Bennett et al., 2022). In addition, although participants displayed good knowledge of the impact of hearing loss on mental health, they did not necessarily know how to manage mental health needs (Bennett et al., 2022). Participants were also unsure of how to introduce the topic of mental health with clients in a way that was inoffensive due to the negative stigma associated with mental illness (Bennett et al., 2022). Additional barriers included lack of resources, limited patient contact time, and being unsure whether addressing mental health is part of audiologists' scope of practice (Bennett et al., 2022). The researchers concluded that audiologists need to first address their own thoughts and behaviours related to mental well-being so that their clients' mental health needs can be met (Bennett et al., 2022).

A qualitative study (*n* = 118 Australian audiologists) explored the content of conversations about mental health between audiologists and clients, as described by audiologists (Laird et al., 2023). As in Bennett and Barr et al.'s (2021) study, most audiologists (77.1%; *n* = 91) reported that in their setting there were no structured ways of assessing mental health needs (Laird et al., 2023). Although most audiologists (95.8%, *n* = 113) had engaged in discussions with clients about their mental health at least once in their career, less than one third of participants discussed mental health with their clients as standard practice (Laird et al., 2023). Audiologists who initiated discussions on mental health used open-ended questions to start the dialogue on mental health needs with their clients (Laird et al., 2023). Yet, participants reported that most of the time clients would be the ones to initiate the conversation on mental health (85.6%, *n* = 101) especially when rapport was established and clients felt comfortable (Laird et al., 2023). Laird et al.'s (2023) study suggests that audiologists may provide a safe space for clients to disclose problems, but there is a need for audiologists to be prepared in appropriately managing mental health needs, further illustrating the importance of knowledge and skill development.

A multi-disciplinary study, including audiologists, otolaryngologists, and speech-language pathologists in the United States of America (US), surveyed professionals' beliefs and practices concerning cognitive assessment in hearing-impaired clients (Raymond et al., 2020). Participants reported that they did not screen for cognitive impairment, despite working with at-risk clients (Raymond et al., 2020). Participants would not screen, even if a new client presented with a symptom of cognitive decline, such as memory loss (Raymond et al., 2020). Further, participants reportedly did not routinely refer clients for cognitive testing, with less than half of participants referring clients even if cognitive screening was positive (42.42%) (Raymond et al., 2020). Neither clients' age nor degree of hearing loss consistently influenced participants' decisions related to screening and referral for cognitive assessment (Raymond et al., 2020). These results should be interpreted with caution due to the small sample size (Raymond et al., 2020). It should also be noted that of the sample of 66 professionals, only 23 were audiologists; three were speech pathologists and the majority of participants were otolaryngologists (*n* = 40) (Raymond et al., 2020). Participants' professions significantly influenced reported referral behaviour; for example, speech pathologists had much higher rates (100%) of reported referral than audiologists (21.74%; p = .0215) with otolaryngologists being least likely to refer (14.29%; p = .0147) (Raymond et al., 2020). The lack of referrals reported by otolaryngologists is surprising, considering comprehensive mental health and psychiatry training is expected to be included in medical curricula. Although Raymond et al.'s (2020) survey research described screening and referral behaviours, it did not explore the reasons for these behaviours, which was recommended for future research, especially considering the low percentage of reported referral rates (Raymond et al., 2020).

The scope of profession of an audiologist varies depending on regulatory body, with some guidelines being more explicit than others in defining their role in addressing mental health needs. Universally, intensive treatment for mental health conditions exceeds an audiologist's scope of profession. However, screening and referral are pivotal aspects of an audiologist's role in addressing their patients' mental health needs (Bennett, Meyer, Ryan & Barr et al., 2020). Screening for mental disorders is a mental health care service which audiologists may provide that is in line with their scope of profession (American Speech-Language-Hearing Association, 2018). Screening is a time-efficient method which can help to identify clients who need onward referral for more specialised mental health services, while also avoiding unnecessary referrals (Shen et al., 2016; Raymond et al., 2020). The use of both screening and clinical-reasoning tools in the audiological setting may result in optimal referral for mental health services (Bennett, Meyer, Ryan & Barr et al., 2020). Screening might give rise to opportunities for health promotion and disease prevention in the audiology setting and will be discussed next.

Screening for depression in the audiological setting

Identifying depression in older adults is complex as physical symptoms of depression, for example changes in appetite, lower energy levels and insomnia, may mimic symptoms of other diseases (Tsoi et al., 2017). Moreover, older adults with depression more commonly report physical symptoms as opposed to changes in mood, which makes it more likely that cases of depression will be missed (Tsoi et al., 2017). It is therefore necessary to use scales that have been standardised on the older adult population when screening for depression in older adults (Krishnamoorthy et al., 2020).

The Geriatric Depression Scale (GDS) is one of the most frequently used scales to screen for depression in older adults (Krishnamoorthy et al., 2020). The GDS can be used in older adults with normal functioning as well as those who experience functional decline, such as cognitive impairment (Krishnamoorthy et al., 2020). A systematic review found that shorter forms of the GDS had high sensitivity and specificity when used to screen for depression in older adults and that using shorter forms of the scale would optimise time resources (Krishnamoorthy et al., 2020). The National Institute for Health and Care Excellence (NICE) had recommended an even shorter screening scale, i.e., the Two-Question Screen[1], only consisting of two closed-ended questions (Tsoi et al., 2017). A meta-analysis found that the Two-Question Screen had similar diagnostic value to 16 other depression screening tools, including the GDS. As the Two-Question Screen is valid, short, simple, self-rated and closed ended, it may be a valuable screening tool which is also time-efficient (Tsoi et al., 2017).

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[1] Questions from the “Two-Question Screen”: in the past month, (a) “Have you been troubled by feeling down, depressed or hopeless?” and (b) Have you experienced little interest or pleasure in doing things?”

Audiologists should be aware that depression scales have not yet been validated in hearing-impaired populations and should therefore interpret symptoms with caution (Bennett & Donaldson et al., 2021). For instance, changes in social behaviours are symptoms of depression, but in hearing-impaired individuals, withdrawal from social interaction may not be a symptom of depression, but rather an avoidance behaviour of a situation that is challenging or tiring for them (Bennett & Donaldson et al., 2021). Depression screening scales that could be used in the audiology setting should be designed to be used by non-mental health specialists and should be appropriate for administration to the hearing-impaired population (Bennett & Donaldson et al., 2021). Ideally, the scale should be concise, but still have high reliability and validity so that clinic time is used effectively (Bennett & Donaldson et al., 2021). In a small (*n* = 11) qualitative study, ten out of eleven audiology participants mentioned never having used or been trained in using depression screening scales (Bennett & Donaldson et al., 2021). Audiologists felt the Geriatric Depression Scale – short form, with its closed yes/no responses, is a quick scale which can provide a glance into a client’s mental wellbeing (Bennett & Donaldson et al., 2021). An identified barrier to screening was that even if audiologists were able to identify signs of depression, they described being unsure of what to do next. For example, not knowing to whom to refer, or how to talk to clients about their mental health (Bennett & Donaldson et al., 2021). Participants also discussed how it was already emotionally difficult to work with hearing-impaired clients and that audiologists themselves require psychological support or coping strategies to prevent, for instance, compassion fatigue (Bennett & Donaldson et al., 2021).

Audiologists have described more informal ways of screening for depression instead of standardised scales, such as openly asking the client and their families questions related to mental health (Bennett & Donaldson et al., 2021). In general, hearing health professionals preferred screening scales that were more open to allow for natural conversation and were welcoming to the idea of using screening scales to identify clients who may benefit from further mental health assessment (Bennett & Donaldson et al., 2021). It has been suggested that screening for both depression and cognitive decline in older adults should occur simultaneously as late life depression is frequently associated with cognitive decline (Kok et al., 2017). Screening for cognitive decline is discussed next.

Screening for cognitive impairment in the audiological setting

Cognitive screening is especially important in high-risk populations (Lin et al., 2017), such as older adults with hearing loss (Thomson et al., 2017; Loughrey et al., 2018) and/or depression (Kok et al., 2017). US and Canadian guidelines are undecided about whether the benefit outweighs the harms in screening for cognitive impairment and do not currently recommend screening in asymptomatic individuals (Patnode et al., 2020; Sarant et al., 2023). Cognitive screening may have negative consequences, for example it could result in adverse emotional reactions or stigma (Patnode et al., 2020). However, screening for cognitive impairment could facilitate earlier identification and management and reduce third party disability (Patnode et al., 2020). Although the gold standard for diagnosis of cognitive impairment is a formal battery of neuropsychological assessment, carried out by a specialised mental health care professional, cognitive screening may identify clients who may benefit from such in-depth assessment (Lin et al., 2017).

There are numerous cognitive screening tests available, but audiologists should be cautious in their selection as hearing loss may confound results (Shen et al., 2016; Raymond et al., 2021). For example, if a cognitive screening test is carried out verbally, the individual may present with a low score because they could not hear the instructions, not because of a cognitive impairment (Shen et al., 2016). Audiologists may minimise the effects of hearing loss on test scores by facing participants whilst giving instructions, conducting tests in quiet rooms, ensuring that the client is wearing their prescribed hearing technology and providing written instructions (Shen et al., 2016).

Through a systematic review, Raymond et al. (2021) explored the literature on cognitive screening in the post-lingually hearing-impaired population. They found that the most frequently used screening assessments for older adults with hearing loss were the Mini-Mental State Exam (MMSE) and the Montreal Cognitive Assessment (MoCA) (Raymond et al., 2021). However, individuals with hearing impairment may be scored inaccurately on the MMSE and MoCA which both rely on audition (Raymond et al., 2021). The MoCA is simple to administer and score and has good sensitivity as a screening tool for both mild cognitive impairment and dementia (Lin et al., 2017). However, it may be inappropriate to use the MoCA without modification to screen for cognitive impairment in individuals with hearing loss as it relies on standardised verbal instructions (Lin et al., 2017). Utoomprurkporn et al. (2020)'s systematic review presented evidence to support that individuals with hearing loss scored significantly lower than those with normal hearing on the standardised, verbally administered MoCA. However, the researchers were unable to report on whether the low scores were due to method of instruction or actual cognitive impairment (Utoomprurkporn et al., 2020). When analysing specific sub-test instructions, Utoomprurkporn et al. (2020) found that mishearing target words may affect scores, as words with frequency characteristics in the range of participants' hearing loss had much higher rates of error (Utoomprurkporn et al., 2020).

Lin et al. (2017) developed a modified version of the MoCA for individuals who are hearing-impaired, the MoCA-HI, which was found to be a reliable cognitive impairment screening tool in individuals with severe hearing impairment. Further, Parada et al. (2020) found that the MoCA-HI had good construct validity and suggested that it is an appropriate tool to screen for cognitive impairment in individuals with untreated hearing loss. However, there are limitations to the MoCA, for example, it is confounded by culture and takes longer to complete than other screening scales available (Cova et al., 2022). The Mini-Cog, for example, is a much shorter scale that can be administered in the primary setting, but also has limitations in that it is subject to education levels (Carnero-Pardo et al., 2022) and only has a sensitivity of 76% and a specificity of 73% in primary care settings (Seitz et al., 2021).

These findings call for a need for development of a concise cognitive screening scale appropriate in the audiology setting.

Integrating mental health and audiological services

Even though hearing technology may improve communication and potentially reduce cognitive decline (Lin et al., 2023), amplification alone may not be enough to improve mental health issues related to hearing loss (Laird et al., 2020; Mamo et al., 2018; Mertens et al., 2021). Audiologists have been urged to move towards a holistic model of care wherein an individual’s physical hearing loss is treated, as well as the secondary effects of thereof, such as the impact of hearing loss on mental health (Punch et al., 2019; Bennett et al., 2022). Treating clients holistically has also been shown to improve hearing health outcomes (Laird et al., 2020). For example, by exploring and managing the way in which hearing loss affects psychosocial functioning complemented with treating the physical hearing impairment (Punch et al., 2019). Holistic care should also be individualised, as each client may have different social and emotional needs (Timmer et al., 2023).

In a qualitative study, older adults who participated in audiological rehabilitation recounted that psychological well-being greatly affected aural rehabilitation (Laird et al., 2020). For example, clients presenting with psychological symptoms may experience lower levels of motivation, energy and self-efficacy which may in turn decrease client adherence and self-management (Laird et al., 2020). The researchers concluded that for optimal audiological rehabilitation, psychological factors need to be investigated and addressed (Laird et al., 2020). Encouragingly, as reported by a sample of audiologists practicing in the United Kingdom, audiologists believed that counselling should be person-centred (Woodward & Saunders, 2023). For example, the audiologists felt that counselling should involve not only addressing hearing loss and technology, but also be used to form an alliance with their clients (Woodward & Saunders, 2023). Despite the awareness of counselling as multidimensional, barriers, such as feeling under-skilled, may prevent audiologists from putting their beliefs into practice (Woodward & Saunders, 2023).

It is an audiologist's duty to provide person-centred audiological rehabilitation which addresses not only hearing loss, but also the impact of hearing loss on physical, cognitive, social, and emotional well-being (Laird et al., 2020). Examples of individualized management include providing auditory-cognitive training for clients diagnosed with cognitive impairment (Shen et al., 2016) or providing psychosocial support, accompanied by a referral to a mental health practitioner, for clients presenting with symptoms of depressive disorders (Bennett, Meyer, Ryan & Barr et al. 2020). Providing psychosocial support, part of an audiologists' scope of profession (Bennett et al., 2022), forms a component of addressing clients' mental health needs. However, a recent study reported that when attending to clients' psychosocial needs, most approaches used by audiologists were informal and non-standardised, despite the existence of evidence-based approaches, such as cognitive behavioural therapy (CBT) which can be adapted for use by audiologists (Bennett & Kelsall-Foreman et al., 2021).

Cognitive Behavioural Therapy (CBT) is an evidence-based method of counselling used by mental health care professionals for treating mental disorders, such as depression and anxiety (Bennett & Kelsall-Foreman et al., 2021). CBT helps clients to replace any negative thoughts and behaviours with positive ones (Bennett & Kelsall-Foreman et al., 2021). Task-shifting may be an important way to meet the high need for psychosocial management (Shahmalak et al., 2019), by for example, upskilling audiologists in using the principles of CBT in their at-risk patient populations. Trained audiologists have used principles of CBT successfully, for example, in the management of clients with tinnitus (Bennett & Kelsall-Foreman et al., 2021). CBT also has the potential to be used in addressing hearing loss related emotional needs and so Bennett & Kelsall-Foreman et al. (2021) explored the possibilities of using CBT in standard audiological practice. The researchers conducted a semi-structured focus group with audiology staff (audiologists, receptionists, and managers) (*n* = 13). Although rarely included in their current practices, most of the participants were interested in extending their audiological care to include mental health services such as CBT; whilst others were reluctant due to barriers, such as being unsure of whether it is part of their scope of practice (Bennett & Kelsall-Foreman et al., 2021).

Although researchers have described ways in which audiologists may address mental health needs in their practice, for example, by encouraging social interaction, professionals are unsure of their role and boundaries to which services they may provide (Bennett & Kelsall-Foreman et al., 2021). Development of standardised processes of audiologist-driven mental health care may allow audiologists to better understand their role in the management of mental health concerns so that they may be more frequently addressed in the audiology setting (Bennett & Kelsall-Foreman et al., 2021). Timmer et al. (2023) have proposed an evidence based five-step plan to address mental health needs in the audiology setting. The first step is to establish clients' mental well-being and identify any mental health symptoms by using, for example, mental well-being screening scales (Timmer et al., 2023). The next step is to involve family members in audiological management to not only provide social-emotional support to the hearing-impaired client, but also decrease third party disability (Timmer et al., 2023). For instance, inviting clients' family members to sessions and setting joint hearing goals. For step three, Timmer et al. (2023) suggested that social-emotional goals should be included in the audiological management plan, such as monitoring cognitive well-being or increasing social participation. The fourth step is fitting the client with hearing technology and providing auditory training whilst relating it to mental health needs (Timmer et al., 2023). For instance, explaining social emotional benefits of hearing technology throughout the fitting process and choosing technology based on clients' specific needs (Timmer et al., 2023). Step five is counselling (Timmer et al., 2023). Timmer et al. (2023) acknowledged that audiologists are not equipped to provide therapeutic counselling in the way that a mental health professional is, but described how audiologists are able to counsel within the scope of their profession. Audiologists may practice active listening, encourage dialogue, use therapeutic interview techniques such as reflecting, paraphrasing, and validating feelings and practising empathy (Timmer et al., 2023). Although constructed based on evidence, further research should be performed on the effectiveness of Timmer et al.’s (2023) five-step plan in real world audiology settings.

There is a need for improved identification and management of mental disorders in hearing-impaired older adults and audiologists may be able to collaborate with mental health professionals in addressing this need. Further exploring audiologists’ knowledge, perceptions and practices is necessary to determine whether there is a need for knowledge enhancement or protocol development to optimize health resources and improve the management of mental health needs of hearing-impaired older adults. The present multi-national study aims to explore practices and perceptions of audiologists in addressing the mental health needs of their clients.

Methodology

Aim

The aim of the study was to identify audiologists' knowledge, practices and perceptions related to the mental health needs of older adult clients with hearing loss in different countries.

Objectives

1. To assess audiologists' knowledge related to depressive disorders and dementia in older adults using the Knowledge of Late-Life Depression Scale – Revised (KLLD-R), the Dementia Attitudes Scale (DAS), three Case Vignettes and focus groups.
2. To report on audiologists' practices related to the mental health needs of their older adult clients through survey and focus groups.
3. To explore audiologists' perceptions related to the mental health needs of their older adult clients through focus groups.
4. To identify facilitators and barriers experienced by audiologists addressing mental health needs of older adult clients with hearing loss through survey and focus groups.

Study Design

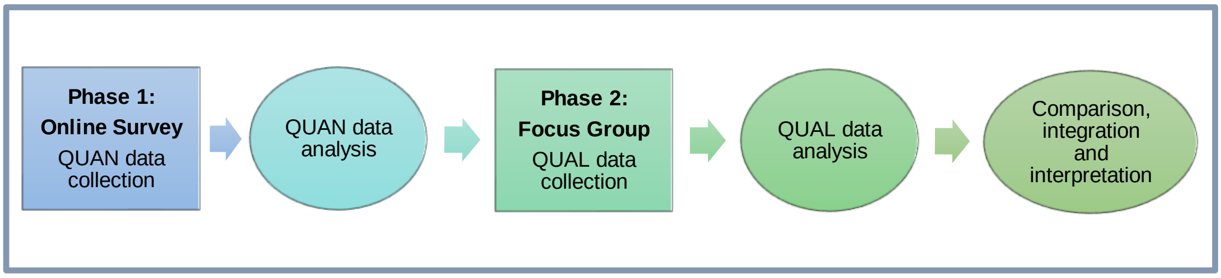
The study followed a mixed methods design, combining quantitative and qualitative elements to broaden perspectives and corroborate findings (Johnson et al., 2007). Specifically, an explanatory sequential design was used. The first phase of explanatory sequential design was quantitative (DeCuir-Gunby & Schutz, 2018). In phase one of this study, an online survey was conducted to obtain predominantly quantitative data which were analysed to obtain a broad understanding of the research question (DeCuir-Gunby & Schutz, 2018). Intramethod mixing was featured in the survey in which both closed-ended and open-ended questions were asked, resulting in both qualitative and quantitative data (Renz et al., 2018).

In explanatory sequential designs, the first quantitative phase is followed by a second qualitative phase (DeCuir-Gunby & Schutz, 2018). Thus, the online survey was followed by the facilitation of focus groups to acquire qualitative data which may explain quantitative results in more depth (Acocella, 2012; DeCuir-Gunby & Schutz, 2018). Quantitative and qualitative data were analysed separately and then integrated, enabling triangulation (Renz et al., 2018).

Strengths of a two-phase design include flexibility with multiple opportunities to explore a phenomenon, while limitations include lengthier data collection and the complexity of merging different types of analyses (DeCuir-Gunby & Schutz, 2018). Morse (Morse & Niehaus, 2009) notation to describe the study design: QUAN → QUAL has been used and a visual representation of the study design is shown in **Figure 1**.

Figure 1

Visual representation of study design



Legend: Quan = Quantitative; Qual = Qualitative

Participants

Inclusion Criteria

- Registered audiologists or dual-registered speech-language pathologist and audiologists, but whose primary work must be in the field of audiology, practicing in South Africa or other countries. The international recruitment was influenced by access to diverse regulatory environments and practices due to the researcher relocating to the Netherlands.

- Internet connection by any suitable digital device including computers, laptops, smartphone, tablets, etc.
- Self-evaluated English language abilities at a level high enough to understand and complete the English online questionnaire and (if applicable) take part in a focus group discussion in English.
- Additional inclusion criteria for phase two, i.e. online focus group (Lobe et al., 2020):
    - An internet connection of sufficient capacity to allow for videoconferencing via Zoom platform.
    - Functioning speakers, microphone and camera on the device the participant chooses to use for the Zoom call.
    - Access to a quiet, private space to prevent environmental interruptions and disturbances.

Exclusion Criteria

- Exclusion criteria for phase two of data collection (focus group):
    - Lack of access to a self-reported private space that can be used during the Zoom call so that participants are not able to look significantly into one another's homes, or any other place they choose to be for the video call, thereby protecting their rights to privacy.

Sampling Method

For the survey, convenience sampling was used to recruit participants in an inexpensive, time-efficient manner (Etikan et al., 2016). As the survey was voluntary, participants were self-selected and so the sample was not truly representative of the population. Purposive/nested sampling, an advantageous sampling method in qualitative research (Smith & Noble, 2014), was used for the focus group as a subset of participants took part in the second phase of data collection based on willingness and availability (Coffey et al., 2017). As using purposive sampling alone did not recruit enough focus group participants, convenience sampling was also used.

Recruitment of Participants

Emails were sent to audiology professional bodies and associations inviting them to advertise the survey in their newsletters. The survey was also advertised (see **Appendix A**) on audiology Facebook groups, with permissions from their administrators. At the end of the survey, participants were able to indicate whether they would like to take part in a focus group and if so were asked to provide an email address at which the researcher could invite them to the second part of the study.

Sample Size

For the survey, an online sample size calculator was used to determine the number of participants needed to reflect the population. The total population was set according to the number of audiologists practicing in each country. Confidence level was set to 95% with a 5% margin of error and the ideal sample sizes per country are displayed in **Table 1** below (SurveyMonkey™, n.d.).

Table 1

Ideal sample size per country

Country	Number of audiologists	Ideal sample size
South Africa	781 (HPCSA, 2020)	258
United Kingdom	4000 (Lewitt & Allsop, 2022)	351
The Netherlands	1600 (Hoorzaken, n.d.)	310
New Zealand	400 (New Zealand Audiological Society, n.d.)	197
Canada	1924 (Lagacé et al., n.d.)	321

Note. HPCSA: Health Professions Council of South Africa

Six to eight participants comprise an ideal size for a focus group but focus groups can be successful with as few as three participants (Gill et al., 2008). Videoconferencing works best with a smaller sample size with a maximum of five individuals (Lobe et al., 2020). Therefore, each focus group consisted of a sample size of two to three participants. Five mini focus groups were held as the number of focus groups was dependent on data saturation (Guest et al., 2017).

Description of participants

Participants for the survey component of the research included 64 audiologists with 50 participants completing all three Case Vignettes and the majority of the quantitative questions. Seven participants completed only answers to the first vignette and seven participants completed answers to the first and second vignettes. Survey completion rate was low (49.23%). Completion rate was calculated as the number of individuals who consented to the survey and then left (*n* = 66), to those who completed at least one Case Vignette of the survey (*n* = 64). A reason for low completion rate is possibly due to the long survey completion time (30 minutes on average) and time constraints of audiologist participants.

Of the 50 full responses, 32 (64%) participants practiced in lower-middle income countries (LMIC) (South Africa and Namibia) and 18 (36%) participants practiced in high income countries (HIC) (Canada, United Kingdom, New Zealand, United States of America and Netherlands). Most of the participants were female (86%; *n* = 43). Participants' ages ranged from 20 to 60+ years and years of experience ranged from <1 to >20 years. Most of the participants practiced in an urban setting (92%; *n* = 46) and were spread fairly evenly over public (34%; *n* = 17), and private (34%; *n* = 14) facilities, or both public and private (10%; *n* = 5) and academic (22%; *n* = 11) sectors. Demographic variables for participants that answered the full survey *(n = 50)* are displayed in **Table 2** below.

Table 2

Survey sample description (n = 50)

Variable	*n* (%)
Country of practice	
South Africa	31 (62%)
Namibia	1 (2%)
Canada	3 (6%)
United Kingdom	6 (12%)
New Zealand	3 (6%)
United States of America	2 (4%)
The Netherlands	4 (8%)
Age (years)	
20-29	23 (46%)
30-39	10 (20%)
40-49	12 (24%)
50-59	3 (6%)
60+	2 (4%)
Gender	
male	7 (14%)
female	43 (86%)
Urban or rural	
Urban	46 (92%)
Rural	4 (8%)
Sector	
Public sector	17 (34%)
Private sector	17 (34%)
Both public and private	5 (10%)
Academia	11 (22%)
Years of experience	
< 1	7 (14%)
1 to 5	17 (34%)
6 to 10	6 (12%)
11 to 20	15 (30%)
> 20	5 (10%)

Participants reported a wide range of areas of expertise (**Table 3**) with the majority focussed in adult aural rehabilitation (76%).

Table 3

Participants' area of expertise

Area of expertise	*n* (%)
Adult aural rehabilitation	38 (76%)
Paediatric aural rehabilitation	13 (26%)
Tinnitus	14 (28%)
Balance and vestibular	7 (14%)
Implantable devices	4 (8%)
Other:	16 (32%)
Hearing aids	3 (6%)
Diagnostic audiology	6 (12%)
Intermediate care	1 (2%)
Technical specialist	1 (2%)
Musicians	1 (2%)
Early detection	1 (2%)
Learning disability	1 (2%)
Ototoxicity monitoring	1 (2%)
Primary health care	1 (2%)
None	2 (4%)

Five mini focus groups were held with groups of two or three participants. In total, 13 participants took part in a focus group. All participants were female and practicing in South Africa. Almost all participants were in the age range of 20 to 29 years (*n* = 12) and one participant was in the age range of 50 to 59 years. Seven (53.85%) participants worked in the public sector and six (46.15%) in the private sector. Most participants (*n* = 10; 76.92%) had 1 to 5 years of experience, one participant had less than one year of experience, one participant had 6 to 10 years of experience and one had more than twenty years of experience.

Measurement Instruments

The online survey started with three Case Vignettes (see **Appendix B**): two portraying clients with a depressive disorder and one control. The vignettes were obtained, with permission (see **Appendix C**), from a previous study (Bennett, Meyer, Ryan & Eikelboom, 2020) with slight adaptations to vocabulary to suit the international sample. Participants were asked open-ended questions related to each of the vignettes. Vignettes have been suggested to be both practical and ethical in health research that explores participants' attitudes, thoughts and beliefs (Hughes & Huby, 2002; St. Marie et al., 2020).

An online survey from a previous study (Bennett, Meyer, Ryan & Barr et al., 2020) was used, with permission (see **Appendix D**). The survey included demographic details, such as participants' ages, genders, countries of employment, as well as questions on clinical experience. The survey incorporated questions on awareness of depression and dementia in the audiological setting and whether the participant routinely asked clients about their mental health needs. Questions pertaining to knowledge, perceptions and practices of audiologists in addressing the mental health needs of their older adult clients with hearing loss were included.

The survey included the Knowledge of Late-Life Depression Scale – Revised (KLLD-R) (Karantzas et al., 2012) with additional questions specific to hearing loss (Bennett, Meyer, Ryan & Barr et al., 2020) (see **Appendix E**) to assess knowledge of depression. Items are rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree) and the factors assessed are "Symptoms of depression", "Facts about depression" and "Myths about depression." Scores range from 10 (lowest) to 40 (highest) with a higher score indicating more knowledge about depression. To assess audiology-specific knowledge of depression, six extra questions specifically related to hearing loss were added, as in Bennett, Meyer, Ryan & Barr et al.'s (2020a) study, with possible scores on a scale from 16 (lowest) to 64 (highest). The Knowledge of Late-Life Depression Scale – Revised has been suggested to have good psychometric properties and can be used in research to test knowledge about depression among professionals caring for older adults (Karantzas et al., 2012).

The Dementia Attitude Scale (O’Connor & McFadden, 2010) (see **Appendix F**) was used to assess attitudes towards and knowledge of dementia. The Dementia Attitudes Scale (DAS) is suggested to have good construct validity, convergent validity and reliability in assessing professionals’ person-centred knowledge of and attitudes towards dementia and is recommended as a research tool (O’Connor & McFadden, 2010). The factors assessed are “dementia knowledge” and “social comfort” (O’Connor & McFadden, 2010). Items are answered on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Total scores on a scale from 20 (lowest) to 140 (highest) with higher scores indicating higher knowledge of and more positive attitudes towards dementia.

The survey included the 15-items from Raymond et al.’s (2020) survey to identify participants’ screening and referral behaviours related to cognitive impairment (see **Appendix G**).

The researcher compiled a topic guide that was used to prompt discussion for the focus group (see **Appendix H**).

The rationale for choosing Zoom as a platform for the online focus group is that it has been largely used for research, is user-friendly and facilitates real-time audio and video (Lobe et al., 2020). Due to the widespread adoption of videoconferencing platforms since the COVID-19 pandemic, the researcher assumed that participants would be familiar with using Zoom. Only the host may control the enabling and access to the meeting recording (Lobe et al., 2020). Further, the host can protect the meeting with a password so that only those invited can enter the meeting and, with the waiting room feature, each participant may be verified by the host before entering the meeting (Lobe et al., 2020).

Procedures and Data Collection

Ethical approval was obtained from the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (reference number HREC 349/2021). The researcher sent emails to audiology associations and forums who sent the invitations to potential participants. The researcher also posted, with permissions, invitations to the survey on audiology Facebook pages.

Phase 1: Survey

The survey was administered using SurveyMonkey (see **Appendix I**). Potential participants received electronic notification of the study (see **Appendix A**). The participant clicked on the appropriate link to an online survey. The participant was required to read an information sheet and was asked if they consent to taking part in the study. To improve readability, a summarized version of the informed consent form was seen on the first page of the survey (see **Appendix J**). Participants had the option to view/download the full information sheet (see **Appendix K**). If they ticked the box to consent, they could proceed to the survey. For the first part of the survey, the participant was asked to read three Case Vignettes and answer related questions. Next, the participant was asked to fill in demographic details. The last part of the survey consisted of Likert-type, closed-ended and open-ended questions, from the scales listed under **Measurement instruments**, which investigated knowledge, perceptions and practices of audiologists in addressing the mental health needs of their older adult clients with hearing loss. The full survey took approximately 30 minutes to complete. Once they had completed the survey, participants were asked if they would like to take part in the second phase of the study, a focus group, and if so, were prompted to provide an email address at which the researcher could invite them to take part. On the last page of the survey, the participant was thanked and provided with the researcher's contact details should they have had any further questions or comments. On the last page, there were also links to free online courses (see **Appendix L**) which participants could have chosen to complete to further their knowledge and skills in the provision of mental health services for their patients.

Phase 2: Focus Group

Participants who indicated interest in the focus group were emailed individually (see **Appendix M**) with the link to a screening questionnaire on SurveyMonkey™ (see **Appendix N**) and received a response from the researcher indicating whether they met the eligibility criteria or not. Participants who met the eligibility criteria were sent a second email (see **Appendix O**) with a link to a FindTime poll, to indicate which days and times worked best for them, as well as a link to a SurveyMonkey™ which contained an information sheet and informed consent document which facilitated renewed consent (see **Appendix P**). Participants were made aware that the meeting would be recorded. Participants who consented were each sent a Zoom meeting invitation which they could have accepted or declined. At the time of the meeting, once all the participants had joined, the facilitator informed the participants that the recording would begin and were assured that only the researcher would have access to the recording. The researcher facilitated the focus group. After all participants had an opportunity to ask questions and consent to being recorded, the audio and video recording began. The facilitator provided questions as prompts for discussion. (See **Appendix H** for topic guide). The facilitator did not take part in the discussion, but rather observed, taking great care to make a non-judgmental stance (Qutoshi, 2018). At the end of the discussion, the participants were thanked and provided with the researcher's contact details for any further questions. The facilitator then ended the meeting.

Reliability and Validity/rigor

The reliability, validity and statistical analysis of the measurement instruments in the survey can be found in **Table 4** below.

Table 4

Reliability, validity and statistical analysis of measurement instruments

Tool	Reliability, validity and statistical analysis
Bennett, Meyer, Ryan & Barr et al. (2020) Survey and Case Vignettes.	Was developed based on previously published and validated surveys designed to assess knowledge, beliefs and practices of other healthcare professionals in addressing mental health needs during routine clinical care (Davison et al., 2009; Northcott et al., 2017; Sekhon et al., 2015). A preliminary version of Bennett, Meyer, Ryan & Barr et al.'s (2020) survey was reviewed by four mental health consultants and five clinical audiologists to confirm the appropriateness of the items as well as the ecological validity of behaviours illustrated in the vignettes.
Knowledge of Late-Life Depression Scale – Revised (KLLD – Revised)	The KLLD – Revised has been suggested to have good psychometric properties and can be used in research to test knowledge about depression among professionals caring for older adults (Karantzas et al., 2012). When factor structure and internal consistency was analysed, the researchers found excellent fit to the data (χ 2 (31, N = 194) = 31.48, p > .05; CFI = .999; TLI = .998; RMSEA = .010; SRMR = .043) (Karantzas et al., 2012). Intraclass correlation was high (>.95) for each subscale, and Cronbach's alpha was .82 for facts about depression and .70 for the remaining two subscales suggesting good internal consistency (Karantzas et al., 2012). When analysing criterion validity, the researchers found excellent fit for both attitudes (χ 2 (6, N = 149) = 7.31, p > .05; CFI = .987; TLI = .969; RMSEA = .038; SRMR = .034) and self-efficacy (χ 2 (4, N = 149) = 2.51, p > .05; CFI = 1.00; TLI = 1.00; RMSEA = .000; SRMR = .027) (Karantzas et al., 2012).
The Dementia Attitudes Scale (DAS)	The DAS is suggested to have good construct validity, convergent validity and reliability and is recommended as a research tool (O'Connor & McFadden, 2010). Cronbach's alphas ranged from 0.83 to 0.85 (O'Connor & McFadden, 2010). Regarding convergent validity, the DAS correlated well with other scales measuring similar constructs with correlations ranging from 0.44 to 0.55 with a mean of 0.5 tool (O'Connor & McFadden, 2010).
Raymond et al.'s (2020) survey	The survey was developed by Raymond et al. (2020) to identify health professionals' behaviours related to cognitive screening and referral. This survey was designed to be completed by health professionals who treat patients with age-related hearing loss (Raymond et al., 2020). The survey was tested by distributing it to six members of the Otolaryngology Department at Emory University who analysed the survey in terms of content comprehension and intent (Raymond et al., 2020).

Trustworthiness of qualitative part of the research was achieved through satisfying Guba’s (1981) criteria: credibility, transferability, and dependability and confirmability, described in **Table 5** below.

Table 5

Strategies to fulfil trustworthiness according to Guba's (1981) criteria

Criteria	Strategies to satisfy criteria
Credibility	Triangulation of data, prolonged engagement and persistent observation was performed (Cypress, 2017). The researcher had completed a course in conducting focus groups (Cypress, 2017).
Transferability	Researcher provided thick descriptions; continued data collection until saturation occurred and ensured meticulous and accurate transcription (Cypress, 2017).
Dependability and Confirmability	The research methods were described in detail; the researcher described rationales for approaches in detail (Cypress, 2017). Coding was repeated at two points in time for a sample of the data. Researcher kept a reflexive journal so that reflective commentary and self-awareness was an ongoing process (Cypress, 2017).

Table 6 shows potential biases in the research and strategies for management.

Table 6

Potential biases and strategies for management

Type of bias	Strategy to manage bias
Selection bias	Due to self-selection, the results likely reflect audiologists who are interested in metal health. This is a limitation to the study as it influences generalisability (Smith & Noble, 2014).
Social desirability bias	Participants remained anonymous in the online survey, unless they had volunteered to take place in the focus group. Participants were told that there were no right or wrong answers to encourage frankness. For the focus group, the researcher took great care to make a non-judgmental stance (Qutoshi, 2018).
Recruitment bias	Survey was posted online, excluding participants without internet access. The researcher acknowledges that this was a limitation to the study.
Measurement bias	Survey measures consist of previously used and validated questionnaires and scales. (Malone et al., 2014). Details of the psychometric qualities of the instruments are given in **Table 4**.
Missing data bias	Maximise survey response rate (Malone et al., 2014). Parts of survey were analysed separately and sample size for each section was reported.
Interviewer bias	Researcher remained neutral throughout the focus group and was accepting of participants' responses.
Respondent bias	For the focus group, researcher gently discouraged dominant behaviour and encouraged more quiet participants to voice their opinions.
Nonresponse bias	Reminders were sent on forums. Online surveys in research are known to have low response rates (Wu et al., 2022). This is a limitation to the study in that desired sample size could not be reached.
Interpretation bias	Focus group themes and interpretations were reviewed by the research supervisor.
Confirmation bias	An inductive approach to focus group analysis was employed and themes that did not align with preconceptions were reported.

Data Management

Data were managed according to the University of Cape Town’s Research Data Management Policy (2018). Original data were collected. The survey data were both quantitative and qualitative. Quantitative data were both nominal and categorical.

All personal data were protected. Respondents were anonymised by assigning each participant a number (survey) or pseudonym (focus group) so that participants remained unidentifiable. Only the researcher and research supervisor had access to raw data which was stored on a password-protected computer and external hard-drive stored in a locked drawer. Data were exported from SurveyMonkey™ into an Excel spreadsheet and then deleted from SurveyMonkey™.

The focus group generated qualitative data which were audio and video recorded and later transcribed. Prior to the focus group, the researcher explained to each participant how to use a pseudonym as their Zoom username to protect their identity. The Zoom platform allowed audio-video recordings to be stored locally, on the researcher’s computer, without any other person on the call having access to the recording. Only the researcher had access to the recordings and raw transcription data which was stored on a password protected computer and external hard-drive. After the project, the audio and video recordings were deleted.

Dataset sizes for both the survey and focus group were less than 20 GB and did not require large storage space. In line with South African Good Clinical Practice Guidelines (Department of Health, 2006), processed, anonymised data will be stored for fifteen years within the University of Cape Town’s free of charge storage platforms.

Data Analysis

The purpose of an explanatory sequential design is to link quantitative and qualitative data in such a way that the qualitative data can explain the results from the quantitative phase (Creswell & Plano Clark, 2018). Therefore, the data were analysed in a sequence depicted in **Figure 1**.

Survey data were exported into Excel for analysis. Distribution was determined by generating histograms for numerical data and bar graphs for categorical data. Histograms were analysed in terms of skewedness, peakedness and symmetry. Box-and-whisker diagrams were used to identify outliers. Data were then analysed in terms of descriptive statistics (mean, median, mode, range, standard deviation). Linear regression was used to analyse relationships between variables. This was used to determine which factors related to audiologists' increased knowledge of their client's mental health needs. For example, to determine whether better knowledge of depression is related to higher levels of experience by comparing years of experience with scores on the Knowledge of Late Life Depression Scale.

Qualitative content analysis was used to systematically and objectively analyse qualitative data (Schreier, 2014). A coding frame was created, consisting of main categories and subcategories, which were defined, revised, expanded and segmented (Schreier, 2014). For the vignettes, a deductive approach to content analysis was used to allow for testing theories in different contexts (Elo & Kyngäs, 2008). The deductive categories were obtained from Bennett, Meyer, Ryan & Eikelboom's (2020) content analysis of their study participants' responses to the Case Vignettes. The results from the vignettes were triangulated with other survey items.

Focus groups were analysed through content analysis to extract themes from the data. An inductive approach to content analysis was used which allowed new themes and insights to emerge (Elo & Kyngäs, 2008). In inductive analysis, the codes were obtained straight from the raw data while avoiding preconceived ideas so that themes emerged on their own (Moretti et al., 2011). The researcher transcribed and repeatedly read through the data so as to become immersed in the data. Subsequently, the transcripts were entered into a two-column table in Microsoft Word, facilitating line-by-line coding. The codes were counted to obtain frequencies to determine the importance of particular codes. These frequencies guided the identification and formulation of overarching themes. Quotes were used to represent and provide evidence for themes (Creswell & Plano Clark, 2018).

To integrate quantitative and qualitative data through triangulation, joint display tables were created (Creswell & Plano Clark, 2018). The integration phase allowed for the qualitative data to give a deeper understanding of and add nuances to the quantitative results (Creswell & Plano Clark, 2018).

Ethical Considerations

The researcher promoted research integrity by following the principles and responsibilities of the Singapore Statement on Research Integrity (World Conference on Research Integrity, 2010) (see **Appendix Q**). In line with the Declaration of Helsinki (World Medical Association, 2013), the ethical considerations are described below.

Autonomy

Informed consent was required from all participants. As the documents appeared on the first page of the online survey along with the contact details of the researcher, Carla van Stelten, the research supervisor, Dr Christine Rogers, and the University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee, participants could not enter the survey without having consented. Potential participants could have contacted the researcher prior to consenting should they have had any questions about the study and their participation. Participation was completely voluntary and potential participants could have declined to take part or withdraw from the study at any time without explanation or consequence. For the focus group, the link to the SurveyMonkey™ with the informed consent document was attached to the email invitation and the participants were provided with the researcher's contact details should they have had any questions prior to consenting. Participants needed to complete the informed consent process before they were sent a Zoom invitation. The potential participant did not need to make an immediate decision. The participant could have withdrawn from the study at any point without explanation nor consequence. Focus group participants were reminded of their rights as participants and the limits to confidentiality at the commencement of each group.

Confidentiality

Participants in the survey were asked if they wished to take part in the second phase of the study i.e. the focus group and were asked to provide an email at which they could be invited to take part. The researcher stored the participants' emails on a password-protected document and deleted the SurveyMonkey™ question asking participants for their email after triangulation. Potential participants were sent invitations in individual emails. For the survey, unless voluntarily providing an email address, the potential participant was not asked to provide any identifiable information. Instances where participants were asked to provide email addresses included only when indicating that they were willing to take part in the second phase of the survey or if they requested that the final study results be shared with them directly.

For the focus group, confidentiality could not be guaranteed and participants were made fully aware of this during the informed consent process. Participants were urged, in both the informed consent document and introduction of the focus group, to respect the privacy of fellow participants by refraining from discussing who attended the focus group and what was said. Participants were excluded if they indicated that they did not have access to a private space to protect other participants' and their own rights to confidentiality.

Beneficence, Non-maleficence and Risk/benefit Ratio

Preventing the spread of the COVID-19 pandemic outweighs the risks related to data collection via online platforms.

Participants were not paid for taking part in the study. However, participants who took part in the online focus group were able to request remuneration for any data costs incurred.

Due the nature of the topic, participants may have recounted traumatic encounters with clients. However, the researcher was trained in psychological first aid and was able to perform psychological first aid immediately and facilitate an appropriate referral if further counselling was necessary (see **Appendix R** for description of psychological first aid course). If further counselling was required, costs incurred were at the participant's own expense. No such events occurred.

Participants benefited in that the researcher provided them with links to free online courses which may have furthered their knowledge and skills in the provision of mental health services for their patients. The social value of the research and participant benefits outweighed potential harms. All possible measures were put in place to minimise harm to participants. The researcher concluded that the risk benefit ratio was satisfactory.

Justice

Audiologist participants were invited from various countries to ensure that the research explored audiological care of clients' mental health internationally to obtain diverse perspectives. Demographic variables did not influence selection. All participants were treated fairly and with respect. The researcher is aware of social justice advocacy. The research may start a dialogue within the audiological community about mental health issues in older clients which may improve equal access to audiologist-provided mental health services. The results were disseminated back to the participants by allowing them to tick a box if they would have liked to receive an abstract once the study was complete, however they would have needed to provide an email address and procedures for participant privacy were followed as in the ***Confidentiality*** section above. The results were disseminated to the scientific community through congress or publication and to the lay community by a small article for World Hearing Day in local newspapers.

Results

The aim of the study was to identify audiologists' knowledge, practices and perceptions related to the mental health needs of their older adult clients with hearing loss. The results are reported in two phases (Phase 1: Survey; Phase 2: Focus Groups) according to the Objectives.

Results of Phase 1: Survey

Objective 1: Participants' knowledge of mental health

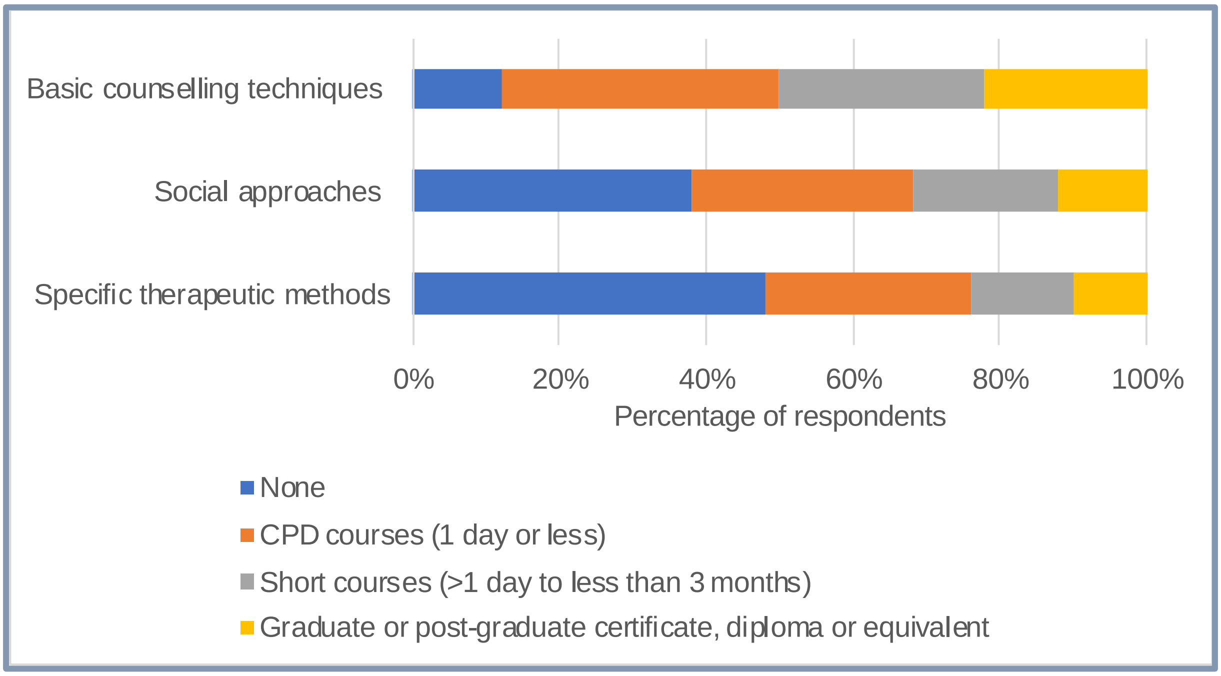
Before reporting on participants' knowledge of mental health, current levels of training are presented. Next, knowledge is quantified by reporting scores from the KLLD-R and DAS. Following this, abilities in identification of mental disorders in response to the Case Vignettes are demonstrated. Finally, self-reported knowledge, confidence and comfort are reported.

Participants' current levels of training in mental health management.

Participants had varying levels of training in mental health management areas. Most of the participants (88%, *n* = 44) had some level of training in basic counselling techniques, for example active listening, with just over one fifth of participants (22%, *n* = 11) having received training in basic counselling techniques at a graduate/post-graduate level and about two thirds through CPD (Continuing Professional Development) or short courses (66%; n = 33). Six participants (12%) had not received training in basic counselling techniques. Thirty-one participants (62%) had training in social approaches, for example working with the family, and over one third of participants received no training in social approaches (38%; *n* =19). Just over half (52%, *n* = 26) of participants received training in more specific therapeutic methods, for example Cognitive Behavioural Therapy (CBT). (See **Figure *2***). Most participants (94%, *n* = 47) were interested in developing their knowledge and skills associated with mental health and emotional well-being.

Figure 2

Participants' levels of training in mental health



Knowledge of Late Life Depression Scale – Revised.

Fifty participants completed the Knowledge of Late Life Depression Scale – Revised (KLLD-R). Mean KLLD-R score was 30.4 (SD = 2.36; range from 25 to 37). The mean score of the KLLD-R with audiology-related questions was 49.02 (SD = 3.53; range from 40 to 58) (See **Table 7**). Mean item scores for the different survey domains are as follows: "symptoms" = 3.48; "facts" = 3.19; "audiology-related" = 3.1; "myths" = 2.4. Questions related to physical symptoms were also grouped together in which participants had a mean item score of 3.31.

Table 7

Participants' scores: Knowledge of Late Life Depression Scale – Revised

Domain	Survey item	M/4 (SD)
Symptoms	Sleep problems can be a symptom of depression[a]	3.44 (0.70)
	Tiredness can be a symptom of depression[a]	3.48 (0.65)
	Loss of interest in things previously enjoyed can be a sign of depression	3.52 (0,50)
Facts	Depression is common among aged care residents with dementia	3.28 (0.57)
	It is common for depression to go undetected among older people	3.46 (0.58)
	Older people with depression often report physical aches and pains rather than sadness[a]	3.00 (0.67)
	Late-life depression is associated with poorer recovery from physical illnesses	3.02 (0.62)
Myths	Depression is a normal reaction to the changes of old age	2.80 (0.76)
	Depression is a normal reaction to the death of an older person's partner	2.02 (0.87)
	Most older people who have to sell their home and move into residential care would become depressed	2.38 (0.67)
Audiology-related	Older people don't commit suicide, it's more of a problem in younger age groups[b]	2.86 (0.78)
	There is a greater rate of depression in people with hearing loss than people with normal hearing[b]	3.12 (0.66)
	It is normal for older people to talk about having nothing to live for[b]	2.80 (0.90)
	There is effective treatment for late-life depression[b]	2.86 (0.81)
	Hearing aids are sufficient to treat the symptoms of depression caused by hearing loss[b]	3.32 (0.71)
	Social isolation can contribute to depression[b]	3.66 (0.59)
	Total	**49.02/64 (3.53)**

Note. Item scores range from 1 to 4 with higher scores denoting higher knowledge; M/4: Mean item score out of 4; SD: Standard deviation

[a] Item related to physical symptoms; [b] Item specific to audiology knowledge of depression (Bennett, Meyer, Ryan & Barr et al., 2020)

There was no significant relationship between KLLD-R scores and participants' demographic variables. Practicing in LMIC and HIC (r^2 = .02; *F* = .79; *df* = 1; p =.38); age (r^2 = .003; *F* = .12; *df* = 1; p = .73); years of experience (r^2 = .01; *F* = .54; *df* = 1; p = .47); urban or rural setting (r^2 = .007; *F* = .36; *df* = 1; p = .55). KLLD-R scores were also not significantly related to whether participants routinely asked their clients about mental health needs (r^2 = .002; *F* = .11; *df* = 1; p = .74) nor whether participants had their own experience with mental health problems (r^2 = .002; *F* = .11; *df* = 1; p = .75).

Dementia Attitudes Scale.

Forty-seven participants completed the Dementia Attitudes Scale (DAS) which tested participants' knowledge about and attitudes towards dementia. The DAS is a Likert-type questionnaire with item scores on a scale from 1 (strongly disagree) to 7 (strongly agree). The mean score was 107.98 (SD = 12.98). The mean item score was 5.83 for the knowledge domain and 5.05 for the social comfort domain (See **Table 8**).

Regression analysis indicated a significant relationship between scores the DAS and KLLD-R (r^2 = .25; *F* = 14.9; *df* = 1; p = .0004). DAS scores were not significantly related to whether participants were from HIC or LMIC countries (r^2 = .02; *F* = .91; *df* = 1; p = .34), age (r^2 = .04; *F* = 2; *df* = 1; p = .16), years of experience (r^2 = .04; *F* = 1.88; *df* = 1; p = .18), whether participants routinely asked about mental health (r^2 = .07; *F* = 3.31; *df* = 1; p = .08), whether participants screened for cognitive impairment (r^2 = .03; *F* = 1.39; *df* = 1; p = .25), nor whether participants referred for cognitive testing (r^2 = .08; *F* = 3.83; *df* = 1; p = .06).

Table 8

Participants' scores: Dementia Attitudes Scale

Domain	Survey item	M/7 (SD)
Social comfort	It is rewarding to work with people who have ADRD [a]	4.62 (1.45)
	I am afraid of people with ADRD [a]	5.53 (.,29)
	I feel confident around people with ADRD [a]	4.74 (1.18)
	I am comfortable touching people with ADRD [a]	5.64 (1.16)
	I feel uncomfortable being around people with ADRD [a]	5.32 (1.45)
	I am not very familiar with ADRD [a]	4.30 (1.81)
	I would avoid a person with ADRD [a]	6.11 (1.12)
	I feel relaxed around people with ADRD [a]	4.89 (1.26)
	I feel frustrated because I do not know how to help people with ADRD [a]	4.09 (1.66)
	I cannot imagine caring for someone with ADRD [a]	4.66 (1.84)
	I admire the coping skills of people with ADRD [a]	5.62 (1.10)
Dementia knowledge	People with ADRD can be creative [b]	5.15 (1.22)
	Every person with ADRD has different needs [b]	6.30 (1.17)
	People with ADRD like having familiar things nearby [b]	5.43 (1.25)
	It is important to know the past of people with ADRD [b]	5.60 (1.08)
	It is possible to enjoy interacting with people with ADRD [b]	6.09 (0.79)
	People with ADRD can enjoy life [b]	6.02 (0.79)
	People with ADRD can feel when others are kind to them [b]	6.43 (0.84)
	We can do a lot now to improve the lives of people with ADRD [b]	5.85 (1.17)
	Difficult behaviours may be a form of communication for people with ADRD [b]	5.62 (1.38)
	Total	**107.98 (12.84)**

Note. Item scores range from 1 to 7 with higher scores denoting better attitude towards and higher knowledge of dementia; M/7: Mean item score out of 7; SD: Standard deviation; ADRD: Alzheimer's disease and related dementias

[a]Item from DAS (social comfort) (O'Connor & McFadden, 2010); [b]Item from DAS (dementia knowledge) (O'Connor & McFadden, 2010)

Abilities in identification of mental disorders: Three Case Vignettes.

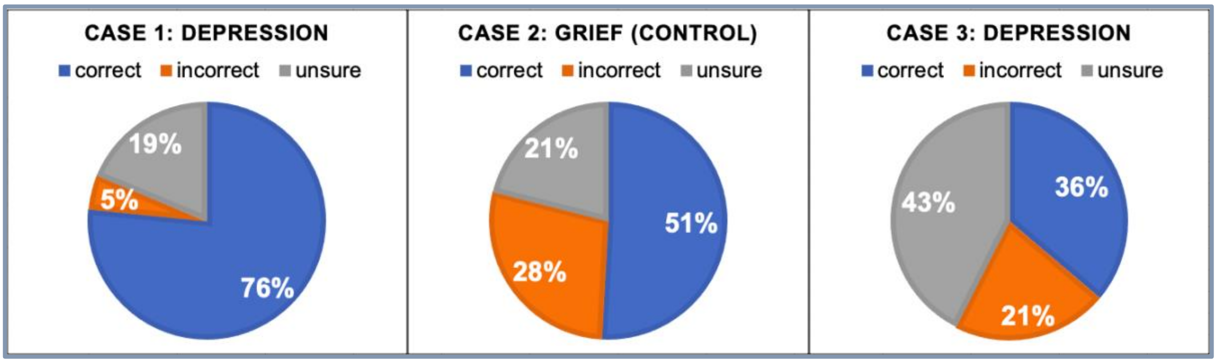
Participants were provided with three vignettes, two portraying clinical depression (Case 1 and Case 3) and one grief (Case 2) and were asked to identify whether the client presented with a mental disorder or not. Sixty-four participants completed Case 1 of which 49 participants (76.56%) correctly identified that the client presented with a mental disorder, three participants (4.69%) incorrectly indicated that the client did not present with a mental disorder and 12 participants (18.75%) stated that they were unsure.

Fifty-seven participants completed Case 2, of which 29 participants (50.88%) correctly ruled out a mental disorder, 16 participants (28.07%) incorrectly indicated that the client presented with a mental disorder and 12 participants (21.05%) were unsure.

Forty-seven participants answered questions about Case 3, of which fewer, 17 (36.17%), correctly identified that the client presented with a mental disorder, 10 participants (21.28%) incorrectly ruled out a mental disorder and a greater number of 20 participants (42.55%) were unsure. See **Figure 3** for a summary of answers to Case 1, 2 and 3.

Figure 3

Case Vignettes: Participants abilities in identification or exclusion of mental disorders



Correct identification of a mental disorder in Case 1 had a significant positive correlation with scores on the KLLD-R (r = .47; p < .05). There was no significant correlation between correct answers to Case 2 and scores on the KLLD-R (r = .08; p = .57). There was no significant correlation between correct answers to Case 3 and scores on the KLLD-R (r = .28; p = 0.06).

For the three Cases, participants were asked to describe the presenting symptoms in a report to a general practitioner or mental health professional. Overall, symptom report varied across all three Cases with 30 different symptoms listed in Case 1, 34 in Case 2 and 27 in Case 3 (see **Appendix S** for full list of reported symptoms per Case). Types of symptoms listed per Case are found in **Table 9**. Participants mainly reported psychological symptoms, for example low mood or lack of motivation, for Case 1 (70.97%; *n* = 44) and Case 2 (87.72%; n = 87.72%). Social symptoms, such as loneliness and withdrawal, were most commonly listed for Case 3 (77.08%; *n* = 37). Over two thirds of participants failed to mention physical symptoms, such as tiredness and physical pain, for Case 1 (69.35%; *n* = 43) and Case 3 (66.67%; *n* = 32). Labelling terms, such as “depression” and “social anxiety” were used across the three Cases, more so for Case 1 (40.32%; *n* = 25) and Case 3 (29.17%; *n* = 14) than for Case 2 (10.53%; *n* = 6).

Table 9

Types of symptoms listed by participants for three Case Vignettes

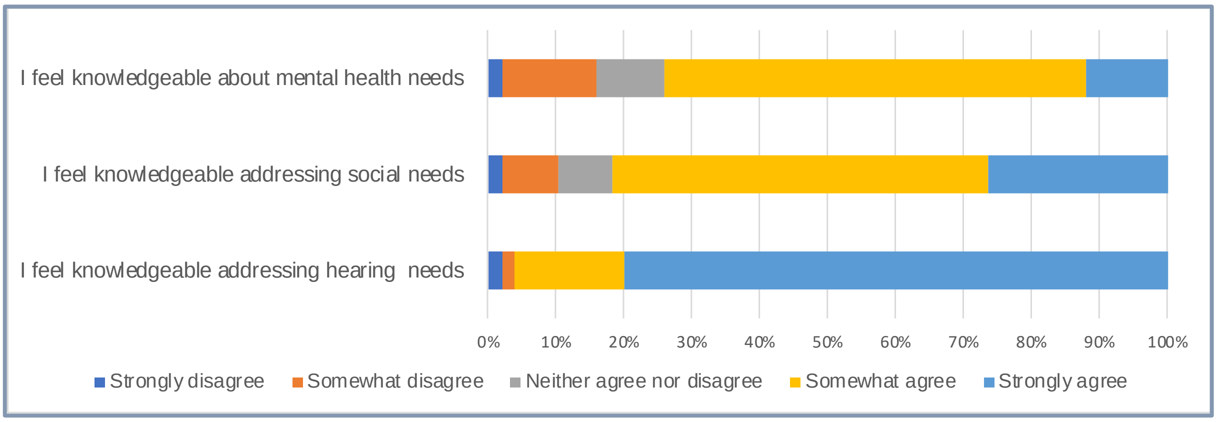
Type of symptom	Case 1: Depression *n* (%)	Case 2: Grief *n* (%)	Case 3: Depression *n* (%)
Physical	19 (30.65%)	1 (1.75%)	16 (33.33%)
Psychological	44 (70.97%)	50 (87.72%)	25 (52.08%)
Social	24 (38.71%)	12 (21.05%)	37 (77.08%)
Hearing	8 (12.9%)	11 (19.30%)	13 (27.08%)
Other:			
Labelling terms	25 (40.32%)	6 (10.53%)	14 (29.17%)
State the client’s own words	5 (8.06%)	2 (3.51%)	2 (4.17%)
Screening scores	1 (1.61%)	0 (0.00%)	0 (0.00%)

Self-perceived knowledge, confidence and comfort related to biopsychosocial needs of clients.

Participants answered survey questions related to self-perceived knowledge in addressing and discussing hearing, social and emotional needs. Most of the participants felt knowledgeable in addressing hearing-related (96%, *n* = 48), social (80%, *n* = 40) and mental health needs (74%, *n* = 37) (See **Figure 4**).

Figure 4

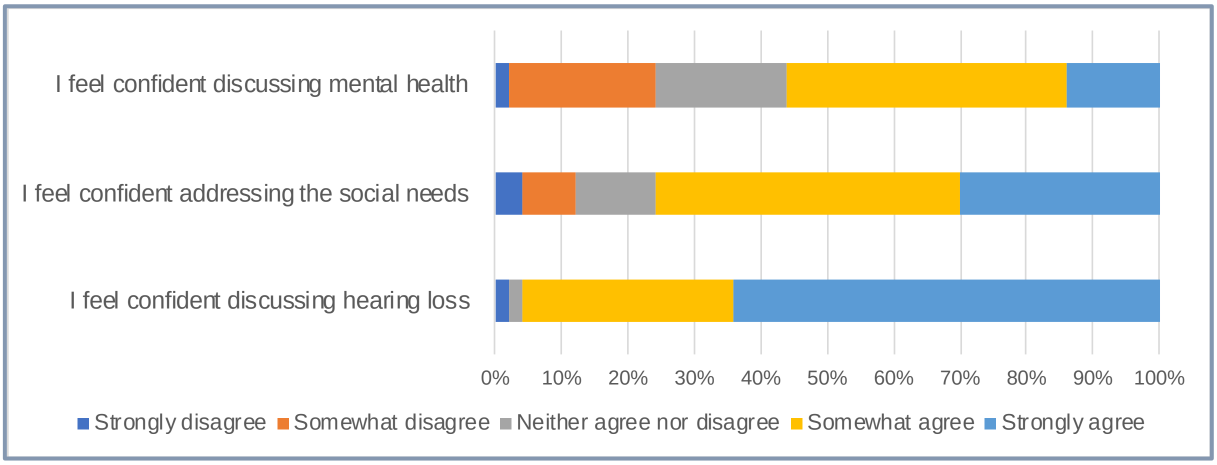
Participants' self-perceived knowledge on hearing, social and mental health needs



Participants were also confident in discussing hearing loss and audiological rehabilitation (96%, *n* = 48) and addressing social needs (76%, *n* =38), but just over half of participants were confident in discussing mental health (56%, *n* = 28) (See **Figure 5**).

Figure 5

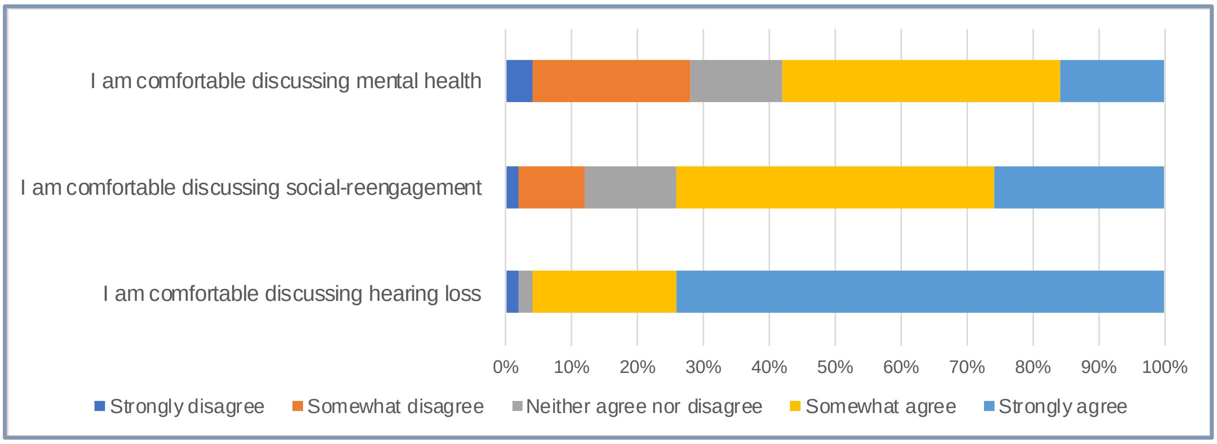
Participants' confidence in addressing hearing, social and mental health needs



Further, the majority of participants were comfortable with discussing hearing loss and audiological rehabilitation (96%, *n* = 48). Less participants, although still the majority, felt comfortable discussing social reengagement (74%, *n* = 37) and fewer felt comfortable discussing mental health (58%, *n* = 29) (See **Figure 6**).

Figure 6

Participants' comfort related to discussing hearing, social and mental health needs



Whether participants routinely asked clients about mental health had a low, positive correlation to comfort in discussing mental health (r = .38), but was not correlated to confidence in discussing mental health (r = .25)

Objective 2: Practices related to mental health needs: Survey results

Firstly, practices in response to the Case Vignettes are described. Next, referral behaviours, followed by screening behaviours are reported.

Responses to mental health concerns: Case Vignettes.

Participants described how they would respond to clients' needs in three different Case Vignettes. Responses were open-ended questions included in the questionnaire. Most participants responded to psychosocial needs for Cases 1 and 2 and fewer, though still the majority, for Case 3 (100% for Case 1, 92.98% for Case 2 and 79.17%). (See **Table 10**).

Table 10

Participants' responses to mental health needs: Three Case Vignettes

Types of needs responded to	Case 1: Depression *n* (%)	Case 2: Grief *n* (%)	Case 3: Depression *n* (%)
Audiological only	0 (0.00%)	4 (7.02%)	10 (20.83%)
Psychosocial only	16 (25.00%)	7 (12.28%)	6 (12.50%)
Audiological and psychosocial	48 (75.00%)	46 (80.7%)	32 (66.67%)

In terms of describing participants' responses, through content analysis and frequency counts with a deductive approach using pre-determined themes from Bennett, Meyer, Ryan & Eikelboom (2020), the following themes were deduced in the present study: "informational counselling", "diagnostic testing", "interventions", "clinical processes", "emotional support", "involving/referring to external help" and "clinician is unsure." All subthemes and meaning units can be found in **Appendix T**. A summary is found in **Table 11**.

Table 11

Participants' specific responses in addressing emotional needs across three Case Vignettes

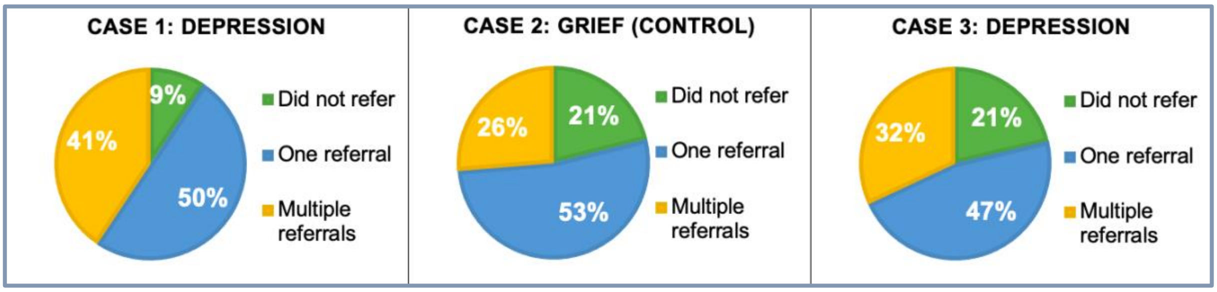
Clinical behaviour	Case 1: Depression *n* (%)	Case 2: Grief *n* (%)	Case 3: Depression *n* (%)
Informational counselling	31 (48.44%)	15 (26.32%)	17 (36.17%)
Audiological testing	7 (10.94%)	9 (15.79%)	10 (21.28%)
Audiological interventions	33 (51.56%)	32 (56.14%)	34 (72.34%)
Encourage social participation	7 (10.94%)	2 (3.51%)	4 (8.51%)
Person-centred clinical processes	21 (32.81%)	40 (70.18%)	15 (31.91%)
Emotional support	33 (51.56%)	25 (43.86%)	20 (42.55%)
Referral	47 (73.44%)	23 (40.35%)	17 (36.17%)
Impose clinician views on client	2 (3.13%)	2 (3.51%)	1 (2.13%)
Unsure	1 (1.56%)	0 (0.00%)	2 (4.26%)

Referral to address mental health needs: Case Vignettes and quantitative survey results.

Questions regarding referral behaviours and perceptions were asked throughout the survey. In response to the Case Vignettes, most participants reported that they would involve external help. For Case 1 (depression), 58 participants (90.63%) reported that they would involve external help and of those who referred, 32 referred to only one source of support while 26 made multiple referrals. In Case 2 (grief), 45 participants (78.95%) involved external help with 30 participants involving one other source of support and 15 making multiple referrals. In Case 3 (depression), 37 (78.72%) involved external help with 22 participants involving one source of external help and 15 recommending multiple referrals. (See **Figure 7**).

Figure 7

Case Vignettes: Percentage of participants involving external help



Referral destination varied with 24 different referral destinations being reported across the three Cases (see **Table 12**). The most common professional to whom participants would refer across all three Cases was a psychologist.

Table 12

Referral destinations for Case Vignettes

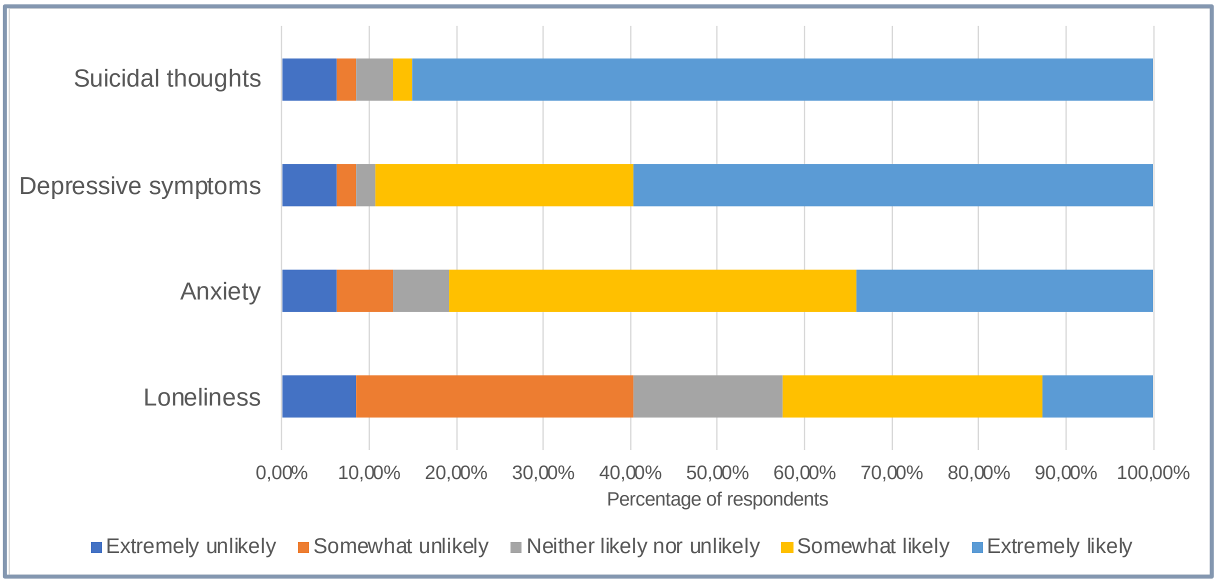
Referral destination (open-ended response)	Case 1: Depression *n* (%)	Case 2: Grief *n* (%)	Case 3: Depression *n* (%)
Medical professionals			
GP	21 (32.81%)	10 (17.54%)	15 (31.25%)
Psychiatrist	14 (21.88%)	3 (5.26%)	4 (8.33%)
Geriatric specialist	2 (3.13%)		
Neurologist	1 (1.56%)	1 (1.75%)	
Allied health professionals			
Social worker	10 (15.63%)		2 (4.17%)
Psychologist	32 (50.00%)	25 (43.86%)	22 (45.83%)
Therapist	1 (1.56%)	2 (3.51%)	1 (2.08%)
Occupational therapist	2 (3.13%)		
Grief counsellor		9 (15.79%)	
Physiotherapist	1 (1.56%)		2 (4.17%)
Dietician			3 (6.25%)
Counsellor			4 (8.33%)
Chiropractor			1 (2.08%)
Social/support groups			
Family/friends	4 (6.25%)	3 (5.26%)	1 (2.08%)
Retirement village staff	6 (9.38%)		
Self-referral services	2 (3.13%)		
Support groups	4 (6.25%)	5 (8.77%)	
Religious support groups		3 (5.26%)	
Family therapy		3 (5.26%)	
Faith leader		3 (5.26%)	
Social groups		1 (1.75%)	1 (2.08%)
Couples therapy			1 (2.08%)
Pilates classes			1 (2.08%)
Meditation techniques			1 (2.08%)

Legend: GP = General Practitioner

In the quantitative section of the survey, when asked about referral behaviours in response to clients' symptoms, most participants (89.36%) were likely to refer clients presenting with depressive symptoms. Participants were slightly less likely to refer clients presenting with anxiety (80.85%) and much less likely to refer clients presenting with loneliness (42.55%) (see **Figure 8**). However, only eight (16%) participants reported that they routinely ask their audiology clients whether they are concerned about their mental well-being, or whether they have recently experienced anxiety, depression or suicidal thoughts. Although most participants were likely to refer for suicidal thoughts (87.23%; *n* = 41), four participants (8.51%) were unlikely and two (4.26%) were undecided on whether to refer clients presenting with suicidal thoughts.

Figure 8

Participants' likelihood of referral



Seven (14.89%) participants reported routinely referring their clients for cognitive testing. For just over two thirds (68.09%; *n* = 32) of all participants, clients' age did not affect whether the audiologist was likely to refer individuals for cognitive testing. For 33 participants (70.21%) the clients' degree of hearing loss did not influence whether they were likely to refer clients for cognitive testing or not. Eight participants (20%) reported that they would never refer for cognitive testing, even if a symptom, such as memory loss, was mentioned.

Professionals to whom participants would refer clients for cognitive testing varied, with seven different practice types being listed, with no one profession being favoured. (See **Table 13**).

Table 13

Practice types to which participants would refer for cognitive testing

Practice type	n (%)
Internal medicine	3 (6.38%)
Gerontology/ memory clinic	11 (23.40%)
Psychiatry	10 (21.28%)
Neurology	7 (14.89%)
No response	4 (8.51%)
GP	5 (10.64%)
GP who specialises in geriatrics	1 (2.13%)
Consult with multidisciplinary team	1 (2.13%)
Psychologist	4 (8.51%)
Not possible to refer	1 (2.13%)

Legend: GP = General Practitioner

Screening for mental health in the audiology setting: Survey results.

Only seven (14.89%) participants reported that they had ever screened for cognitive impairment in their practice. Of those who did screen for cognitive impairment, degree of hearing loss was not a factor in the likeliness of screening (100%, *n* = 7) and for most participants, clients' age was also not a factor (71.43%, *n* = 5). More than half of the participants (53.19%, *n* = 25) were unsure of which tool was the best for screening for cognitive impairment. A wide range of possible tools was mentioned. When stating which tool they thought was best for screening for cognitive impairment, seven participants (14.89%) referenced the Cognitive Abilities Screening Instrument (CASI), while five (10.64%) referenced the Mini-Mental State Exam (MMSE) and five (10.64%) referenced the

Montreal Cognitive Assessment (MoCA). One participant said that there was no evidence for the best tool (see **Table 14**).

Table 14

Scales identified by participants as being the best screening tool for cognitive impairment

What is the best screening tool for cognitive impairment for those with hearing loss? (participants' closed end responses)	*n* (%)
MMSE (Mini-Mental State Exam)	5 (10.64%)
MOCA (Montreal Cognitive Assessment)	2 (4.26%)
Mini-Cog	5 (10.64%)
CANTAB (Cambridge Neuropsychological Test Automated Battery)	0 (0.00%)
AD8 (Ascertain Dementia 8-item Informant Questionnaire)	1 (2.13%)
3WR (Three Word Recall)	0 (0.00%)
CDT (Clock Drawing Test)	0 (0.00%)
TMT (Trail Making Test)	0 (0.00%)
CASI (Cognitive Abilities Screening Instrument)	7 (14.89%)
Not sure	25 (53.19%)
Other:	
There is no evidence for the best tool	1 (2.13%)
I go by gut feel	1 (2.13%)

Objective 3: Perceptions on mental health: Open-ended survey responses

Most participants (86%, *n* = 43) believed that a better understanding of the emotional and mental health statuses of their clients would positively affect the way in which they provided hearing-related services and/or the outcomes received by their clients. These participants described the resulting changes in practice to be improved audiological care, facilitating counselling, facilitating referral, promotion of patient-centred and holistic care, improving clinicians' confidence and allowing for clinician reflection. Themes and meaning units are summarised in **Table 15** below.

Table 15

How participants believe a better understanding of the emotional and mental health status of their clients would affect the way in which they practice/ patient outcomes

Theme (number of participants)	Meaning unit (number of participants)
Improve audiological care (21)	Improve client experience (3) Improve hearing rehabilitation (4) Promote better quality of life (4) Encourage social engagement (4) Increase client motivation to wear hearing aids (6)
Facilitate counselling (7)	Improve clinician's counselling abilities (5) Help to provide support (2)
Facilitate referral (8)	Help with appropriate referrals (8)
Promote person-centred and holistic care (12)	Facilitate holistic care (7) Provide more than audiological care (2) Promote individualised management (3)
Improve clinicians' confidence (3)	Help clinician feel more confident in providing care (3)
Allow for clinician reflection (6)	Assist in understanding clients' behaviours (6)

Participants were asked to comment on how they perceived the attitudes of their hearing-impaired clients towards engaging in conversations regarding mental health and emotional well-being during audiology appointments. Opinions were mixed, with some participants reporting that their clients were willing to engage in conversations about mental health (11 meaning units), whilst others reported that clients were not willing to open up in the audiology setting (8 meaning units) or had negative emotional reactions (9 meaning units). Other participants reported on factors relating to the audiologist, for example, clients' willingness to confide depended on the audiologist's behaviour (5 meaning units) or that the audiologist did not initiate the conversation on mental health (3 meaning units) (See **Appendix U** for all themes and meaning units).

Results of Phase 2: Focus groups and Triangulation

In this section, Objectives 1, 2 and 3 were expanded upon by exploring the results from the focus group through thematic discussions, and triangulation. Afterward, the results of Objective 4 follow.

Participants' knowledge, identification and referral practices related to the mental health needs of their older adult clients

Theme: Intuitive, sometimes insightful, but unstructured

Participants reported on their knowledge about mental health issues in their older adult clients. Throughout the discussions, participants demonstrated an understanding about the psychosocial impact of hearing loss (18 mentions). For example, Group 1 P2 explained that hearing loss leads to social isolation, which in turn affects mental health:

> I think… when an older person has a hearing loss…that isolation is not managed appropriately or accordingly. They tend to withdraw themselves from a lot of things that they usually would do and it's usually things they would enjoy… when they interact with others, and when that's taken away from them… it could lead to mental health (issues) or depression.

Participants also displayed knowledge of the relationship between hearing loss and cognitive decline (19 mentions) and indicated their awareness of current evidence on the topic. For example, when Group 1 P1 cited:

> The *Lancet* 2020[2] review really was a ground breaker with the World Health Organization report that came out about (hearing loss) … "the most modifiable risk factor for dementia", which it's been shown to be.

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[2] Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., ... & Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *The Lancet, 396(10248),* 413-446. doi: 10.1016/S0140-6736(20)30367-6

Note. References are cited in this chapter to facilitate understanding of the context.

Other participants described scanty knowledge on the subject of mental health (13 mentions). Group 4 P2 acknowledged that she did not know much about depression in older adults, but upon reflection, believed psychosocial issues and hearing loss could be related:

> We don’t know that much about depression in older adults. But, when I just think about in terms of hearing loss, not being able to communicate with someone… just how severely it impacts your relationships in general… it really… it has a major impact… on your quality of life.

Group 1 P3 explained how her perceived lack of knowledge hindered her from addressing mental health needs in a way she believed she could:

> I think I don’t have, I don’t feel like I have enough knowledge (about mental health) to actually… appropriately help them the way I feel like I could do.

A joint display table was created illustrating an example of participants’ survey scores for the Knowledge of Late Life Depression Scale – Revised (KLLD-R), Dementia Attitudes Scale (DAS) and answers to Case Vignettes with their quotes from the focus groups. (**Table 16**).

Table 16

Joint display table: Participants' KLLD-R and DAS scores and answers to Case Vignettes with quotes from the focus groups

Domain	Variable	Group 1 P1	Group 1 P2	Group 2 P1	Group 1 P3	Group 2 P2
Experience	Years of experience	More than 20	6 to 10	Less than 1	1 to 5	1 to 5
Knowledge of depression	KLLD Score (out of 60)	52	43	47	45	50
Knowledge of dementia	DAS Score (out of 120)	107	104	92	93	105
Abilities in identifying mental disorders	Correctly identified or excluded a mental disorder in 3 Case Vignettes (%)	33.33%	0%	33.33%	33.33%	66.67%
Current practices in assessing for mental disorders	Quotes from focus groups	"Self-assessment scales: so we use the HHI *(hearing handicap inventory)* a lot." "we've got three screening questions and if there are red flags coming up that if they're feeling that sometimes they forget things… "do you find that you forget people's names?", "do you find that you forget where you were supposed to be today?"" "It's something that… goes a lot on instinctive behaviour."	"continuously assessing and asking the patient "how are you feeling?", "how are you coping?" "Is this patient able to answer your simple or basic questions? When you instruct them on what to do, are they mindful or they forget halfway?"	"Just small things that they will say. They sometimes don't feel as though they need hearing aids because they don't have anyone to listen to or anyone to speak to… they just feel as though… they're…waiting to die… or you can… see the way they are… their demeanour changes… from the first time you see them… to other times you can just see that… they're no longer the same." "I look for red flags… I don't think I've seen any patients with dementia. I just have my patient that has ranging emotions. It's possible that it's… due to dementia or Alzheimer's, because of frustration of not remembering what I have said previously, or… not remembering what certain things are."	"you ask… uncomfortable questions like… "how do you feel about your hearing loss?" and then they would open up to you and there would be other issues and… cultural issues… and… patients would also like start crying." "Using the, the questionnaires to screen the patients… when you're doing… the case history information. Just getting to know the patient in the case history and during the testing process if you see okay this patient's not following anything that I'm saying or they're forgetting the instructions or… they're like "why am I here?" or… small things… that you can pick up." "I would have… a senior supervisor with me or someone that's more trained and guiding me and helping me… assess with the patient."	"Number one would be to identify red flags… are they saying certain things that are pointing towards depression?… and then being there just to listen is very important… especially if they have suicidal thoughts or ideations" "I look for red flags. So, there may be patients that are missed because the red flags were so small that I didn't pick it up… sometimes their significant other… says, "I tell him this all the time and he always forgets. He is not remembering" "they seem fine and then there are only subtle things that they do that leads to, "oh no, maybe they're forgetting something"… so, having to do that… Mini-Cog assessment really helps"

Some ways in which participants identified mental health needs included case history taking (23 mentions), communicating with the client, observing client behaviour and using assessment scales. Some participants used specific questions during case history taking, for example, asking about medication use or sleep quality (5 mentions). Others used open-ended questions that resulted in clients discussing their feelings, as illustrated by Group 5 P2:

> Usually part of your case history is not just going into your symptoms, but also going…into… “which aspects… do you find that you are struggling most with?” And then… they get prompted by that and… come out to, “okay, but this is how I’m really feeling.”

In terms of screening, only one participant used a standardised screening scale, the Mini-Cog, to screen for dementia. Participants used audiology self-assessment scales, for example the Hearing Handicap Inventory to identify psychosocial needs related to hearing. Group 5 P1 explained how she would identify signs of cognitive decline through communication with the client and their family, but upon reflection acknowledged that subtle signs may be missed and that, despite not using them, screening scales are important:

> Often when you are talking to someone… or consulting a patient that has cognitive decline, you pick it up… I mean, okay maybe not the mild ones, but you do kind of pick it up. Once you start giving instructions, once you start having general chats, you can see… or the kids will even bring it up… I personally don’t have a tool that I would use to assess cognitive decline, but I do know that it is important… definitely… it is important… there are quite nice tools out there should I need to incorporate them… but I don’t.

Participants provided several different instances in which they would refer clients for further management of mental health issues. Participants stated that if the issues were not audiology-related, they would refer on (17 mentions). Group 5 P2 provided an example of when she had referred a client to a mental health professional after picking up bigger issues, not related to hearing loss, during case history:

> There has been a patient actually this week… she also had a mugging incident and in that case I asked her…, "are you struggling to sleep?"… "have you had some anxiety from that?" She said yes, she thinks she's quite an anxious person. It was quite an older individual, so you could see it was difficult for her to admit it… So… with those type of things, cues that you would get from your case history and sort of the patients'… talking points… if something traumatic has happened, that's usually when I tend to refer them to… other disciplines or psychologists…

What was apparent from the discussions was that participants did not have a set protocol for when they would refer clients, but rather referred based on the clinician's own judgement. For example, Group 5 P1 explained that she did not have a structured approach of when to refer, because she felt that every client was unique and referred based on her own clinical reasoning and conversations with clients:

> I think after just chatting to them you kind of get the idea that they might require that (referral)… I think it's quite difficult to have… "okay these are my mental health things, these are what I'm [going to] pick up in my patients", when… everyone's mental health is different, everyone's experience of it is different. So… I don't have any… framework… or… cues… I'm looking for… but I do refer.

In terms of to whom they would refer, participants provided a variety of different professions. This aligns with the survey data where there was limited consensus on referral location. Some participants also selected referral destinations based on which professionals were close by. Group 5 P2 explained how she relied on geographical proximity when referring clients to mental health professionals. She also said that any psychologist that the client could find would suffice for their needs:

> … there is a psychologist in the street, so usually we go off a referral based on… geographical location, “this is the closest, there’s a psychologist up the street, go see them, they’re… across the way.” … so there’s no one particular that I refer to. Whatever the patient can find… would work.

Other participants felt it was important to build a relationship with and refer to mental health professionals with a special interest in hearing loss. For example, Group 1 P1 discussed the importance of working with psychologists who have a knowledge of hearing loss, but acknowledged that they were a scarce resource:

> I don’t think there’s enough link between psychology and audiology… certainly… hearing-related communication difficulties is… an area that a psychologist needs to understand… about the impact of hearing difficulties… there are people (mental health professionals with knowledge on hearing loss) out there, but it’s quite hard to find them and I think when one finds them it’s like gold and… they then will become your referral source and then you hold on to that link.

Table 17 is a joint-display table which depicts the main barriers to making a referral to a mental health professional, identified in the survey responses, alongside focus group quotes.

Table 17

Main perceived barriers to making a referral to a mental health professional

Barrier to referral	Survey participants listing this as a barrier *n* (%)	Focus group quotes supporting barriers to referral
People with hearing impairment decline onward referral to MHPs when I suggest this	23 (48.94%)	"Imagine me telling someone in their 70s, go chat to the psychologist… [they are] [going to] be like, "no chance, I have my wife. I can chat to her."" – Group 5 P1
There are no MHPs in my team	17 (36.17%)	"I've never met a psychologist in the settings that I've worked in. I think as a resource they are very scarce." - Group 3 P2
I'm not sure when to make a referral/ guidelines are unclear	16 (34.04%)	"I think it can get a bit blurry but I do think there are guidelines out there… maybe…I need to make the effort to familiarise myself with it…I don't know if I should say there should be better guidelines or if it's me that's not…too familiar with it…I'm always stuck between that… how much do I have to talk about it before I refer you on?." – Group 1 P2
I'm not sure who to refer to	12 (25.53%)	"I'm not sure if… we're supposed to refer to a neurologist to investigate further and do further management when it comes to… complex… mental health issues or psychiatrist or psychologist" - Group 1 P3
MHPs are difficult to access	12 (25.53%)	"sometimes when [clients] have to wait for that long or have to travel that long… some end up giving up… just not going and then… it's just so discouraging having to wait long… to be seen by a professional." – Group 3 P2
MHPs feel under skilled in working with people who have hearing impairment	5 (10.64%)	"I realised when we referred… often we get the psychologist calling us saying… "what is this? How is this… our scope? What are you referring this patient for?" So, as much as we need them (psychologists), I think they also need to know more about what is that link from their expertise related to what patients are experiencing for us" – Group 1 P2

Legend: MHPs: Mental health professionals

Participants' perceptions on scope of profession and working in a multidisciplinary team

Theme: This is me; this is what we do

Participants agreed on the importance of working in a multidisciplinary team so that clients could be managed holistically (22 mentions). However, participants reported that different disciplines often worked in parallel instead of together (19 mentions) as explained by Group 1 P2:

> Most hospitals have the services available but, often times you're so stuck in your department… I've never met the psychology department or I don't know how to direct a patient to the psychology department…So, I think… if an audio department is really… concerned about their patients' mental health… whether it's related to hearing or not, just to have that… referral list… I do wish sometimes… I knew more in a specific facility.

Group 4 P2 explained how health professionals should recognise the value that each team member brings to the management of a client and shift away from the mindset that different professions should work in isolation:

> … Whether it be mental health, or hearing loss, identifying it or not… I think we need to get to a point where we acknowledge that all of us (health professionals) have a role in all health conditions and we need to get to a point where we sit together and be like, "this is how you can assist us in identifying this issue", or, "… this is… your role..."… we need to kind of get out of… "this is my patient, this is my condition, you don't deal with it."

Participants acknowledged that audiologists are not equipped to be the sole provider of mental health services and stressed the need to work with other disciplines. Group 5 P2 explained how she would be able to provide basic counselling related to audiological needs, but conveyed that due to the limitations in audiologists' knowledge and skillset, it is crucial to involve other professionals more specialised in the delivery of mental health services:

> I'm not equipped to handle depression or be the sole… counsellor for depression. I can counsel him from the hearing aspect… But, I'm not someone who… can deal with the mental health… on its own… So, that's sort of where… the referrals to the other disciplines come in…

Participants expressed that they perceived other professionals to be unaware of the role of the audiologist. Nevertheless, participants acknowledged the necessity for audiologists to actively promote and enhance awareness of their role within a multi-professional team, as mentioned by Group 1 P1:

> There should be reaching out on both sides… of the way forward in the management of a patient rather than working in islands… I think sometimes it's just getting out of your office and going to [mental health professionals] and saying "this is me; this is what we do. I think there's a lot of scope for us to work together."

Theme: I can fix your hearing, but…

Participants stressed that the primary role of an audiologist is to address hearing and communication needs. They proposed that helping with audiological needs could help with mental health issues (8 mentions). Group 1 P1 explained that hearing loss impacts communication needs and that by addressing hearing loss, for example through fitting hearing technology, communication and in turn mental health status will improve:

> Fundamental to the kind of profile of the patients we're seeing is that their communication needs have been affected by their hearing loss. So, we need to primarily address that, because very often when we've addressed that appropriately… their mental health will hopefully improve and their communication will improve. Because… we all know how isolating hearing loss can be. So, there's a link between the technology we're offering them, hopefully appropriate technology,

> and we therefore can resolve a lot of their communication difficulties, like social isolation.

Participants felt that audiologists are in a good position to help if mental health issues are related to hearing difficulties, but acknowledged that audiologists are limited in what they can do (16 mentions). They recognized that there is a boundary between audiologists helping and recognising the need to refer, and perceived that the boundary was not clear to them. Group 1 P2 described how she found it difficult to determine when it was her responsibility to manage her clients' mental health needs and when it was necessary to refer on. She provided examples of clients' needs that were unrelated to hearing loss. She also mentioned that she found it difficult to refer because of the stigma associated with mental health professionals:

> For me… it's a tricky one, because when you hear depression and that… I think "okay, what's my scope?"… "How much of this can I address or look into or ask the patient what's wrong or what's the problem?" So, (sigh) like when I hear assess, I'm like, "is this a part of my diagnostic testing?" … or is it actually sitting the patient down and… considering what else is making you unhappy. Okay, it's your hearing loss, but often we find that some patients have bigger… social issues and things happening and that for me is how much do I go into… helping you or assisting you versus I need to refer you on… it's not always easy just to refer on because then you have to try and convince this person you need help or… a psychologist that could really help you and then often patients culturally look at you like, "Am I crazy?" So… for me it's that balance of, "where am I over-stepping my scope and where can I help this person?"

Participants described how audiologists play a supportive role and can act as a gatekeeper by opening the door for further mental health management (5 mentions) considering that sometimes the audiologist is the first professional clients confide in. Group 4 P2 explained how the role of the audiologist was to identify red flags or a need for referral:

> I think more so the role is to identify a need for some sort of referral. I kind of stick to my scope of practice and I think that it’s important to identify when there’s a need to refer on… for things such as addressing mental health.

Other participants felt that addressing mental health needs was not part of an audiologist’s scope of practice (7 mentions) and that it was an optional service that should only be addressed when it is brought up, as illustrated by Group 5 P1:

> I think it’s something that you kind of choose to do it… it’s not… in our scope of practice to be addressing the mental health needs of patients… well in my opinion… I just think you kind of do it when you consider… the patient as a whole… I don’t know. I think you do it when you want to do it…. When it’s brought up…then I feel like it needs to be addressed.

Participants’ perceptions and practices related to psychosocial counselling in the audiology setting

Theme: empathy, listening, validating, and counselling

Participants shared their practices of basic counselling services. For example, that they would provide counselling about the psychosocial benefits of audiological management or psychosocial adjustment counselling related to hearing loss. Participants conveyed that one of the counselling techniques they used in the audiology setting was active listening (14 mentions). Further, participants reported providing informational counselling; displaying empathy, unconditional positive regard, and concreteness. Group 5 P3 provided an example of when she put audiological management aside and simply allowed her client to talk about her feelings:

> I had a patient a couple of weeks ago, her husband died and… after her husband died she didn’t really care about her health and everything just started to deteriorate… I booked her for a fitment (of a hearing instrument) about a week ago. I didn’t actually end up doing the fitment because she was too emotional… So, for that

> entire one hour session, she just sat and spoke to me… she is seeing a psychologist, she's on antidepressant medication and all of that. But,… for that entire session I just let her talk, even though I actually didn't do the fitment… I feel like that's… what she needed – was to talk… I feel like that helped her a lot… I sometimes, if patients need to talk, I just allow them to do that. I don't stop them, I don't try and rush the situation or anything. If I need to, I'll rather then make another appointment if they need that session to just talk.

Group 5 P2 spoke about how she found it important to listen to and validate her clients' feelings and ask open-ended questions to make them feel heard:

> It's also… important to validate their (clients') feelings… if they're feeling frustrated with their hearing situation… their social isolation or anything, just to make sure that they know that they are not alone. That… it's normal to feel that way when you've got a hearing loss and it's normal for families to be frustrated with people who have hearing loss… It's also just to… link what they are feeling to the current status… of their (hearing) loss and everything…I think a lot of the times our patients just sort of want to have someone to chat to. Even if it's just a, "how have you been since the last time we saw you?"… "How is your family doing?" That I already think gives them a bit of a boost, because someone is listening to them and validating their feelings.

The participants also described how with time, as trust and rapport are built, clients tend to confide in the audiologist (7 mentions). This finding is consistent with survey results where audiologists reported that clients' willingness to engage depended on whether they trusted the audiologist or not. Group 2 P2 explained how a trusting client-clinician relationship is formed throughout follow-up sessions and as a result, clients communicate their feelings:

> As an audiologist… you see the patient a couple of times. So, we can actually develop quite a strong relationship with our patients and that often… creates a space for them to open up… because we've earned… trust.

Due to clients often presenting with problems other than hearing loss, participants shared the viewpoint that audiologists need to be holistic in their management (19 mentions). Group 2 P1 expressed that it is an audiologist's duty of care to treat clients holistically, which includes addressing mental health needs:

> I think, as a health professional, it's our duty to be able to look at the patient holistically… so… if you notice that your patient seems to have symptoms of depression then you can ask them if they're open to being referred to someone else or if they want to talk about it.

Participants scheduled follow-ups with their clients (15 mentions) and spent extra time with clients when they sensed it was required (17 mentions). For example, Group 5 P3 would monitor the impact of hearing loss on psychosocial status in follow-up appointments:

> From an audiologist's point, I think we just monitor patients in follow-ups. So, just remember what they said in the previous session. If, for example, they say that they… don't go out as much anymore, because… maybe they don't like to socialise, because [they're] embarrassed about their hearing loss… and they come back for a follow-up, just monitoring and making sure that there's some improvement… in how they socialise, if there's any impact on their communication, if that's improved.

Group 4 P2 relayed how they would schedule extra appointments with clients with memory problems to provide them with extra support and repetition of information to make sure that their audiological as well as mental health needs were met:

> Having those regular check-ups with the patients… having an actual session where it's not about the testing and things like that. So, if the patient came in for a follow-up, that session would be dedicated to speaking to them about what's

> happening since they've been amplified… a lot of the… older patients that I've worked with that kind of have… memory issues… I find that… it's a lot of repetition. … it's a lot of patience going over things that were previously discussed. So, having that time to… just go over it with them.

Participants reported that they would involve the client's family and/or significant other when addressing psychosocial needs (29 mentions). Group 3 P1 would involve family members in sessions so that they can get a better idea of what the client is struggling with, thereby strengthening the client's support system:

> Also, it's important to [involve] some of their family members in the counselling session… I think if the family members have a better understanding of what's happening with them (the client) and what they are actually going through, it builds on the support system that they have at home and that will obviously help with their depression or anxiety or whatever they may be going through because of their hearing loss.

Objective 4: Facilitators and barriers to addressing mental health needs of audiology clients

Two joint display tables were created, showing survey data alongside quotes from the focus groups, to provide rich descriptions of the barriers and facilitators related to audiologists being able to address their clients' mental health needs. The facilitators discussed in the focus groups aligned with the data from survey responses (**Table 18**).

Table 18

Main perceived facilitators to addressing mental health needs

Main facilitators	Survey participants listing this as a facilitator *n* (%)	Focus group quotes supporting facilitators
Provision of more training	39 (78%)	"I think maybe like a webinar on…the most common mental illnesses in the population 65 and over. How to properly identify them, [because] even I don't think I know the proper difference between dementia and Alzheimer's… and… other like soft skills on how we can approach them or if they are in a frantic mood, how do we calm them down?... like a webinar or discussions, or case studies, or… Something that we could chat about things. That, that would probably help." - Group 2 P2
Having a clinical decision tree tool/clinical management guidelines to support me	33 (66%)	"I think sometimes we think… we don't know enough about certain things about… assessing and addressing…I think a tool, like a check, or not a checklist, like a questionnaire would be a good thing, because it's in like a black and white thing and you don't have to, I don't know, cross-examine yourself or doubt yourself about the conclusions that you've come up with…but that there's something… black and white to… back your referral to go to someone." - Group 4 P1
Having adequate time to address emotional well-being	29 (58%)	If I know a patient takes longer… and has a lot to say, then I do book longer consultations so that they feel heard. Whether they've got depression or not... Is it a facilitator, the long appointments? I think so… because you have more time to chat… more time for them to open up…" - Group 2 P2
Being able to access on-going supervision/ support from a practitioner skilled in delivering emotional support and counselling	27 (54%)	"I think if we were able to somehow be more involved with other professionals that… deal more with things like mental health and actually observing them and maybe being able to be in their sessions... I think maybe it's… one of those topics where we kind of need to collaborate with other health professionals that are more involved with mental health, addressing mental health issues and then we can kind of see, or they can kind of determine where our role, as audiologists, could be and we can kind of be somehow be some sort of assistance…" - Group 4 P2
Knowing who and how to refer for mental health services	27 (54%)	"Maybe some of the different referral pathways. So you could say that, "look, if your patient doesn't want to see me as the counsellor, what are their other options?"... that sort of thing, because at the moment I only know of two options, which is "speak to me, or go speak to the counsellor." That's it. But, I'm sure there [are] other pathways or other things that they can do." - Group 2 P1
My role definition encouraging me to address emotional well-being	13 (26%)	"An actual, almost like academic document… like a white paper almost, saying "listen, audiologists, this is what you can do, this is what you can't do. This is where your job, your duty, actually stops."… and, "this is what you can do about it"… - Group 4 P1
Recognition from senior staff of the value of working on emotional well-being	11 (22%)	"I think if I even go to my mentor now… that's been in audiology for 30-odd years, I think she would look at me like, "what, what about mental health?", kind of a thing because that's just… not what we're about… in her eyes or in, I think the older generation's eyes… so I think it's… the thing of authority... Like having more structure in a sense." - Group 4 P1

Barriers that emerged from the focus groups, that were not apparent in survey responses, included client factors (41 mentions), stigma (27 mentions), and audiologists' own mental health needs (12 mentions) and are discussed below.

During the discussions, participants identified cultural factors as a barrier to addressing mental health needs, particularly in countries such as South Africa (9 mentions). For example, Group 4 P3 explained that in many South African cultures, the concept of mental health is dismissed or not taken seriously, making it challenging for audiologists to address:

> I think also… in a country like South Africa… something that's a boundary is cultural aspects [because]… in a lot of the cultures in South Africa, mental health – there's no such thing as that… no one's [going to] take you seriously. They're [going to] just 'sweep it under the rug.'

Group 4 P1 provided an example of where cultural factors prevented her from making a referral to a mental health professional and prevented her client from receiving sufficient psychosocial support from their significant other:

> I once had a patient that… had to be seen by someone (a mental health professional) and she was there with her husband and her husband was like, "no, no such thing, we're not doing that", and definitely a symptom of cultural unawareness or not wanting… to address and come face-to-face with that kind of thing. So, it's almost like a pride thing in *Afrikaans culture*[3]… I think that's a barrier just in my context personally… the cultural barrier… overcoming that.

Another client factor discussed was having limited transport to facilities (7 mentions) because of either lacking independence and relying on others or low socio-economic status and lacking funds to spend on means of transport. Group 2 P2 explained that she was

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[3] *Note*. Masculinity is highly valued in Afrikaans culture, and showing emotional vulnerabilities may be viewed as a sign of weakness, negatively impacting attitudes towards mental health services (Bantjes et al., 2017).

unsure if mental health was addressed after she had made a referral as clients may have been unable to arrange transport to facilities:

> So, we have quite a few… psychologists that we do refer to… but it's difficult for them to get to, especially if they live in retirement villages… and that's again, like, having to… get someone to take them and arrange it and sometimes I think for someone who's depressed it's quite a big deal. Like, when you're depressed, life already feels like so much and so to try organise transport and all of that… I don't know if many people… actually end up going.

Another client factor discussed was that older adults did not mention mental health. This could prevent audiologists from identifying mental health needs if they were not routinely asking about it (7 mentions). Participants discussed how the stigma of seeing a psychologist prevented audiologists from making onward referrals. While only 2% of survey participants identified stigma as a barrier to addressing mental health needs, it emerged as a prominent barrier during the focus group discussions. Group 5 P1 explained how clients' age and stigma influenced whether mental health was brought up during consultations or not:

> I also think… we also have to remember that mental health for our generation is completely normal. But, mental health for your older generation was, like, a taboo thing. Like, "you're not anxious, there's clearly something wrong with you." So, you will see that resistance in patients opening up. Like, "what's really bothering you?", "How is your anxiety?", "How's your depression?" and stuff like that… you can do that with like, your, middle aged adults, but with your older adults, they'll be like, "What? Nothing is wrong with me", despite taking anti-depressants… I do have a lot of patients that… won't talk to me about their mental health. Even though I've seen them for the past two years, they still won't, because to them it's… something that's not spoken about.

One participant mentioned that a barrier was that an audiologist's own mental health status and needs could impact their abilities to address their clients' mental health needs. In survey responses, 86% (n = 43) of audiologists indicated that they or anyone close to them had experienced mental health issues. Group 5 P2 shared that her own mental health vulnerabilities made it challenging for her to effectively address her clients' mental health needs:

> If I'm being realistic with myself, I don't think I have the mental capacity to be able to take on someone else's mental burdens at this stage… I think we all try… to an extent, but there's certain things that are just… out of our ability, our training abilities and… like I said, personally for me, my mental capacity… I feel fragile already, and now, if I have to sit and listen to a lot of patients it's… it's not going to work so well with me.

A number of barriers were consistent with survey responses and can be found in **Table 19**.

Table 19

Main perceived barriers to addressing mental health needs

Main barriers	Survey participants listing this as a barrier *n* (%)	Focus group quotes supporting barriers
I feel under-skilled/ lack of training	33 (66%)	"I think we definitely need more training in that aspect *(addressing mental health)*, because… I know we did do “psychology” and everything like that, but I don’t think it was enough for us to kind of have a big enough impact on them or… make a difference, because we’re also scared to kind of dive into an unknown territory like that. So, I think we definitely need more training, or I guess a lot of us need more confidence in that area as well." - Group 4 P3
Time/ caseload pressures	25 (50%)	"In public (healthcare sectors) you, you literally have to be able to see your patient in 15 to 20 minutes… if it really does seem like something that’s… a big problem *(mental health needs of the patient),* then I try and ask my colleagues if I can speak to the patient for a little bit longer... But, honestly… we have… a large patient load. So, spending about 40 minutes to an hour with one patient, it’s not feasible." - Group 2 P1
I worry that I may get ‘out of my depth’	22 (44%)	"You feel like you don’t want to over-step and… be nosy or… delve into or open a can of worms or something you can’t solve… so sometimes… you don’t go into it *(addressing mental health)*, which, probably shouldn’t be the case always." - Group 1 P2
Lack of on-going specialist supervision in psychosocial approaches	16 (32%)	"It would also be up to the department of health or, or any other facility that can hire a psychologist, to discuss human resources to be available so that we can easily address… the mental health of patients without them having to wait long lists or travel far to see a psychologist" - Group 3 P2
Not within an audiologist’s scope of practice	10 (20%)	"I think to me it’s about… “what’s our role?”, as audiologists…. if we’ve gone to the HPCSA and we read what our roles... I don’t even know if mental health is mentioned there… so, almost knowing what authority we have and sticking to that." - Group 4 P1
Emotional support/counselling is a low priority where I work	8 (16%)	"So, if I were to get into an audiology job where those are the kind of things *(mental health needs)* we address, because where I am at the moment it’s really, unfortunately, it’s just having the patient come in, assess them, "do they go to ENT?", "Do they get discharged?", "Do they need to be put on a hearing aid waiting list?" So, where I am at the moment those are the ways that we go... It’s just like “come in, test, refer, go or be placed on the waiting list.” - Group 3 P1

Discussion

This research explored the knowledge, practices and perceptions of audiologists in addressing the mental health needs of their older adult clients with hearing loss. Through integrating quantitative survey data from 50 audiologist participants and qualitative focus group data from 13 audiologist participants, a comprehensive discussion of what audiologists currently think and do about the mental health needs of their clients in their setting follows. The findings highlight what audiologists know about the relationship between hearing loss and mental health, what they currently do to address the mental health needs of their clients and their perceptions regarding addressing mental health in the audiology setting. Facilitators and barriers in being able to provide mental health services in the audiological setting are discussed. Further, limitations to the research are noted, as well as clinical implications and recommendations for future research.

Participants’ knowledge of the mental health needs of their older adult clients

Participants displayed a moderately good general knowledge of the impact of hearing loss on emotional and cognitive well-being as displayed by quantitative survey results and focus group discussions. However, this knowledge may not be consciously applied during clinical practice. Survey results as well as focus group themes are integrated below to illustrate how audiologists acknowledge the mental challenges that their clients may be facing, but may not efficiently be acting upon them. Following this, participants’ current levels of training in mental health will be discussed.

Considering the results from the Knowledge of Late-Life Depression Scale – Revised, participants had moderately good knowledge about depression with mean KLLD-R scores of 49.02 out of 64 (SD=3.53). These scores were similar to the mean KLLD-R score of 48.1 (SD=5.23) in Bennett, Meyer, Ryan & Barr et al.’s (2020) study. For the Dementia Attitudes Scale (DAS), participants also displayed a moderately good knowledge of dementia with a mean DAS score of 107.98 (SD=12.98) out of 140, comparable to scores of speech-language pathologists in Saccasan and Scerri’s (2020) study (mean = 107.5, SD =

12.52). However, these empirical findings contradicted the results of the Case Vignettes, particularly for Case 2 (control), where almost half (49.12%; *n* = 28) of the participants were unable to correctly rule out a mental disorder and for Case 3, where only about one third (36.17%; *n* = 17) of participants correctly identified that the client was presenting with a mental disorder. A greater number of participants correctly identified Case 1 as having a mental disorder (76%; *n* = 49), possibly due to the client repeatedly bringing up death and suicidal ideation. The client in Case 1 was also already on psychiatric medication for sleep problems, which may have led participants to believe that the client had already been diagnosed with and treated for a mental disorder. Participants' abilities in identifying and ruling out mental disorders were lower than in Bennett, Meyer, Ryan & Eikelboom's (2020) study (Case 1 = 96%, Case 2 = 48%, Case 3 = 63%).

The symptoms which participants identified in each Case Vignette varied, but could be categorised into four groups: physical, psychological, social and hearing. Both Cases 1 and 3 conveyed physical symptoms of clinical depression, for example, exhaustion, physical pain and reduced appetite. Considering that participants scored well in questions related to physical symptoms of the KLLD-R, it is surprising that only about one third of participants identified physical symptoms in Case 1 (30.65%; *n* = 19) and Case 3 (33.33%; *n* = 16). It is concerning that most participants would not report on physical symptoms of depression, considering that older adults find it more acceptable to report physical rather than psychological symptoms (Tsoi et al., 2017). Moreover, without further investigation of physical symptoms, such as insomnia and fatigue, depressive disorders may be under-diagnosed (APA, 2013).

Both Cases 1 and 3 displayed impairment in social functioning, which is an important sign of major depressive disorder (Herrman et al., 2022), but has also been associated with hearing loss (Shukla et al., 2021). Participants were able to identify abnormal social behaviour, for example, social withdrawal and isolation, across the three Cases, particularly for Case 3 (77.08%; *n* = 77.08%). As most participants did not consider Case 3 to be portraying a mental disorder, they may have attributed social symptoms to the hearing loss rather than a mental disorder. It is positive that participants identified symptoms of diminished social functioning as audiological rehabilitation may reduce symptoms of social disconnectedness and in turn improve mental health status (Santini et al., 2020). However, considering that participants under-identified the mental disorder in Case 3, it would be important for audiologists to improve their knowledge and skills in determining when social symptoms extend beyond the effects of hearing loss.

Participants also listed psychological symptoms across the three Cases. For Case 2, 50 participants (87.72%) identified psychological symptoms, for example depressed mood and attention difficulties (Herrman et al., 2022). However, this was of recent onset, triggered by the loss of her husband and the psychological symptoms were a normal reaction to her recent loss (Pop-Jordanova, 2021). Also, the symptoms did not result in an impairment in functioning, which is more suggestive of a period of grief than a mental disorder (Pop-Jordanova, 2021). Thirty-five (61.4%) participants mentioned that the client in Case 2 displayed signs of grief. Still, it is important that the client receives support during this time, as bereavement is a risk factor for depressive disorders in older individuals (Blackburn et al., 2017). The client in Case 2 also presented with what seemed to be memory impairment, for example seeming absent-minded and asking the same questions repeatedly. Though memory difficulties may be attributed to grief (Pop-Jordanova, 2021), it would be important for audiologists to further explore these symptoms given the strong association between hearing loss and cognitive impairment (Loughrey et al., 2018). However, only four (7.02%) participants listed memory difficulties as a symptom and two (3.51%) participants would discuss cognitive impairment with this client. This is concerning as cognitive symptoms may not be explicitly brought up by older adults or may be viewed as normal, and so it is important for the clinician to carefully probe for specific symptoms (APA, 2013). In Case 3, the loss of interest in things previously enjoyed (anhedonia) was also repeatedly mentioned; which is an important psychological symptom in major depressive disorder (Serretti, 2023).

Though participants scored well on the item concerning anhedonia in the KLLD-R, only seven (14.58%) audiologists listed it as a symptom in Case 3, suggesting that participants may know the symptoms of depression, but are unable to identify these symptoms when applied to a case.

Participants' levels of training in addressing mental health needs

Most of the participants in this study (88%; *n* = 44) had received some sort of training in basic counselling, interestingly, most commonly outside of university training (66%; *n* = 33). Training in basic counselling may therefore be insufficient during audiology training, though, notably, participants realise the need for further development of these skills. What is concerning is that 12% (*n* = 6) of the participants reported having received no training at all in basic counselling techniques. During the focus groups, participants discussed that they were taught basic counselling skills during audiology undergraduate training, but did not feel that training was specific enough to their setting to be able to implement during practice. Similarly, Luterman (2020) reported that although counselling is included in audiology training, it was not taught in a way that enabled audiologists to put their knowledge into practice, indicating a need for a change in the way counselling skills are taught. For example, Beck and Kulzer (2018) suggested that during training, counselling skills, such as active listening, non-verbal communication, observing silence and empathy, should be practiced using hands-on learning experiences. During repeated training with (simulated) clients, students should constantly be provided with educator feedback on these skills (Beck & Kulzer et al., 2018) in order to develop and strengthen the skills and improve students' confidence while limiting the risk to actual clients.

Just over half of the participants in this study had received training in specific therapy methods, such as cognitive behavioural therapy (CBT). It has been suggested that audiologists may be upskilled to provide evidence-based psychotherapeutic interventions such as CBT, though there is controversy about whether CBT can be delivered by audiologists (Henry et al., 2022). For example, studies have reported on the benefits of audiologist-provided CBT for tinnitus, whilst others voiced concerns regarding audiologists' lack of training in the foundations of psychology, essential in conducting CBT (Henry et al., 2022). CBT is not typically taught in audiology training and requires years of further education (Beck & Kulzer, 2018). Participants in this both phases of this report expressed a strong will to further develop their knowledge and skills in addressing mental health. For example, 94% (*n* = 47) of survey participants wanted to improve their knowledge in mental health) as well as the focus group discussions. It is encouraging that respondents were eager to deepen this knowledge, to better address their clients' mental health needs and in turn maintain high standards of audiological care. Current practices and perceptions related to addressing mental health in the audiology setting are discussed next.

Participants' practices and perceptions related to clients' mental health needs

Participants in the focus groups felt that improving hearing status would result in clients becoming more socially integrated and, in turn, improve their mental health status. For example, hearing aids may reduce symptoms of depression and loneliness in hearing-impaired older adults and, though the literature is mixed, may have a positive effect on cognition (Yang et al., 2022). However, only addressing audiology-related needs is not enough in terms of care for individuals presenting with mental health symptoms, especially considering that symptoms may not always be related to hearing loss. Encouragingly, most participants expressed that they would respond to the psychosocial needs of their clients. In terms of the Case Vignettes, 100% (*n* = 64) of participants described clinical behaviours that would address psychosocial needs for Case 1, 93% (*n* = 53) for Case 2, and 80% (*n* = 38) for Case 3. Management strategies for the Case Vignettes were diverse, therefore participants may be responding to psychosocial needs, but in a non-standardised way, consistent with findings from Bennett & Barr et al.'s (2020) mixed methods study. In both phases of this study, participants suggested "providing psychosocial support", "referral" and "screening" as management strategies and will be discussed below. Participants' perceptions on scope of practice related to mental health is also discussed.

Providing psychosocial support to clients

Participants in both phases of this study reported on the ways in which they currently provide psychosocial support to their clients, for example, through psychosocial counselling and displaying empathy. Participants discussed how empathy fosters the therapeutic alliance, making it more likely that mental health issues could surface. Focus group participants found it important to actively listen to their clients and normalise and validate their feelings. However, self-restriction occurred in some cases, with participants reporting they would only perform psychosocial counselling strictly within the scope of audiology, for example, if the client's emotional needs were related to adapting to their hearing loss. In contrast, other participants were more confident and reported that often clients presented with psychosocial needs unrelated to hearing, and they felt it was important to provide emotional support even if these needs were not audiology-related. Participants in this study prescribed tailored management based on clients' needs. For example, in Case 2, when the client was going through a period of grief, 23 (40.35%) participants would delay audiological management to allow the client time to grieve. Another example, reported in the focus groups, was that they would tailor appointment times and schedule follow-ups with clients they felt needed extra emotional support.

Another important clinical practice reported was involving the family. Participants recognised that clients are functioning in a unit and that their families and significant others play a crucial role in supporting them, especially when there are accompanying mental health issues. For example, if the participant felt that the client was experiencing cognitive issues, they would encourage them to bring a family member to the next session so that they may assist in remembering information, as well as provide psychosocial support. Participants also recognised that clients experiencing mental health issues, such as depression or cognitive decline, may have trouble making decisions, which raises issues of autonomy, and therefore found it important to involve family members to support decision making in terms of audiological rehabilitative options. It is positive that participants would involve families in audiological management as such involvement has been shown to not only reduce individual and third-party hearing-related disability, but to provide benefits for the mental health of older adults (Ekberg et al., 2023).

Referral practices

In response to closed-ended survey items, participants reported they would refer clients presenting with suicidal thoughts (87.23%; *n* = 41), depressive symptoms (89.36%; *n* = 42) and anxiety (80.85%; *n* = 38) and fewer for loneliness (42.55%; *n* = 20). The rates of referral in this study were similar to those in Bennett, Meyer, Ryan & Barr et al.'s (2020). Referral behaviours may be influenced by audiologists' abilities in identification of mental disorders. For example, most participants correctly identified Case 1 as having a mental disorder (76.56%; *n* = 49) and would involve external help (90.63%; *n* = 58). However, much fewer participants correctly identified Case 3 as having a mental disorder (36.17%; *n* = 17) and, perhaps consequently, fewer participants would refer this client (78.72%; *n* = 37). Alternatively, more participants may have referred in Case 1 due to the client presenting with suicidal thoughts. Despite the existence of evidence-based recommendations on addressing suicide risk in the audiology setting (Zitelli & Palmer, 2018), alarmingly 9.38% (*n* = 6) of participants would not refer the client presenting with suicidal thoughts, thus failing to meet their duty of care, potentially causing harm to the client.

There was not a standard pathway of professionals to whom the participants would refer. For example, there were 24 different referral locations across the three Cases. What was interesting was the suggestion of a wide range of both healthcare practitioners and community-based support, for example social groups and exercise groups, to which participants would refer. The broad nature of the range of referral destinations is encouraging because it shows that respondents are thinking holistically by responding to medical as well as social needs. However, multiple referrals may be unrealistic in resource-constrained settings. Across the three Cases, a psychologist was the most common referral destination. However, for Case 1, only 50% (*n* = 32) of participants would refer to a psychologist, and 45.83% (*n* = 22) for Case 3. For Case 2 (control) 43.86% (*n* = 25) of participants would refer the client to a psychologist, however, in this case a grief counsellor may be sufficient.

In closed-ended survey responses, only seven participants reported referring for cognitive testing (14.89%) and there was no consensus as to whom participants would refer for cognitive testing. The rates of referral for cognitive testing were much lower among participants in this study than the audiologists in Raymond et al.'s (2019) study (60.87%). This could reflect a diverse patient population and also a difference between high-income countries and LMIC where funding and resources are different. It is surprising how few audiologists are referring clients for cognitive testing, when the relationship between hearing loss and cognitive decline is well established (Loughrey et al. 2018). The first reports of the relationship between hearing loss and cognitive decline were published over 25 years ago (Baltes & Lindenberger, 1997) with more convincing evidence continuing to be published (Raymond et al., 2021; Loughrey et al. 2018; Thomson et al., 2017) and so it of concern that audiologists are not acting on these findings.

Screening practices

Checklists and screening scales are not routinely being used in the audiology setting, which was evident in both the survey responses as well as focus group discussions. For example, only seven survey participants (14.89%) and one focus group participant mentioned using a screening scale for cognitive decline. The low percentage of audiologists who screen for cognitive impairment is consistent across other studies (Kestens et al., 2022; Raymond et al., 2020). When asked which screening scale was best for screening for cognitive decline, over half of survey participants (53.19%) were unsure whilst others suggested the Cognitive Abilities Screening Instrument (CASI) (14.89%) and others the Mini-Cog (10.64%) to be the best tool. By contrast, in a systematic review by Raymond et al. (2021), the Mini Mental State Exam (MMSE) and the Montreal Cognitive Assessment (MoCA) were most commonly used to screen for cognitive impairment in the audiology setting. However, as one survey participant in the present study also mentioned, none of these tools were yet validated on the hearing-impaired population and may therefore inaccurately over-identify dementia due to the confounding effects of hearing loss on results (Raymond et al., 2021). The MMSE may not be an appropriate option in the audiology setting as it is sensitive to language, hearing level, socioeconomic status and culture (Ng et al., 2018). The MMSE is further unfavourable for the audiology setting as it is copyrighted (Seshadri & Mazi-Kotwal, 2012), an issue in resource-constrained settings, and takes a long time to administer, expending already limited time and financial resources.

Recently, a modified version of the MoCA, the MoCA-HI, has been validated for individuals with acquired hearing impairment. The MoCA-HI is readily available to those trained in administering it, with health professionals being able to complete the certification free of charge (Dawes et al., 2023). Should audiologists incorporate screening in their practice, it would be important to use a valid and reliable tool in their setting to maximise already limited appointment time and resources. The MoCA-HI is therefore a good option, as it is sensitive and reliable in hearing-impaired clients and may prevent over-identification whilst facilitating appropriate onward referral. Audiologists may also be willing to implement the MoCA-HI as it takes ten minutes to administer, as audiologists have reported that they would prefer cognitive screening to take a maximum of ten minutes (Kestens et al., 2022). However, there is a need for adaptation related to language and culture, followed by pilot studies, to increase the reliability and validity of the MoCA-HI in different contexts (Cova et al., 2022). it is important for audiologists to know the symptoms of cognitive impairment and to be observant of their clients' behaviour when deciding whom to screen (Sarant et al., 2023). Currently, screening for cognitive impairment is not recommended in asymptomatic individuals, due to insufficient evidence of benefits outweighing harms (Patnode et al., 2020). However, recommendations may change in future, especially considering that hearing loss is a potentially modifiable risk factor for cognitive decline, and screening may allow for earlier identification and management of cognitive decline in at-risk populations (Brewster et al., 2022).

In response to the Case Vignettes, one participant suggested a social anxiety screener. Audiology-specific self-assessment scales were mentioned, though these are related to measuring the impact of hearing loss on quality of life rather than screen for mental illness. There was no reference in either phase of the study to a specific screener for depression, though participants were eager to learn about tools they could use to screen for depression in their setting. Depression screening scales have not yet been validated on hearing-impaired older adults (Bennett & Donaldson et al., 2021). Nevertheless, simple, short screening scales do exist that are normed on older adults and can be administered by non-mental health professionals. Examples which may be appropriate for the audiology setting include the Geriatric Depression Scale – 15, and the Two-Question Screen (Tsoi et al., 2017).

Participants were not routinely asking about their clients' mental health. For example, only 16% (*n* = 8) of survey participants reported that they routinely asked their clients whether they were concerned about their mental well-being or whether they were experiencing symptoms of mental health issues. Some focus group participants confirmed only addressing mental health needs when they were raised. Thus, even though most participants (86%; *n* = 43) believed that a better understanding of the mental health status of their clients would influence their audiological care and outcomes, exploring clients' mental health status was not standard practice. It is encouraging that participants want to support clients' psychosocial needs, however, it is important for professional boundaries to be clear and for audiologists to be appropriately trained so that they are not delving into issues that they are unable to solve within their scope, and indeed refer. Audiologists' perceptions on scope of profession related to mental health needs are discussed next.

Scope of profession: the audiologist’s role in addressing psychosocial needs

It may be difficult for audiologists to determine whether symptoms of depression and cognitive decline, for example tiredness or decreased concentration, may be related to the hearing loss itself or indicative of something more, such as a mental disorder. Making this crucial distinction is outside of an audiologist’s knowledge base and scope of practice and calls for the need to collaborate with mental health practitioners (Beck & Kulzer, 2018). Still, audiologists require a basic knowledge of symptoms that may indicate a need for referral to optimise resources. However, participants’ views in both phases of this study were mixed regarding whether addressing mental health needs was within their scope of profession.

It is within the audiologist’s scope to provide counselling that falls under two categories: informational and psychosocial counselling (Laird et al., 2023). The purpose of informational counselling is to educate clients on hearing loss, rehabilitative options and instruction on self-management of hearing loss, for example, how to use their hearing aids (Beck & Kulzer, 2018). Audiologists in this report as well as elsewhere (Luterman, 2020) felt that they are skilled in providing informational counselling, but less skilled in providing psychosocial counselling. In the scope of audiology, psychosocial counselling is counselling related to the psychosocial impacts of audiological conditions (Luterman, 2020). Participants in this study were aware that their role definition included psychosocial counselling, but admitted that the term “psychosocial counselling” can be somewhat unclear. For example, when clients present with psychosocial conditions unrelated to hearing loss, it can be challenging for audiologists to recognise when psychosocial counselling surpasses their scope. Participants agreed that evidence-based practice guidelines may help audiologists to address the psychosocial needs of their clients, but were unsure if guidelines already existed. Other studies have reported that despite the existence of evidence-based recommendations in patient-centred care, audiologists may not be using them to facilitate decision making (Boisvert, 2017). The following section will discuss facilitators and barriers to addressing mental health in the audiology setting.

Facilitators and barriers to addressing mental health in the audiology setting

The main barrier to addressing mental health needs in the audiology setting, as reported by 66% (*n* = 33) of survey participants and continuously brought up during focus group discussions, was that audiologists felt under-skilled and lacked training. Several authors reported that a lack of training was the main barrier to audiologists addressing mental health needs (Bennett, Meyer, Ryan & Barr et al., 2020; Woodward & Saunders, 2023). Most participants in this report (78%; *n* = 39) felt that the provision of more training would facilitate them in being able to address their clients' mental health needs. Participants in both phases of this study reported that one of the main reasons they may not be addressing mental health needs as standard practice is because of time constraints and caseload pressures, and they felt that having adequate time would facilitate addressing emotional needs in the audiology setting. However, being receptive to clients emotional needs may not necessarily increase appointment time. For example, empathy may be incorporated within, rather than added to, appointment time (Howick & Rees, 2017), and displaying empathy may only increase appointment time by 40 seconds (Fogarty et al., 1999). Displaying empathy in an evidence-based way has also been shown to increase client satisfaction and potentially reduce the amount of follow-up appointments (Howick & Rees, 2017).

In closed-ended survey responses, participants listed that the main barrier to them making a referral was that clients declined onward referral when the audiologist suggested it (*n* = 23; 48.94%). Focus group participants mentioned that reasons for not referring for mental health needs included finding it difficult to bring up the topic, feeling that it was not within their scope of profession, or due to encountering cultural barriers and stigma perceived by clients and their significant others. Participants further discussed how their clients are already dealing with the stigma of ageing and hearing loss and how introducing the topic of mental health adds another layer of stigma for them to navigate. Other studies demonstrated that stigma and cultural barriers, particularly in minority populations, prevented older adults from utilising mental healthcare services (Lavingia et al., 2020). In contrast, Bennett & Barr et al. (2020) found that despite perceived stigma, hearing-impaired adults recognised the importance of addressing psychosocial needs.

Other barriers specific to making referrals, as reported by participants in both phases of this study, were there being no mental health professionals in their team, or that mental health professionals were difficult to access, which may be due to professional isolation. A major theme arising from the focus groups was the lack of multidisciplinary collaboration, resulting in professional isolation and health professionals working in parallel instead of together. Focus group participants working in tertiary hospitals with psychology departments available, admitted that they had never met the mental health professionals, nor knew how to direct clients to these departments as they were too focused on their own tasks and caseloads. Furthermore, audiologists perceived mental health professionals to lack knowledge on the impact of hearing loss on quality of life, consistent with the views of audiologists in Nickbakht et al.'s (2023) study. Nevertheless, participants were keen to work with and learn from mental health professionals and felt that building strong referral networks would facilitate holistic care of their clients.

Participants in this study (66%; *n* = 33) and elsewhere (Bennett et al., 2022) felt that decision-making tools would aid them in addressing their clients mental health needs. Such tools do exist; for example, the audiology-specific intervention developed by Bennett et al. (2023) is a concrete way for audiologists to be able to address mental health needs in their setting. The tool includes, but is not limited to, providing audiologists with prompts to ask clients about their mental health, informational tools about the impact of hearing loss on psychosocial well-being and visual tools to make a personalised plan with the client to address their psychosocial needs. In terms of cognitive impairment, something as simple as including a screening question during case history may prompt a discussion with the client on their cognitive status (Sarrant et al., 2023). Another example is Sarrant et al.'s (2023) list of competencies and person-centred intervention options for managing cognitive impairment in audiology clients. However, there is a need for context-specific tools which are culturally appropriate for the country in which the audiologist is practicing, particularly where there are strong negative attitudes towards mental health in specific cultural groups.

Training and clinical implications

There is a need for the evaluation and revision of audiology curricula pertaining to the assessment and management of mental health needs so that theory may be operationalised into the workplace. Training in mental health may need to be more explicit and specific to the audiology setting. To fulfil their duty of care, audiologists should be trained in crisis management so that they are able to promptly assess and address suicidal ideation. Currently practicing audiologists should keep up to date with current recommendations regarding addressing mental health needs in the audiology setting. Referral and screening protocols should be established in the context of different audiology settings to ensure the use of evidence-based practices, and that resources are spent optimally.

Strengths and limitations

This study builds on preliminary research in exploring audiologists' knowledge, perceptions and practices related to the mental health needs of their clients. Strengths of the study include its mixed methods design which allowed for interrogation into possible reasons for quantitative results and the use of an international, albeit small, sample of audiologists from both high and LMIC to report on results in different contexts. Several limitations to this study need to be considered. Due to self-selection, it is likely that participants interested in mental health took part in this study, which introduces bias and results may not be reflective of the views of the broader audiologist population. Contrary to this, participants were forthcoming regarding their lack of knowledge and confidence, as noted in both phases of the study. While curiosity could have motivated participation, relatively low levels of appropriate identification of the Cases in question, would argue against expert bias. Another limitation to the study is social desirability bias, i.e. participants may have responded in ways they seem socially acceptable or desirable rather than reflections of their true thoughts and behaviours (Qutoshi, 2018). Again, the researcher was struck by the frankness of participants' responses, which did not necessarily reflect participants in a flattering light. Due to time constraints paired with the nature of the research, it was not possible to recruit a large number of participants from the targeted countries, limiting the generalisability of findings. Despite efforts to recruit from various countries, the response rate was lower than expected, affecting the diversity of participant backgrounds, especially for the focus groups where participants were only South African. The majority of participants, especially those in the focus groups, were from Southern Africa, so could have unique tensions which apply to a LMIC setting compared with a wealthier region. Another limitation is that many participants were young with little clinical experience, however, as the participants were recent graduates, results may provide insight into what audiologists are being taught.

Recommendations for future research

It is recommended that studies with larger sample sizes are conducted to increase internal and external validity on the research topic. Context-specific, culturally appropriate screening and decision-making tools for mental health management in the audiology setting should be developed and validated. Qualitative research could document audiologists' responses to mental health needs during clinical encounters with older adults. Further research could explore psychologists' knowledge and perceptions of working with older adults with hearing impairment.

Conclusion

This multi-national study explored the knowledge, perceptions and practices of audiologists in addressing the mental health needs of their older adult clients with hearing impairment. This study emphasised the important role audiologists play in addressing the mental health needs in their setting, especially in light of the prevalence of dementia and depression among older adults, and the interconnected association between these mental disorders and hearing impairment. The audiologists who participated in this study generally displayed a moderate understanding of mental health, yet they acknowledged the presence of gaps in their knowledge. Participants' perceptions on whether addressing mental health needs was part of their scope of profession were mixed. Nevertheless, participants recognised that their clients' needs extend beyond hearing loss, and that addressing their psychosocial needs would improve audiological care. It is encouraging that participants conveyed they would address psychosocial needs in their setting, however, practices, including counselling, screening and referral behaviours, were unstructured and not standardised. Audiologists may be over- or under-identifying mental disorders in their setting, which is concerning because over-identification may waste already scarce resources, while under-identification may prolong the time it takes for clients to receive the help they need. There is therefore a need for the development of context-specific screening scales and referral algorithms to assist audiologists in the identification and management of mental health needs. Audiologists may also benefit from using audiology-specific tools when making decisions on management of mental health needs, and although such tools exist, they should be adapted and validated so that they may be used in different socioeconomic, cultural and language contexts. It is evident that there is a need, and, promisingly, an eagerness among audiologists to deepen their knowledge and skills in the identification and management of mental health needs in their setting, so that they can care for each client holistically.

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Appendices

Appendix A: Email and recruitment flyer to be forwarded by South African audiology associations and forums to potential audiology participants

Dear Audiologists based in South Africa

I am an MSc audiology student at the University of Cape Town. I am conducting a research study that will explore South African audiologists' perceptions and practices in addressing the mental health needs of their older adult clients.

As an audiologist practicing in South Africa, you are being invited to take part in my online survey. Your participation will take approximately 30 minutes. At the end of the survey, you will receive a link to free online courses which you may take to improve your knowledge and skills related to the mental health needs of older adults with hearing loss.

The survey is open from [date] to [date]. Your participation is completely voluntary and your answers will be recorded in such a way that you will not be identifiable. More information and consent documents are available by clicking the link.

If you have any questions, the student researcher, Carla van Stelten, can be contacted via cell: 076 791 0785 or email: vstcar008@myuct.ac.za. The research supervisor, Dr Christine Rogers, can be contacted via tel: 021 406 6315 or email: Christine.Rogers@uct.ac.za

[Click here to access the survey]

or copy and paste this URL into your internet browser:

I appreciate your time!

Kind regards

Carla van Stelten

MSc Audiology Student

University of Cape Town

ARE YOU AN AUDIOLOGIST WHO WORKS WITH OLDER ADULT CLIENTS?

RESEARCH INVITATION

I am an MSc audiology student at the University of Cape Town. I am exploring South African audiologists' perceptions and practices in addressing the mental health needs of their older adult clients. As an audiologist practicing in South Africa, you are being invited to take part in my research study.

ONLINE SURVEY

- To participate, you can complete a voluntary and confidential 30-minute online survey. You can access the survey by clicking the following link:

http://(access link).co.za

- At the end of the survey, you will receive a link to free online courses related to the mental health needs of older adults with hearing loss.

--The survey is open from [date] to [date].

MORE INFORMATION

More information and consent documents are available by clicking the link. If you have any questions contact:

- **Carla van Stelten**
Student Researcher
Cell: 076 791 0785
Email: vstcar008@myuct.ac.za.

- **Dr Christine Rogers**
Research Supervisor
Cell: 021 406 6315
Email: Christine.Rogers@uct.ac.za

Study approved by a registered Research Ethics Committee

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Appendix B: Case Vignettes

We are interested in learning more about how audiologists respond when clients report experiences associated with emotional well-being. Please read the three cases below and let us know what you would normally do during a clinical consultation by completing the questions provided for each case.

Case One

“Mrs R is a 92-year-old widow living in an older persons’ retirement village. She has moderate to severe hearing loss bilaterally and her current hearing aids are now seven years old, though she reports rarely wearing them. She has difficulty hearing the other residents at mealtimes, but isn’t so concerned as she prefers to keep to herself. She says that she never has visitors and so has no reason to hear. She says that at her age, she doesn’t have much to live for and so is just waiting for her time to be up.

You offer to arrange new hearing aids for her under NHI, but she says not to bother, that she doesn’t do anything that requires hearing anymore and that new hearing aids would be wasted on her and the money better spent on someone who would use them. She tells you that she is too tired to learn anything new and that the pills they give her to help her sleep don’t seem to be working, so she is just constantly exhausted. She tells you that she thinks it would be easier for everyone if she wasn’t to wake up the next morning.”

Case Two

“Mrs S is a 67-year-old widow with moderate hearing loss bilaterally. She reports being keen to try hearing aids as she often mishears what people say, especially at church, when speaking to her daughters on the phone, and at prayer group. When you ask about hearing around the house, she bursts into tears and says that her husband of 49 years died three weeks ago and that she is struggling to cope with living alone. She thinks about him to the point of tears most days and feels quite lonely. Her daughters try to help, but they are pressuring her to sell the family home and move into a smaller place. She agrees that the house is too big for one person, but it is full of memories and she just loves the garden that she and her husband spent years growing together.

When you try to explain hearing aid options to Mrs S, she seems absent minded and asks the same questions repeatedly. She says that money is no problem and that she would feel more comfortable if you just chose the best hearing aid for her.”

Case Three

"Mrs C is a 68-year-old retiree, living with her husband of 42 years. She has a moderate SNHL bilaterally and is ready to update her hearing aids, now 5 years old. She and her husband own a caravan and spend six months of the year traveling around South Africa. When you express your jealousy for her travels, she responds by saying that it was fun the first year, but then the second and third trips have not been so enjoyable. She complains that she doesn't sleep well in the caravan and that her lack of sleep causes her to feel constantly exhausted, too tired even to eat. You notice that she looks quite thin, but then so do a lot of women her age.

When you start to probe for COSI goals, she says that she used to sometimes have difficulty hearing her husband when they were walking in the veld, but that she doesn't go with him anymore as she prefers to watch her daytime TV shows in the caravan. Her COSI goals include hearing the TV at a softer volume as she doesn't want to disturb the other campers in the caravan park, and hearing her husband calling out to her when he is cooking on the outside braai while she is watching her shows inside the caravan.

When you probe as to who her other communication partners might be, she says that they often make friends with the other campers in the campground. She then corrects herself, by saying that her husband does this, that he chats with the other couples around the campfire at night. She says that she'd like to join them, but that she's got nothing interesting to add to the conversation and gets worried that they may not like her, so she stays inside.

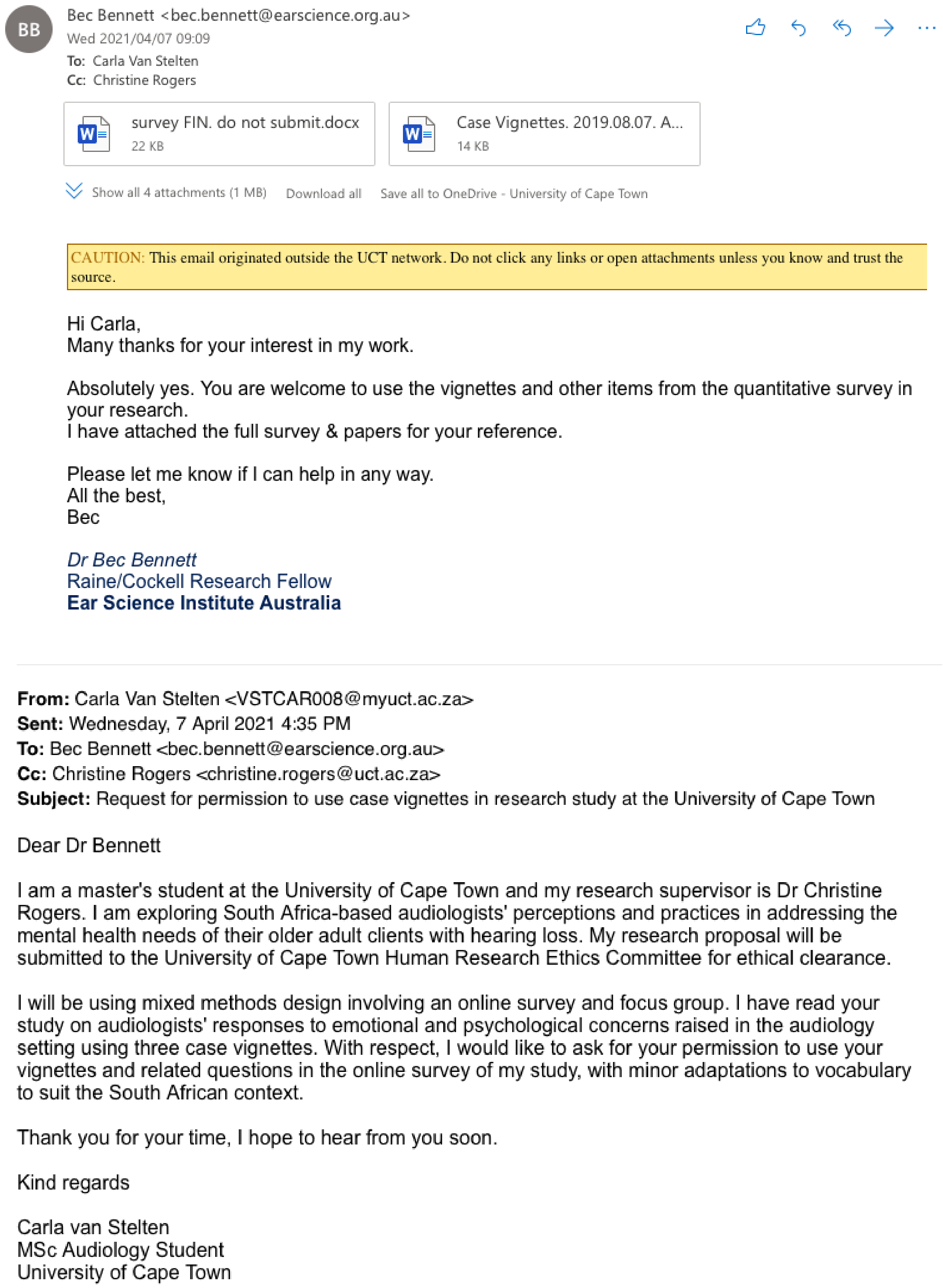
She says that she is interested in a pair of hearing aids that will link into the TV so that her husband can listen to his music, while she watches her shows."

*Vocabulary changes to the original vignettes are underlined.

Questions:

1. Describe your usual course of action if presented with a case like this in your clinical environment.
2. Are the symptoms described consistent with a mental illness?
3. How would you describe the symptoms in a report to a GP or mental health professional?
4. Would you recommend the client seek help beyond the audiologist for their presenting concerns? If so, whom?

Appendix C: Permission requested and granted to use Case Vignettes and survey items



Bec Bennett <bec.bennett@earscience.org.au>
Wed 2021/04/07 09:09
To: Carla Van Stelten
Cc: Christine Rogers

CAUTION: This email originated outside the UCT network. Do not click any links or open attachments unless you know and trust the source.

Hi Carla,
Many thanks for your interest in my work.

Absolutely yes. You are welcome to use the vignettes and other items from the quantitative survey in your research.
I have attached the full survey & papers for your reference.

Please let me know if I can help in any way.
All the best,
Bec

Dr Bec Bennett
Raine/Cockell Research Fellow
Ear Science Institute Australia

From: Carla Van Stelten <VSTCAR008@myuct.ac.za>
Sent: Wednesday, 7 April 2021 4:35 PM
To: Bec Bennett <bec.bennett@earscience.org.au>
Cc: Christine Rogers <christine.rogers@uct.ac.za>
Subject: Request for permission to use case vignettes in research study at the University of Cape Town

Dear Dr Bennett

I am a master's student at the University of Cape Town and my research supervisor is Dr Christine Rogers. I am exploring South Africa-based audiologists' perceptions and practices in addressing the mental health needs of their older adult clients with hearing loss. My research proposal will be submitted to the University of Cape Town Human Research Ethics Committee for ethical clearance.

I will be using mixed methods design involving an online survey and focus group. I have read your study on audiologists' responses to emotional and psychological concerns raised in the audiology setting using three case vignettes. With respect, I would like to ask for your permission to use your vignettes and related questions in the online survey of my study, with minor adaptations to vocabulary to suit the South African context.

Thank you for your time, I hope to hear from you soon.

Kind regards

Carla van Stelten
MSc Audiology Student
University of Cape Town

Appendix D: Bennett, Meyer, Ryan & Barr et al.'s (2020) questionnaire

(Adapted from Bennett, Meyer, Ryan & Barr et al. (2020)

This survey aims to explore your views and experiences in discussing emotional well-being and mental health with your clients in the audiology setting.
Please be honest in your responses. There is no right or wrong way to answer the questions. We are interested in what clinicians **currently think and do** in the clinical setting regarding emotional well-being.

Participant screening

S1. Are you registered with the Health Professions Council of South Africa (HPCSA) as an audiologist?

- ○ Yes, I am a registered audiologist with the HPCSA
- ○ No → go to disqualifying page

S.2 In which age group(s) are the clients that you have consulted with in the past year? (select all that apply)

- ☐ 0 to 18 years old
- ☐ 19 to 59 years old
- ☐ 60 and above (if not selected → go to disqualifying page)

Part 1: About you

Q1. What is your age?

- ○ 20–29 years
- ○ 30–39 years
- ○ 40–49 years
- ○ 50–59 years
- ○ 60 years or older

Q2. What is your gender?

- ○ Female
- ○ Male
- ○ Other

Q3. How many years of experience do you have as an audiologist?

- ○ Less than 1
- ○ 1 to 5
- ○ 6 to 10
- ○ 11 to 20
- ○ More than 20

Q4.1 Which province do you normally work in?

- ○ EC
- ○ FS
- ○ GT
- ○ KZN
- ○ LP
- ○ MP
- ○ NC
- ○ NW
- ○ WC

Q4.2 Are you working in an Urban or a rural setting?

❍ Urban
❍ Rural

Q4.3 In which sector do you work?

❍ Public sector
❍ Private sector
❍ Both public and private
❍ Academia

Q5. In which of the following areas would you consider yourself to be a clinical specialist? (please select all that apply)

❍ Adult aural rehabilitation
❍ Paediatric aural rehabilitation
❍ Tinnitus
❍ Balance and vestibular
❍ Implantable devices
❍ Other (please specify)

Q6. Please rate the following statements.

a) I feel **knowledgeable** about addressing the **hearing related** needs of people with hearing impairment				
❍ Strongly disagree	❍ Somewhat disagree	❍ Neither agree nor disagree	❍ Somewhat agree	❍ Strongly agree
b) I feel **confident** discussing **hearing loss and aural rehabilitation** with people with hearing impairment				
❍ Strongly disagree	❍ Somewhat disagree	❍ Neither agree nor disagree	❍ Somewhat agree	❍ Strongly agree
c) I am **comfortable** discussing **hearing loss and aural rehabilitation** with people with hearing impairment				
❍ Strongly disagree	❍ Somewhat disagree	❍ Neither agree nor disagree	❍ Somewhat agree	❍ Strongly agree

Q7. Please can you indicate how much training you have received in delivering emotional support?

a) Basic counselling techniques (such as active listening, paraphrasing, reflective listening, empathising, exploring emotional concerns)			
❍ None	❍ CPD courses (1 day or less)	❍ Short courses (>1 day to less than 3 months)	❍ Graduate or post-graduate certificate, diploma or equivalent
b) Social approaches (e.g. facilitating peer support; working with the family)			
❍ None	❍ CPD courses (1 day or less)	❍ Short courses (>1 day to less than 3 months)	❍ Graduate or post-graduate certificate, diploma or equivalent

c) Specific therapeutic methods, such as Motivational Interviewing, Mindfulness, Cognitive Behavioural Therapy (CBT), Narrative therapy or Solution Focused Therapy (SFT)			
○ None	○ CPD courses (1 day or less)	○ Short courses (>1 day to less than 3 months)	○ Graduate or post-graduate certificate, diploma or equivalent

Q8. Please rate the following statements.

a) I feel **knowledgeable** about addressing the **social** needs of people with hearing impairment				
○ Strongly disagree	○ Somewhat disagree	○ Neither agree nor disagree	○ Somewhat agree	○ Strongly agree
b) I feel **confident** addressing the **social** needs of people with hearing impairment				
○ Strongly disagree	○ Somewhat disagree	○ Neither agree nor disagree	○ Somewhat agree	○ Strongly agree
c) I am **comfortable** discussing **social-reengagement** with people with hearing impairment				
○ Strongly disagree	○ Somewhat disagree	○ Neither agree nor disagree	○ Somewhat agree	○ Strongly agree

Q9. Have you or anyone close to you experienced mental health issues? (This question is optional – please feel free to leave it blank if you would prefer not to respond to this question)

○ Yes
○ No

Q10. Do you routinely ask your audiology clients whether they are concerned about their mental well-being, or whether they have recently experienced anxiety, depression or suicidal thoughts?

○ Yes
○ No

Comments:

Part 3: *Your beliefs and experiences delivering psychological therapy and support to people with hearing impairment*

Q12. Please rate the following statements.

a) I feel **knowledgeable** about the **mental health** needs of people with hearing impairment				
○ Strongly disagree	○ Somewhat disagree	○ Neither agree nor disagree	○ Somewhat agree	○ Strongly agree
b) I feel **confident** discussing **mental health** with people with hearing impairment				

❍ Strongly disagree	❍ Somewhat disagree	❍ Neither agree nor disagree	❍ Somewhat agree	❍ Strongly agree
c) I am **comfortable** discussing **mental health** with people with hearing impairment				
❍ Strongly disagree	❍ Somewhat disagree	❍ Neither agree nor disagree	❍ Somewhat agree	❍ Strongly agree

Q13. What are the main barriers for you in delivering emotional support to people with hearing impairment? (Please select all that apply)

❍ Time/ caseload pressures
❍ I feel under-skilled/ lack of training
❍ Lack of on-going specialist supervision in psychosocial approaches
❍ Emotional support/counselling is a low priority where I work
❍ Lack of research evidence on effective approaches for this client group
❍ I don't consider it part of my role
❍ I worry that I may get 'out of my depth'
❍ Not the client's priority
❍ Lack of funding for this service
❍ Not within an audiologist's scope of practice
❍ Other (please specify)

Q14. Are you interested in developing your knowledge and skills associated with mental health and emotional well-being?

❍ Yes
❍ No

Comments:

Q15. What would help you to improve your delivery of emotional support to people with hearing impairment? (Please select all that apply)

❍ Provision of more training
❍ Being able to access on-going supervision/ support from a practitioner skilled in delivering emotional support and counselling
❍ Recognition from senior staff of the value of working on emotional well-being
❍ My role definition encouraging me to address emotional well-being
❍ Having adequate time to address emotional well-being
❍ Knowing who and how to refer for mental health services
❍ Having a clinical decision tree tool/clinical management guidelines to support me
❍ Access to funding for these services
❍ Not a priority for me
❍ Other (please specify)

**Note: Underlined items were added/slightly adapted to suit the South African context.*

Appendix E: Knowledge of Depression Scale

When factor structure and internal consistency was analysed, the researchers found excellent fit to the data (χ 2 (31, N = 194) = 31.48, $p > .05$; CFI = .999; TLI = .998; RMSEA = .010; SRMR = .043) (Karantzas et al., 2012). Intraclass correlation was high (>.95) for each subscale, and cronbach's alpha was .82 for facts about depression and .70 for the remaining two subscales suggesting good internal consistency (Karantzas et al., 2012). When analyzing criterion validity, the researchers found excellent fit for both attitudes (χ 2 (6, N = 149) = 7.31, $p > .05$; CFI = .987; TLI = .969; RMSEA = .038; SRMR = .034) and self-efficacy (χ 2 (4, N = 149) = 2.51, $p > .05$; CFI = 1.00; TLI = 1.00; RMSEA = .000; SRMR = .027) (Karantzas et al., 2012).

The specific “Knowledge of Late-Life Depression-Scale – revised” to be used (with permission) was one adapted for professionals serving clients with hearing loss (Bennett, Meyer, Ryan & Barr et al., 2020).

Your knowledge of depression

16. Please rate how strongly you agree or disagree with following statements:

a) Sleep problems can be a symptom of depression			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
b) Depression is a normal reaction to the death of an older person's partner			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
c) Depression is common among aged care residents with dementia			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
d) Tiredness can be a symptom of depression			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
e) Depression is a normal reaction to the changes of old age			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
f) It is common for depression to go undetected among older people			
○ Strongly disagree	○ Disagree	○ Agree	○ Strongly agree
g) Loss of interest in things previously enjoyed can be a sign of depression			

❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
h) Most older people who have to sell their home and move into residential care will become depressed			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
i) Older people with depression often report physical aches and pains rather than sadness			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
j) Late life depression is associated with poorer recovery from physical illnesses			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
k) Older people don't commit suicide, it's more of a problem in younger age groups			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
l) There is a greater rate of depression in people with hearing loss than people with normal hearing			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
m) It is normal for older people to talk about having nothing to live for			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
n) There is effective treatment available for late-life depression			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
o) Hearing aids are sufficient to treat the symptoms of depression caused by hearing loss			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree
p) Social isolation can contribute to depression			
❍ Strongly disagree	❍ Disagree	❍ Agree	❍ Strongly agree

**Below are the questions that follow the Knowledge of Depression scale as Bennett, Meyer, Ryan & Barr et al. (2020).*

Q17. Do you believe that a better understanding of the emotional and mental health status of your hearing impaired patients would affect the way in which you provide hearing related services and/or the outcomes received by your clients? How?

Q18. How do you perceive the attitudes of people with hearing impairment towards engaging in conversations regarding mental health and emotional well-being during audiology appointments?

Your experiences of working with mental health professionals

Q19. How likely are you to refer a hearing impaired patient of yours to a mental health professional if they presented with the following:

a) Loneliness

❍ Extremely unlikely	❍ Somewhat unlikely	❍ Neither likely nor unlikely	❍ Somewhat Likely	❍ Extremely likely
b) Anxiety				
❍ Extremely unlikely	❍ Somewhat unlikely	❍ Neither likely nor unlikely	❍ Somewhat Likely	❍ Extremely likely
c) Depressive symptoms (e.g. sadness, hopelessness, worthlessness)				
❍ Extremely unlikely	❍ Somewhat unlikely	❍ Neither likely nor unlikely	❍ Somewhat Likely	❍ Extremely likely
d) Suicidal thoughts				
❍ Extremely unlikely	❍ Somewhat unlikely	❍ Neither likely nor unlikely	❍ Somewhat Likely	❍ Extremely likely

Q20. What are the main barriers to making a referral to a mental health professional (MHP)? (Please select all that apply)

❍ I'm not sure who to refer to
❍ MHPs feel under skilled in working with people who have hearing impairment
❍ People with hearing impairment decline onward referral to MHPs when I suggest this
❍ There are no MHPs in my team
❍ I'm not sure how to refer to MHPs
❍ MHPs are difficult to access
❍ I'm not sure when to make a referral/ guidelines are unclear
❍ MHPs provide only a limited service
❍ Not part of what I do
❍ Other (please specify)

Appendix F: The Dementia Attitudes Scale

Cronbach's alphas ranged from 0.83 to 0.85 (O'Connor & McFadden, 2010). Regarding convergent validity, the DAS correlated well with other scales measuring similar constructs with correlations ranging from 0.44 to 0.55 with a mean of 0.5 tool (O'Connor & McFadden, 2010).

Items 10, 11, 12, 14, 15, 19 and 20 represent the factor "dementia knowledge" and items 1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 16, 17 and 18 "social comfort" (O'Connor & McFadden, 2010). Items are answered on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) with a higher score suggesting a more positive attitude towards dementia (O'Connor & McFadden, 2010).

The DAS is an open access resource distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The DAS can be found at https://livewell.org/wp-content/uploads/2020/11/Dementia-Attitudes-Scale-DAS-Original1.pdf

The dementia attitudes scale

Please rate each statement according to how much you agree or disagree with it. Select a response according to how you feel in each case. *Please be honest. There are no right or wrong answers.* The acronym "ADRD" in each question stands for "Alzheimer's disease and related dementias."

1. It is rewarding to work with people who have Alzheimer's disease and related dementias (ADRD).
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree
    - ○ Neutral
    - ○ Slightly agree
    - ○ Agree
    - ○ Strongly agree

2. I am afraid of people with ADRD.*
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

3. People with ADRD can be creative.
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

4. I feel confident around people with ADRD.
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

5. I am comfortable touching people with ADRD.
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

6. I feel uncomfortable being around people with ADRD.*
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

7. Every person with ADRD has different needs.
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

8. I am not very familiar with ADRD.*
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

9. I would avoid a person with ADRD.*
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

10. People with ADRD like having familiar things nearby.
    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Neutral
    - Slightly agree
    - Agree
    - Strongly agree

11. It is important to know the past of people with ADRD.
    - Strongly disagree
    - Disagree
    - Slightly disagree
    - Neutral
    - Slightly agree

- ○ Agree
- ○ Strongly agree

12. It is possible to enjoy interacting with people with ADRD.
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree
    - ○ Neutral
    - ○ Slightly agree
    - ○ Agree
    - ○ Strongly agree

13. I feel relaxed around people with ADRD.
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree
    - ○ Neutral
    - ○ Slightly agree
    - ○ Agree
    - ○ Strongly agree

14. People with ADRD can enjoy life.
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree
    - ○ Neutral
    - ○ Slightly agree
    - ○ Agree
    - ○ Strongly agree

15. People with ADRD can feel when others are kind to them.
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree
    - ○ Neutral
    - ○ Slightly agree
    - ○ Agree
    - ○ Strongly agree

16. I feel frustrated because I do not know how to help people with ADRD.*
    - ○ Strongly disagree
    - ○ Disagree
    - ○ Slightly disagree

○ Neutral
○ Slightly agree
○ Agree
○ Strongly agree

17. I cannot imagine caring for someone with ADRD.*
    ○ Strongly disagree
    ○ Disagree
    ○ Slightly disagree
    ○ Neutral
    ○ Slightly agree
    ○ Agree
    ○ Strongly agree

18. I admire the coping skills of people with ADRD.
    ○ Strongly disagree
    ○ Disagree
    ○ Slightly disagree
    ○ Neutral
    ○ Slightly agree
    ○ Agree
    ○ Strongly agree

19. We can do a lot now to improve the lives of people with ADRD.
    ○ Strongly disagree
    ○ Disagree
    ○ Slightly disagree
    ○ Neutral
    ○ Slightly agree
    ○ Agree
    ○ Strongly agree

20. Difficult behaviours may be a form of communication for people with ADRD.
    ○ Strongly disagree
    ○ Disagree
    ○ Slightly disagree
    ○ Neutral
    ○ Slightly agree
    ○ Agree
    ○ Strongly agree

Have you ever known or worked with someone who has ADRD? • yes • no

If yes, please explain. How long have you known, or did you know, the person or people with ADRD? How close was/is your relationship? ___________________________________

* = reverse scored item.

Appendix G: 15 question survey assessing screening and referral behaviours for cognitive impairment

The survey was developed by Raymond et al. (2020) to identify health professionals' behaviours related to cognitive screening and referral. This survey was designed to be completed by health professionals who treat patients with age-related hearing loss (Raymond et al., 2020). The survey was tested by distributing it to six members of the Otolaryngology Department at Emory University who analysed the survey in terms of content comprehension and intent (Raymond et al., 2020).

1. Do you ever screen patients in your practice for cognitive impairment (mild memory loss, dementia etc)?

    -No → go to 1d-f
    -Yes → to go 1a-c
    -Unsure → go to 1d-f

    1a. Patients of which age are you likely to screen for cognitive impairment?

        - >50 years
        - >60 years
        - >70 years
        - >80 years
        - Age is not a factor

    1b. Patients with which degree of hearing loss are you likely to screen for cognitive impairment?

        - mild or worse
        - moderate or worse
        - severe or worse
        - profound or worse
        - Degree of hearing loss is not a factor

    1c. In which setting are you likely to screen for cognitive impairment? Choose all that apply.

        -At the first visit in which hearing loss is identified
        -At the first visit in which hearing loss is identified and a symptom (such as memory loss) is mentioned
        -Only when a symptom (such as memory loss) is mentioned
        -Other:_________________

    1d. Patients of which age would you likely screen for cognitive impairment?

        - >50 years
        - >60 years
        - >70 years
        - >80 years
        - Age is not a factor

1e. Patients with which degree of hearing loss would you likely screen for cognitive impairment?

- mild or worse
- moderate or worse
- severe or worse
- profound or worse
- Degree of hearing loss is not a factor

1f. In which setting would you likely screen for cognitive impairment? Choose all that apply.

-At the first visit in which hearing loss is identified
-At the first visit in which hearing loss is identified and a symptom (such as memory loss) is mentioned
-Only when a symptom (such as memory loss) is mentioned
-I would never screen
-Other:_________________

2. What is the best screening tool for cognitive impairment for those with hearing loss?

- MMSE (Mini-Mental State Exam)
- MOCA (Montreal Cognitive Assessment)
- Mini-Cog
- CANTAB (Cambridge Neuropsychological Test Automated Battery)
- AD8 (Ascertain Dementia 8-item Informant Questionnaire)
- 3WR (Three Word Recall)
- CDT (Clock Drawing Test)
- TMT (Trail Making Test)
- CASI (Cognitive Abilities Screening Instrument)
- Other: __________________

3. Do you ever refer patients in your practice for cognitive testing?

-No → go to 3e-h
-Yes → go to 3a-d
-Unsure → go to 3e-h

3a. Patients of which age are you likely to refer for cognitive testing?

- >50 years
- >60 years
- >70 years
- >80 years
- Age is not a factor

3b. Patients with which degree of hearing loss are you likely to refer for cognitive testing?

- mild or worse
- mod or worse
- severe or worse
- profound or worse
- Degree of hearing loss is not a factor

3c. In which setting are you likely to refer a patient for cognitive testing? Choose all that apply.

-At the first visit in which hearing loss is identified
-At the first visit in which hearing loss is identified and a symptom (such as memory loss) is mentioned
-Only when a symptom (such as memory loss) is mentioned
-Only when screening indicates possible cognitive impairment
-Never

3d. To which practice type are you likely to refer a patient for cognitive testing?

- Internal medicine
- Gerontology
- Psychiatry
- Neurology
- Other: _________________

3e. Patients of which age would you likely refer for cognitive testing?

- >50 years
- >60 years
- >70 years
- >80 years
- Age is not a factor

3f. Patients with which degree of hearing loss would you likely refer for cognitive testing?

- mild or worse
- mod or worse
- severe or worse
- profound or worse
- Degree of hearing loss is not a factor

3g. In which setting would you likely refer a patient for cognitive testing? Choose all that apply.

-At the first visit in which hearing loss is identified
-At the first visit in which hearing loss is identified and a symptom (such as memory loss) is mentioned
-Only when a symptom (such as memory loss) is mentioned
-Only when screening indicates possible cognitive impairment
-I would never refer

3h. To which practice type would you likely refer a patient for cognitive testing?

- Internal medicine
- Gerontology
- Psychiatry
- Neurology
- Other: _________________

Appendix H: Topic Guide for focus group

1. What do you believe is an audiologists’ role in addressing the mental health needs of older adults with hearing loss, specifically related to depression? Probes:
    - Role in assessment/ screening?
    - Role in management?
    - Please describe your confidence in addressing mental health needs, related to depression, in the audiological setting?

2. What do you believe is an audiologists’ role in addressing the mental health needs of older adults with hearing loss, specifically related to dementia/cognitive decline? Probes:
    - Role in assessment/ screening?
    - Role in management?
    - Please describe your confidence in addressing mental health needs, related to dementia/cognitive decline, in the audiological setting?

3. Please describe any facilitators and barriers in addressing mental health needs of adults with hearing loss in your experience. Probes:
    - Experiences of working with mental health professionals and any thoughts on how this might be improved.
    - What would help you to improve your abilities in addressing the mental health needs of older adult clients?

Appendix I: Permission to use Survey Monkey

SurveyMonkey Inc.
www. surveymonkey.com

For questions, visit our Help Center
help.survemonkey.com

Re: Permission to Conduct Research Using SurveyMonkey

To Whom It May Concern:

This letter is being produced in response to a request by a student at your institution who wishes to conduct a survey using SurveyMonkey in order to support their research. The student has indicated that they require a letter from SurveyMonkey granting them permission to do this. Please accept this letter as evidence of such permission. Students are permitted to conduct research via the SurveyMonkey platform provided that they abide by our Terms of Use at https://www.surveymonkey.com/mp/legal/terms-of-use/

SurveyMonkey is a self-serve survey platform on which our users can, by themselves, create, deploy and analyze surveys through an online interface. We have users in many different industries who use surveys for many different purposes. One of our most common use cases is students and other types of researchers using our online tools to conduct academic research.

If you have any questions about this letter, please contact us through our Help Center at help.surveymonkey.com.

Sincerely,

SurveyMonkey Inc.

Appendix J: Summarised information sheet and informed consent form for Phase 1: Online survey

TITLE OF RESEARCH PROJECT: Practices and Perceptions of Audiologists in Addressing Mental Health Needs of Older Adult Clients

Dear respondent,

My name is Carla van Stelten. I am a Master's student at the University of Cape Town and my supervisor is Dr Christine Rogers. I am inviting you to take part in a research project which involves the completion of an online survey.

Background: The global population is ageing and it is important to address the health needs of older adults, including mental health needs. I am exploring audiologists' knowledge and perceptions about the mental health needs of their older adult clients as well as if and how audiologists are addressing these needs.

The survey: To participate in the survey, you need to be an audiologist and need to have worked with older clients with hearing loss in the past year. The survey consists of three main parts and will take approximately 30 minutes to complete. The survey starts with three case studies which you will need to read and then answer questions about what you would normally do when presented with such a case. Next, you will be asked to fill in some demographic information such as age and years of experience as an audiologist. You will then be asked Likert-type and multiple choice questions, from validated surveys, which will assess your knowledge, beliefs and practices regarding the mental health needs of older adult clients. At the end of the survey you will be asked whether you would like to be invited to take part in a focus group, which will take place at a later stage, to explore the research topic in more detail. Finally, you will be provided with links to free online course that may develop your knowledge and skills in addressing the mental health needs of your patients.

Ethics: Your participation in the survey is entirely voluntary and you are free to decline to participate or to stop completing the survey at any time without explanation or prejudice, even if you have agreed to take part initially. For this survey, IP address tracking has been disabled so that identifiable respondent information and IP addresses are not tracked. If you would like to take part in a focus group, I ask you to provide an email address at which I can invite you take part. I will send email invitations individually to protect your confidentiality. To protect your privacy, any email address you provide will be stored on a password protected computer and be labelled in a way that will not identify you.

Contact: If you have any questions, please contact the student researcher, Carla van Stelten, via email: vstcar008@myuct.ac.za or cell: 076 791 0785. The research supervisor, Dr Christine Rogers, can be contacted via email: Christine.rogers@uct.ac.za or tel: 021 406 6315.

Who reviewed or approved this study? The research study has been approved by a registered Research Ethics Committee (Reference number HREC …/2021). **The University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee can be contacted on 021 406 6338 in case you have any ethical concerns or questions about your rights or welfare as a participant on this research study.**

To view/download the full information sheet and consent form for you to keep safe, please click here.

By ticking this box, I, as an audiologist, agree to participate in this research project conducted by Carla van Stelten from the University of Cape Town. I understand that this research project is designed to explore audiologists' knowledge and perceptions about the mental health needs of their older adult clients as well as if and how audiologists are addressing these needs. I understand that in agreeing to participate:

- I have read and understood the explanation about the study and have had the opportunity to ask any questions about the research and my participation.
- I understand that my participation in this study is strictly voluntary and that I am under no obligation to take part in this project.
- I agree to my responses being used for education and research on condition my privacy is respected.
- I understand that I have the right to withdraw from this project at any stage.
- I understand that the researcher will not identify me by name or email address in any reports using the information obtained from the survey. My confidentiality as a participant will remain secure. Subsequent uses of data will be subject to standard data use policies which protect anonymity of individuals and institutions.
- I understand that this research might be published in a research journal or book. In the case of dissertation research, the document will be available to readers in a university library in printed form, and possibly electronic form as well.

☐ I hereby agree to participate in the online survey for this study.

Appendix K: Full information sheet and informed consent form for Phase 1: Online survey

TITLE OF RESEARCH PROJECT: Practices and Perceptions of Audiologists in Addressing Mental Health Needs of Older Adult Clients

My name is Carla van Stelten and I am a Master’s student at the University of Cape Town and my supervisor is Dr Christine Rogers. I am inviting you to take part in a research project which involves the completion of an online survey. Your participation is entirely voluntary and you are free to decline to participate or to stop completing the survey at any time without explanation or prejudice, even if you have agreed to take part initially.

Why is the study being done?

The global population is ageing and it is important to address the health needs of older adults, including mental health needs. I am exploring audiologists’ knowledge and perceptions about the mental health needs of their older adult clients as well as if and how audiologists are addressing these needs.

Why are you being invited to take part?

Audiologists are being invited to take part in the study. Participants are required to have worked with older adult clients with hearing loss in the past year (i.e. individuals aged 60 and above). Your answers will help us to explore audiologists’ knowledge, beliefs and practices regarding the mental health needs of older adults with hearing loss. In line with public health measures aimed at preventing the spread of COVID-19, data collection will be online and therefore participants are required to have internet connectivity in order to complete the online questionnaire.

How many people will take part in the study?

For the online questionnaire, it is hoped that 258 audiologists will participate.

How long will you take part in this research?

The online survey will take approximately 30 minutes to complete. There is an option of a focus group which would take an additional 1 hour and 30 minutes. You will be given full information regarding the focus group should you indicate your interest at the end of this phase of the research.

What do we do to decide if you are eligible to take part in the study?

Audiologists have been sent invitations to take part in this study. Participants should have worked with older adult clients with hearing loss in the past year. At the beginning of the survey, you will be asked a series of questions to determine whether you are eligible to take part in the survey. If your responses meet the inclusion criteria you will be directed to the rest of the survey. If your responses do not meet the inclusion criteria, you will be thanked and directed to the end of the survey.

What will happen if you decide to take part in the study?

If you agree to take part in the study, you will be directed to the survey. For the first part of the survey, you will be asked to read three case studies and answer related questions. You will then be asked to fill in a demographic questionnaire. Next, you will be asked about your beliefs and usual practices related to the mental health needs of older adult clients. After that, you will be asked to answer questions from validated scales assessing your knowledge, beliefs and practices regarding the mental health of clients. The scales are the “Knowledge of Late-Life Depression Scale-revised” and the “Dementia Attitudes Scale” as well as a scale that assesses screening and referral behaviours related to cognitive impairment. You will not be able to go back to edit previous pages once you have submitted them. When you have completed the survey, you will be asked whether you would like to be invited take part in the second phase of the study, which will be an online focus group over Zoom that explores the research topic in more detail. If you indicate that you do not want to take part in the focus group, you may exit the survey and will not be contacted again.

If you indicate that you would like to take part in a focus group, you will be asked to provide an email address at which I can invite you to take part. Potential focus group participants will be emailed individually so that your email is unable to be identified by other participants. The email invitation for the focus group will contain a link to the focus group-specific screening questionnaire. The screening questionnaire determines whether you meet the focus group inclusion criteria related to experience, connectivity and confidentiality. If you complete the focus group screening questionnaire, I will send you a second email you to inform you of whether you are eligible to take part. If you are eligible to take part in the focus group, the second email will contain a link to the focus group informed consent documents as well as a FindTime poll so that a suitable date and time for the focus group can be arranged.

What will happen if I change my mind and want to leave the study?

You may exit the survey at any point without explanation or consequence. At the end of the survey, you are given an option to withdraw from the survey and your answers will not be saved.

What are the risks and discomforts of the study?

To protect your confidentiality, data will be anonymised before analysis so that you will not be identifiable. For this survey, IP address tracking has been disabled so that identifiable respondent information and IP addresses are not tracked. If you choose to indicate that you would like to take part in the focus group or would like to receive the results of the study, we ask you to provide an email address at which we can contact you. Email addresses will be stored in a password protected document on the researcher’s computer. Only the researcher will know your email address. Emails will be sent individually to protect confidentiality. To protect your privacy, any email addresses provided will be labelled in a way that will not identify you. You will be given a research number so that your email address will never be revealed. If the results of the study are published, your identity is kept confidential.

Are there any benefits to you for being in the study?

Your responses may help to determine whether there is a requirement for training or protocol development related to addressing the mental health needs of older adults with hearing loss. At the end of the survey, you will be provided with links to free online course that may develop your knowledge and skills in addressing the mental health needs of your patients.

What other choices do you have?

You may choose not to take part in the research and exit the survey at any point without consequence.

What will happen when the study is over?

The results will be disseminated back to you if you tick a box saying that you would like to receive an abstract once the study is complete. For this you would need to provide an email address and your privacy will be protected as described in the "**Who will see the information which is collected about you during the study?**" section below. The results will be disseminated to the scientific community through congress or publication and to the lay community by a small article for World Hearing Day in the local newspaper.

Will your survey results be shared with you?

Your individual survey results will not be shared with you.

Will the results of the research be shared with you?

If you indicate that you would like to have the results of the research shared with you, you may provide an email address at which we will share the study results with you.

Rewards, payments and expenses.

You will not receive any reward for taking part in the study. You will not be paid for taking part in the study. You do not have to pay to take part in the study.

What will happen to your personal information?

Your personal information will be anonymised and stored on a password protected computer. Only the researcher will have access to your information.

Who will see the information which is collected about you during the study?

Your results will be used for research. Only the researchers and regulatory authorities will have access to the information which is collected from you during the study. Your information will be stored on an Excel spreadsheet. To protect your privacy, the information will be labelled in a way that you will not be identifiable. If you provide an email address, you will be given a research number so that your identity will never be revealed. Only the researcher will have access to any email address provided and your responses will be anonymised in a way that you will not be identifiable. If the results of the study are published, your identity is kept confidential. By indicating that you consent, you are allowing the use of your anonymised survey answers to be included in the data analysis and results of the study.

Who do I speak to (or contact) if I have any questions about the study?

The student researcher, Carla van Stelten, can be contacted as follows:

Cellphone: 076 791 0785

Email: vstcar008@myuct.ac.za

The research supervisor, Dr Christine Rogers, can be contacted as follows:

Telephone: 021 406 6315.

Email: Christine.Rogers@uct.ac.za

Who reviewed or approved this study?

The research study has been approved by a registered Research Ethics Committee (Reference number HREC …/2021). **The University of Cape Town’s Faculty of Health Sciences Human Research Ethics Committee can be contacted on 021 406 6338 in**

case you have any ethical concerns or questions about your rights or welfare as a participant on this research study.

By ticking this box, I, as an audiologist, agree to participate in this research project conducted by Carla van Stelten from the University of Cape Town. I understand that this research project is designed to explore audiologists' knowledge and perceptions about the mental health needs of their older adult clients as well as if and how audiologists are addressing these needs. I understand that in agreeing to participate:

- I have read and understood the explanation about the study and have had the opportunity to ask any questions about the research and my participation.
- I understand that my participation in this study is strictly voluntary and that I am under no obligation to take part in this project.
- I agree to my responses being used for education and research on condition my privacy is respected.
- I understand that I have the right to withdraw from this project at any stage.
- I understand that the researcher will not identify me by name or email address in any reports using the information obtained from the survey. My confidentiality as a participant will remain secure. Subsequent uses of data will be subject to standard data use policies which protect anonymity of individuals and institutions.
- I understand that this research might be published in a research journal or book. In the case of dissertation research, the document will be available to readers in a university library in printed form, and possibly electronic form as well.

☐ I hereby agree to participate in the online survey for this study.

Please download a copy of this information sheet and consent form for you to keep safe.

Appendix L: Links to courses at end of survey

Thank you for taking part in my online survey exploring audiologists' practices and perceptions in addressing the mental health needs of older adults with hearing loss.

If you are interested in furthering your knowledge and skills in addressing the mental health needs of your patients, please see the courses below. The courses can be found on https://www.audiologyonline.com and can be taken for free. However, if you would like to receive a certificate of completion for the course, you would need to have a paid membership for audiology online.

Course: #32826: A new generational approach: integrating psychology and audiology care

- Describe a model for integrating psychology and audiology services
- Discuss research on psychopathy in patients with hearing loss
- Discuss strategies for counselling complex families

Course #31125: Effective counselling = Information + Feelings

- Define counselling in audiology
- Explain psychological barriers in audiology patients
- Describe motivational interviewing and its applications in audiology
- Use of motivational interviewing techniques

Course #27832: Therapy for adults with hearing loss: auditory and cognitive

- Describe relationship between hearing loss and dementia
- List auditory training resources
- Describe areas of cognition to address in therapy
- List specific cognitive traning activities

Course #36236: The Evolution of Cognitive Screening in Audiology: Considerations and Future Implications

- Identify literature that supports cognitive screening as a component of audiological care
- Compare screening methods and barriers
- Discuss how cognitive screening can facilitate patient-centered care in audiology

If you would like to receive an abstract of the study once it is complete, please provide us with an email address at which we can send the abstract. Note that any email addresses you provide remain strictly confidential and your data will be anonymised in such a way that you will not be identifiable.

○ No, I would not like to receive an abstract
○ Yes, I would like to receive an abstract sent to this email address: ____________

Appendix M: First email invitation to potential focus group participant

Dear Participant,

Thank you for completing the survey for my research study on the practices and perceptions of South African audiologists in addressing the mental health needs of older adult clients.

You are receiving this email because you have indicated that you would like to take part in the second phase of the study, an online focus group. The focus group will explore the research topic in more detail.

If you are still interested in taking part, please see the link to the focus group screening questionnaire below. Once you have completed the screening questionnaire, I will send you a second email informing you of whether you are eligible to take part in the focus group or not. If you are eligible, the second email you receive will contain the link to the informed consent documents. You are welcome to ask me any questions you may have about the study or your participation before you fill in the screening questionnaire

Your participation is completely voluntary and you do not have to make a decision right away. You may withdraw from the study at any time without explanation or consequence.

Thank you for your time.

Kind regards

Carla van Stelten
MSc Audiology Student
University of Cape Town

Appendix N: Screening for focus group participation

The following is a screening questionnaire. It is not the informed consent process for the second phase of the study. Filling in this questionnaire does not mean that you consent to take part in phase 2, but that you would like to be invited to take part. The full information sheet and consent forms will be individually emailed to potential participants that meet the inclusion criteria when they are invited to take part in Phase 2.

To take part in the online focus group, potential participants need to meet certain criteria relating to experience, connectivity and privacy. Please tick all that apply to you.

- ☐ I have at least one year of experience practicing as an audiologist
- ☐ I am familiar with the Zoom platform.
- ☐ I have access to at least average quality internet connection allowing for videoconferencing via the Zoom platform.
- ☐ I have access to a functioning microphone, camera and speakers on a device that can be used for a Zoom call.
- ☐ I would be comfortable with the Zoom meeting being recorded, provided that only the researcher will have access to the recording.
- ☐ I have access to a private, quiet space with a neutral background.
- ☐ I am willing to protect all participants’ rights to privacy by not discussing who attended the meeting or repeating anything that was said.

Please provide an email address at which I may contact you to let you know whether you are eligible to take part in the focus group or not. Only the researcher will have access to your email address and it will be kept confidential.

Appendix O: Second email invitations to potential focus group participant

Dear Participant,

Thank you for completing the focus group screening questionnaire. Your responses showed that you are [eligible] to take part in the focus group.

Please see the link to the SurveyMonkey^{TM} below which contains the focus group informed consent documents. If you have completed the informed consent document, there will be a link to a FindTime poll which will be used to arrange a suitable date and time for the focus group.

You are welcome to ask me any questions you may have about the study or your participation before you consent to taking part.

Your participation is completely voluntary and you do not have to make a decision right away. You may withdraw from the study at any time without explanation or consequence.

Thank you for your time.

Kind regards

Carla van Stelten
MSc Audiology Student
University of Cape Town

Appendix P: Informed Consent for Phase 2: Focus Group

TITLE OF RESEARCH PROJECT: Practices and Perceptions of Audiologists in Addressing Mental Health Needs of Older Adult Clients

My name is Carla van Stelten and I am a Master’s student at the University of Cape Town and my supervisor is Dr Christine Rogers. I am inviting you to take part in the second phase of a research project which involves participation in an online focus group via Zoom video chat. Your participation is entirely voluntary and you are free to decline to participate or leave the focus group at any time without explanation or prejudice, even if you have agreed to take part initially.

Why is the study being done?

The global population is aging and it is important to address the health needs of older adults, including mental health needs. I am exploring audiologists’ knowledge and perceptions about the mental health needs of their older adult clients as well as if and how audiologists are addressing these needs. The focus group phase of data collection will explore in further detail audiologists’ perceptions and practices regarding the mental health of their older adult clients. The mixed methods design of the study will allow for the gathering of richer data through focus groups which can be integrated with numerical data from the online questionnaire.

Why are you being invited to take part?

You have completed phase 1 of the study which consisted of an online questionnaire. After completing the questionnaire, you indicated that you would be interested in taking part in the second phase of the study. Audiologists will participate in the focus group. Participants in the focus group are required to have at least one year of experience in working with hearing impaired older adults (i.e. individuals aged 60 and above). Your answers will help us to explore audiologists’ knowledge, beliefs and practices regarding the mental health needs of older adults with hearing loss. In line with public health measures aimed at preventing the spread of COVID-19, data collection will be online and therefore participants are required to have internet connectivity in order to participate in the online focus group.

How many people will take part in the study?

There will be at least three different focus groups of four participants each. Volunteer participants will each take part in one of the focus groups.

How long will you take part in this research?

You have already completed an online survey which took approximately 30 minutes. The focus group will take approximately 1 hour and 30 minutes.

At a later stage, after the researcher has analysed the data, you will be sent themes that have emerged from the focus group and be asked to indicate whether you think the data was interpreted correctly. This should take no more than 30 minutes of your time.

What do we do to decide if you are eligible to take part in the study?

If you completed the survey, you have met the main inclusion criterion for the study. You have filled in a screening questionnaire for the focus group and have received the link to this informed consent document as you have met the focus group inclusion criteria. The focus group specific inclusion criteria are based on experience, internet connectivity and respect for participants' privacy.

What will happen if you decide to take part in the study?

If you would like to take part in the study, you will be asked to provide information in a FindTime poll regarding dates and times which you are available to join a focus group. Focus group slots will be arranged based on potential participants' responses. You will be sent an email with a Zoom invitation to one of the focus groups, based on your availability. You may choose to accept or decline the invitation. If you decline the invitation, we will not contact you further, unless you contact us. If you accept, you will be contacted one day in advance of the focus group to set up and test the Zoom platform as well as learn how to change your username to a pseudonym as opposed to your full name so that your identity is protected. At the time of the meeting, you will click on the appropriate link to the Zoom call. The meeting will be audio and video recorded to ensure accurate transcription. Only the researcher is allowed to record the meeting. Only the researcher will have access to the recording. Once all the participants have joined, the researcher will ask whether any participants have any questions about the study and answer them before data collection begins. The researcher will then ask the participants if they consent to the meeting being audio and video recorded. If you do not consent to being audio and video recorded, you may withdraw from the study without consequence. If everyone on the call has consented to being audio and video recorded, the researcher will start the recording. The researcher will provide prompts for discussion. Any interactions with the researcher during the focus group may constitute some form of data gathering. If you feel uncomfortable in any way during the interview, you have the right to decline to answer any question or to leave the online focus group session. At the end of the discussion, you will be thanked and provided with the researcher’s contact details so that you may ask any questions as well as indicate whether you need to be reimbursed for any data costs incurred by your participation in the online focus group.

What will happen if I change my mind and want to leave the study?

You may withdraw from the study at any time without explanation and without consequence.

What are the risks and discomforts of the study?

Be aware that your confidentiality cannot be guaranteed in a group setting such as this. Please respect one another’s privacy by not discussing who attended the meeting or repeating anything that was said. We request that focus group members respect each other’s confidentiality by not speaking to others about matters raised in the group. We further request participants ensure that no one in their surroundings is able to hear other participants’ responses to respect their rights to confidentiality and privacy of information.

Due the nature of the topic, you may recount traumatic encounters with clients, however, the researcher is trained in psychological first aid and will be able to perform psychological first aid immediately and facilitate an appropriate referral if further counselling is necessary. If further counselling is required, this will be at your own expense.

Are there any benefits to you for being in the study?

There are no direct benefits to you as a participant. However, your responses may help to determine whether there is a need for training or protocol development related to addressing the mental health needs of older adults with hearing loss.

What other choices do you have?

You may choose not to take part in the research and exit the focus group at any point without consequence.

Will the results of the research be shared with you?

At a later stage, after the results are interpreted, you will be asked to review the themes that emerged from the focus group. At this stage you will have an opportunity to comment on the themes, to make sure the data was interpreted correctly, before the study is complete.

If you indicate that you would like to know the results of the study, they will be shared with you once the study is complete via the email address you provide.

What will happen when the study is over?

If you have any questions regarding the study, you may contact the researchers at any point. If you do not contact the researcher and if you do not want to know the results of the study, you will not be contacted again unless you indicated that you would like to receive an abstract of the study once it is complete. The results will be disseminated to the scientific community through congress or publication and to the lay community by a small article for World Hearing Day in the local newspaper.

Rewards, payments and expenses.

You will not receive any reward for taking part in the study. You will not be paid for taking part in the study. You do not have to pay to take part in the study. You may email the researcher after the Zoom call to indicate whether you need to be remunerated with any data costs incurred by your participation in the online video call to a maximum value of R29.00.

What will happen to your personal information?

Your personal information will be anonymised and stored on a password protected computer. Only the researcher will have access to your information. Your personal information will not be linked to your responses.

Who will see the information which is collected about you during the study?

Your results will be used for research. Only the researchers and regulatory authorities will have access to the information which is collected from you during the study. Your information will be stored on a password protected computer and the University of Cape Town's storage platforms. To protect your privacy, the information will be labelled in a way that you will not be identifiable. You will be given a research number so that your identity will never be revealed. Only the researcher will have access to any data containing personal information. Only the researcher will have access to any email address provided and your responses will not be linked to any personal information nor the email address provided. Only the researcher will have access to the focus group recordings. If the results of the study are published, your identity is kept confidential. By indicating that you consent, you are allowing any information you provide that is anonymised to be used in the data collection and results of this study.

Who do I speak to (or contact) if I have any questions about the study?

The student researcher, Carla van Stelten, can be contacted as follows:

Telephone: 076 791 0785

Email: vstcar008@myuct.ac.za

The research supervisor, Dr Christine Rogers, can be contacted as follows:

Telephone: 021 406 6315.

Email: Christine.Rogers@uct.ac.za

Who reviewed or approved this study?

The research study has been approved by a registered Research Ethics Committee (Reference number HREC…/2021). **The University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee can be contacted on 021 406 6338 in case you have any ethical concerns or questions about your rights or welfare as a participant on this research study.**

Consent Form

Project title: Practices and Perceptions of Audiologists in Addressing Mental Health Needs of Older Adult Clients

Student researcher: Carla van Stelten

Research supervisor: Dr Christine Rogers

I volunteer to participate in a research project conducted by Carla van Stelten and Dr Christine Rogers from the University of Cape Town. I understand that this research project is designed to study audiologists' knowledge, beliefs and practices regarding the mental health needs of older adult clients.

As a registered audiologist/ dual registered speech-language pathologist audiologist with the HPCSA, I understand that I am being invited to take part in an online focus group via Zoom. I understand that in agreeing to participate:

- My participation is voluntary. I understand that I will be compensated with a R29.00 for any data costs incurred to me by taking part in the online focus group. I understand that I will not be paid anything further for my participation nor do I have to pay to participate.
- The online focus group will take approximately 1 hour and 30 minutes to complete.
- The online focus group will be audio and video recorded. I can decline to be recorded.
- I understand that if I feel uncomfortable in any way during the interview I have the right to decline to answer any questions or to leave the interview session.
- I understand that the researcher will not identify me by name or any personal information in any reports using the information.
- I am aware that my confidentiality cannot be guaranteed in a group setting such as this. I will respect the other participants' privacy by not discussing who attended the meeting or repeating anything that was said. I will respect the other focus group members' rights to confidentiality by not speaking to others about matters raised in the group. I will ensure that no one in my surroundings is able to hear other participants' responses to respect their rights to confidentiality and privacy of information.
- Precautions will be taken to prevent any of the findings having personal negative repercussions for me.
- Due the nature of the topic, I may recount traumatic encounters with clients, however, the researcher is trained in psychological first aid and will be able to

perform psychological first aid immediately and facilitate an appropriate referral if further counselling is necessary. If further counselling is required, this will be at my own expense.

- If I choose to take part in the focus group, I have the right to review and comment on the transcribed interview data before the findings are analysed.
- I have read and understand the participant information sheet provided to me. I have had all my questions answered to my satisfaction and I voluntarily agree to participate in this study.
- I have been given a copy of this consent form.

<u>Please download a copy of this consent form for you to keep safe.</u>

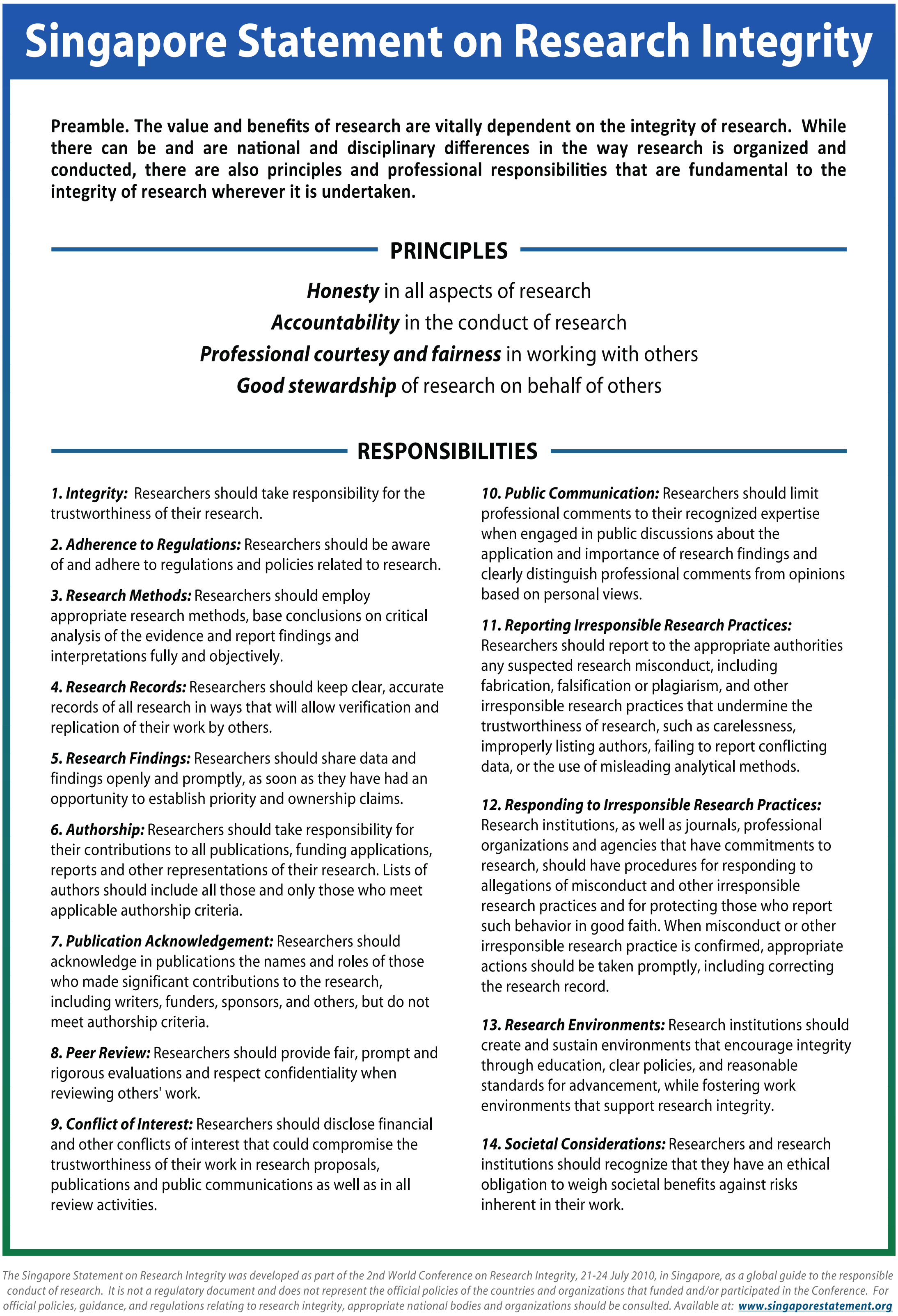
☐ By ticking this box, I hereby agree to participate in the focus group for this study.

☐ By ticking this box, I hereby agree to the audio and video recording of the focus group that I participate in for this study.

Email ____

Date ____

Appendix Q: Singapore Statement



Singapore Statement on Research Integrity

Preamble. The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

PRINCIPLES

Honesty in all aspects of research

Accountability in the conduct of research

Professional courtesy and fairness in working with others

Good stewardship of research on behalf of others

RESPONSIBILITIES

1. Integrity: Researchers should take responsibility for the trustworthiness of their research.

2. Adherence to Regulations: Researchers should be aware of and adhere to regulations and policies related to research.

3. Research Methods: Researchers should employ appropriate research methods, base conclusions on critical analysis of the evidence and report findings and interpretations fully and objectively.

4. Research Records: Researchers should keep clear, accurate records of all research in ways that will allow verification and replication of their work by others.

5. Research Findings: Researchers should share data and findings openly and promptly, as soon as they have had an opportunity to establish priority and ownership claims.

6. Authorship: Researchers should take responsibility for their contributions to all publications, funding applications, reports and other representations of their research. Lists of authors should include all those and only those who meet applicable authorship criteria.

7. Publication Acknowledgement: Researchers should acknowledge in publications the names and roles of those who made significant contributions to the research, including writers, funders, sponsors, and others, but do not meet authorship criteria.

8. Peer Review: Researchers should provide fair, prompt and rigorous evaluations and respect confidentiality when reviewing others' work.

9. Conflict of Interest: Researchers should disclose financial and other conflicts of interest that could compromise the trustworthiness of their work in research proposals, publications and public communications as well as in all review activities.

10. Public Communication: Researchers should limit professional comments to their recognized expertise when engaged in public discussions about the application and importance of research findings and clearly distinguish professional comments from opinions based on personal views.

11. Reporting Irresponsible Research Practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification or plagiarism, and other irresponsible research practices that undermine the trustworthiness of research, such as carelessness, improperly listing authors, failing to report conflicting data, or the use of misleading analytical methods.

12. Responding to Irresponsible Research Practices: Research institutions, as well as journals, professional organizations and agencies that have commitments to research, should have procedures for responding to allegations of misconduct and other irresponsible research practices and for protecting those who report such behavior in good faith. When misconduct or other irresponsible research practice is confirmed, appropriate actions should be taken promptly, including correcting the research record.

13. Research Environments: Research institutions should create and sustain environments that encourage integrity through education, clear policies, and reasonable standards for advancement, while fostering work environments that support research integrity.

14. Societal Considerations: Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work.

The Singapore Statement on Research Integrity was developed as part of the 2nd World Conference on Research Integrity, 21-24 July 2010, in Singapore, as a global guide to the responsible conduct of research. It is not a regulatory document and does not represent the official policies of the countries and organizations that funded and/or participated in the Conference. For official policies, guidance, and regulations relating to research integrity, appropriate national bodies and organizations should be consulted. Available at: ***www.singaporestatement.org***

Appendix R: Psychological First Aid

JOHNS HOPKINS UNIVERSITY

COURSE CERTIFICATE

May 6, 2021

Carla van Stelten

has successfully completed

Psychological First Aid

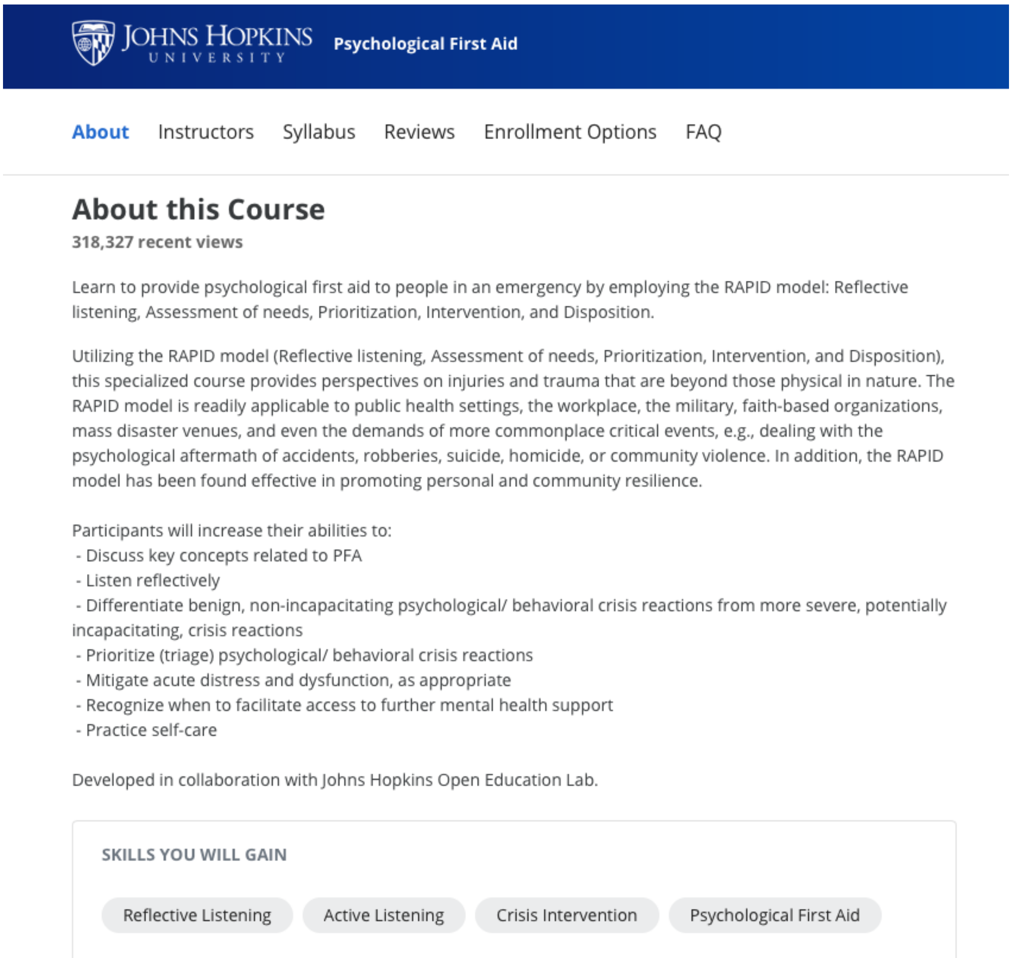
an online non-credit course authorized by Johns Hopkins University and offered through Coursera

Associate Professor
Department of International Health
Bloomberg School of Public Health
Johns Hopkins University

Verify at coursera.org/verify/NF3VPK3TLZAD

Coursera has confirmed the identity of this individual and their participation in the course.

This certificate does not affirm that this learner was enrolled as a student at Johns Hopkins University. It does not confer a JHU grade, course credit or degree; establish a relationship between this learner and JHU; enroll or register this learner at JHU or in any course offered by JHU; or entitle this learner to access or use resources beyond the online courses provided by Coursera.



About this Course

318,327 recent views

Learn to provide psychological first aid to people in an emergency by employing the RAPID model: Reflective listening, Assessment of needs, Prioritization, Intervention, and Disposition.

Utilizing the RAPID model (Reflective listening, Assessment of needs, Prioritization, Intervention, and Disposition), this specialized course provides perspectives on injuries and trauma that are beyond those physical in nature. The RAPID model is readily applicable to public health settings, the workplace, the military, faith-based organizations, mass disaster venues, and even the demands of more commonplace critical events, e.g., dealing with the psychological aftermath of accidents, robberies, suicide, homicide, or community violence. In addition, the RAPID model has been found effective in promoting personal and community resilience.

Participants will increase their abilities to:
- Discuss key concepts related to PFA
- Listen reflectively
- Differentiate benign, non-incapacitating psychological/ behavioral crisis reactions from more severe, potentially incapacitating, crisis reactions
- Prioritize (triage) psychological/ behavioral crisis reactions
- Mitigate acute distress and dysfunction, as appropriate
- Recognize when to facilitate access to further mental health support
- Practice self-care

Developed in collaboration with Johns Hopkins Open Education Lab.

SKILLS YOU WILL GAIN

Appendix S: Participants’ symptom description: Three Case Vignettes

Case 1: Depression (*n* = 62)		**Case 2: Grief (*n* = 57)**		**Case 3: Depression (*n* = 48)**	
Description	***n* (%)**	**Description**	***n* (%)**	**Description**	***n* (%)**
Labelling terms		**Labelling terms**		**Labelling terms**	
Depression	27 (43.55%)	Depression	6 (10.53%)	Depression	10 (20.83%)
Anxiety	1 (1.61%)			Anxiety/ social anxiety	4 (8.33%)
				Antisocial	1 (2.08%)
Psychological symptoms		**Psychological symptoms**		**Psychological symptoms**	
Low mood/ sadness/ depressive	7 (11.29%)	Grief	35 (61.4%)	Hearing loss	10 (20.83%)
Lack of motivation	8 (12.9%)	Struggling to adjust to and process husband's death	8 (14.04%)	Self-esteem issues	8 (16.67%)
Lack of motivation for audiological rehabilitation	7 (11.29%)	Heightened emotional state/ emotional	5 (8.77%)	Loss of interest in things she previously enjoyed	7 (14.58%)
Lack of interest/motivation in socially interacting	5 (8.06%)	Distracted/ lack of attention/ distant	5 (8.77%)	Behaviour change/ maladaptive behaviours	4 (8.33%)
Hopelessness	5 (8.06%)	Difficulty coping	5 (8.77%)	Anxious	2 (4.17%)
Negativity towards life/unable to enjoy life	4 (6.45%)	Stress	4 (7.02%)	Lack of motivation	2 (4.17%)
Loss of interest	3 (4.84%)	Memory issues/ forgetful	4 (7.02%)	Fear of embarrassment	1 (2.08%)
Poor self-esteem/ feelings of worthlessness	3 (4.84%)	Problems with decision-making	3 (5.26%)	Frustrated	1 (2.08%)
Frustrated	1 (1.61%)	Absent-minded	3 (5.26%)	Insecure	1 (2.08%)

Failure to thrive	1 (1.61%)	Tearful	2 (3.51%)	Lack of joy in life	1 (2.08%)
Detached	1 (1.61%)	Overwhelmed	2 (3.51%)	Low mood	1 (2.08%)
Mental exhaustion	1 (1.61%)	Feeling pressurised by children to sell home	2 (3.51%)		
Emotional despondency	1 (1.61%)	Asking the same question more than once	2 (3.51%)		
Discouraged	1 (1.61%)	Trauma related to passing of husband	1 (1.75%)		
Grief	1 (1.61%)	Struggling with ALDs	1 (1.75%)		
Stress	1 (1.61%)	Sadness	1 (1.75%)		
Quality of life affected	2 (3.23%)	Limited mental capacity due to current emotions	1 (1.75%)		
No will to live	10 (16.13%)	Helplessness	1 (1.75%)		
Suicidal ideation/ thoughts of death	6 (9.68%)	Full of thoughts	1 (1.75%)		
		Frustrated	1 (1.75%)		
		Emotional despondency	1 (1.75%)		
		Does not care for management	1 (1.75%)		
		Decreased willingness to engage	1 (1.75%)		
		Open to improve quality of life	1 (1.75%)		
Physical symptoms		**Physical symptoms**		**Physical symptoms**	
Tiredness/ Exhaustion/ Lethargy	12 (19.35%)	Lack of sleep	1 (1.75%)	Changes in weight/ appetite	11 (22.92%)
Insomnia/ Sleeping difficulties	7 (11.29%)			Difficulty sleeping	11 (22.92%)
				Tiredness/ fatigue/ exhaustion	5 (10.42%)
				Physical pain (back pain, neck pain)	1 (2.08%)

Social symptoms		**Social symptoms**		**Social symptoms**	
Social withdrawal	10 (16.13%)	Loneliness	4 (7.02%)	Social withdrawal/ avoidance	19 (39.58%)
Isolation	9 (15.52%)	Family tension	1 (1.75%)	Social isolation	18 (37.5%)
Lack of social interaction	6 (9.68%)			Avoidant	1 (2.08%)
Loneliness	5 (8.06%)			Communication difficulties	1 (2.08%)
				Limited social network	1 (2.08%)
				Loneliness	1 (2.08%)
Scores from screening scale					
Quantify using PhQ-9	1 (1.61%)				
Hearing related		**Hearing related**		**Hearing related**	
Hearing loss	5 (8.06%)	Hearing loss	8 (14.04%)	Willingness to improve hearing	2 (4.17%)
		Clinician did not report symptoms, but provided audiology management plan	1 (1.75%)		
State client’s own words		**State client’s own words**		**State client’s own words**	
State what the client reported in her own words	13 (20.97%)	Explain in the client’s own words	5 (8.77%)	Explain in the client's own words	3 (6.25%)

Appendix T: Content analysis of participants' responses to Case Vignettes

Theme	**Sub-theme**	**Condensed meaning unit (number of meaning units)**	**Condensed meaning unit (number of meaning units)**	**Condensed meaning unit (number of meaning units)**
		Case One: Depression	**Case 2: Grief**	**Case 3: Depression**
Informational counselling				
	Counsel regarding general health conditions			
		Discuss depression and stress (1)	Discuss impacts of grief (1)	Confirm that there are no other underlying medical problems (2)
		Discuss psychosocial impacts of ageing (1)	Discuss possibilities of early-stage dementia (2)	Discuss relaxation therapy techniques (1)
		Discuss tiredness and possible causes (1)		Counsel on psychosocial impacts of sleeping problems (1)
		Sleep training (1)		Ask more questions about sleeping and eating habits (2)
				Counsel on sleep hygiene (1)
	Counsel regarding audiological symptoms or rehabilitative options			
		Counsel on the psychosocial impacts of hearing loss (10)	Counsel about hearing aids (1)	Counsel on realistic expectations (1)

		Identify client's listening needs (1)	Counsel on hearing aid benefits (3)	Counsel on the effects of hearing loss (1)
		Counsel on the psychosocial benefits of amplification (12)	Counsel on importance of being active in hearing rehabilitation decision making (3)	Discuss benefits of new hearing aid technology (2)
		Discuss benefits of hearing aids (8)	Counsel on the psychosocial benefits of amplification (3)	Counsel on the psychosocial impacts of hearing loss (3)
		Counsel on hearing health (1)	Informational counselling (3)	Informational counselling - non-specific (3)
		Informational counselling - non-specified (4)		Counsel on realistic expectations (2)
		Discuss hearing and cognition (7)		Discuss audiological management options (1)
				Counsel on the psychosocial benefits of amplification (5)
				Identify communication needs (1)
				Discuss hearing and cognition (1)
Diagnostic testing				
	Conduct diagnostic testing/screening			
		Hearing aid review (2)	Administer standardised self-assessments (HHIA; COSI) (1)	Check assessment (1)
		Investigate health issues (1)	Use informal tools (IDA tools) (1)	Check current hearing aids (1)
		Full audiology diagnostic (1)	Assess - non-specific (1)	Hearing assessment (2)
		Listening needs assessment (2)	Issue self-assessment scales (1)	Social anxiety questionnaire (1)

	Hearing test (3)	Hearing test (2)	COSI (3)
	Administer mental health screeners (1)	Use hearing aid scales (1)	QoL scale (1)
		Perform listening needs analysis (1)	Use hearing aid scales (e.g. HHIA) (2)
		Spondee word list in poor light with and without lipreading (1)	Fill out hearing-related questionnaires together (1)
Interventions			
Discuss, order, fit or modify hearing devices			
	Encourage her to discuss hearing aid options with family (1)	Decide on hearing aids with client's consent (1)	Decide on appropriate hearing aids (2)
	Modify hearing aid settings (1)	Discuss telecoil options hearing aid (1)	
	Persuade to take action towards audiological rehabilitation (5)	Proceed with hearing aid fitting/trial (8)	Proceed with new hearing aid fitting/ trial (12)
	Fix/review current hearing aids (7)	Proceed with no risk trial (1)	Fix/review current hearing aids (4)
	Encourage hearing aid trial (4)		Offer no risk trial (1)
	Discuss/Provide information on hearing aids (18)	Discuss/Provide information on hearing aids (13)	Discuss/Provide information on hearing aids (9)
	Proceed with hearing aid fitting/trial (5)	Recommend/encourage a hearing aid fitting/ trial (7)	Suggest new hearing aids to encourage social reengagement (5)

	Recommend new hearing aids (3)	Fit with new premium hearing aids since she has no financial restrictions (1)	
	Assistive listening devices fitting/trial (2)	Assistive listening devices trial/fitting (1)	Assistive listening devices trial/ fitting (1)
		Suggest premium hearing aids (1)	Fit hearing aids with TV streamer (1)
			Recommend hearing aid that can link with TV (4)
Modify home listening environments			
		In church - consider placement and loop system (1)	
		Install home system - doorbell/telephone (1)	
		Discuss options church listening environment (1)	
Encourage social participation			
	Encourage social participation (7)	Encourage social participation at church (1)	Encourage social participation (4)
		Encourage social participation (1)	

	Provide/offer communication training			
		Provide communication training (4)	Provide communication training (2)	Provide communication training/ assertiveness training (10)
		Group aural rehab therapy (2)		Group aural rehab (1)
Clinical processes				
	Delay audiological rehabilitative care to focus on psychological/psychosocial concerns			
		Respect client's choice on whether or not to try hearing aids (8)		Delay hearing aid fitting to focus on psychosocial/psychological concerns (2)
		Delay hearing aid fitting to focus on psychosocial/psychological concerns (5)	Delay hearing aid discussion or fitting allowing time for the client to grieve (23)	
	Slow down			
			Slow down the rehabilitation plan (9)	
	Provide ongoing support			

	Keep in touch (1)	Schedule follow-up sessions (6)	
	Follow up after period of time (3)	Follow-up after a period of time (3)	
	Indicate that client may return to talk (1)		
	Schedule further meetings (1)		
Design a rehabilitation plan that considers psychosocial concerns raised			
	Make a plan together with client, family and MDT (2)	Set hearing goals (1)	
	Joint goal-setting (1)	Set mutual goals (1)	
Make time for non-audiological discussion during the appointment			
	Ask about hobbies (2)	Allow the patient to spend some time in consultation talking about her husband (2)	Ask about hobbies (1)
	Make time for non-audiological discussion during the appointment (1)	Ask about hobbies and routine (1)	
Involve significant others			

Involve significant others (5)	Book another appointment so that significant other/family member to attend to discuss hearing aids (8)	Involve husband in audiological rehabilitation (11)
	Ask/encourage client to bring a significant other to future appointments (11)	Explain client's hearing loss to husband during a couples aural rehab session (1)
	Provide family with communication strategies (1)	Assess husband's communication needs (1)
	Involve daughters in hearing aid decision-making process (2)	Ask if she has spoken to her husband regarding her experiences (1)
		Encourage family members to attend audiology appointments with her (1)
		Discuss streaming device for husband (1)
Address only the audiologically relevant symptoms and disregard psychosocial or psychological symptoms raised		
	Address only the audiologically relevant symptoms and disregard psychosocial or psychological symptoms raised (3)	Address only the audiologically relevant symptoms and disregard psychosocial or psychological symptoms raised (6)
Ensure clinician continuity		

		Ensure clinician continuity (1)	
Emotional support (Emotion-focused counselling)			
Use active listening and encourage dialogue			
	Encourage dialogue (4)	Encourage dialogue (2)	I would listen to her (1)
	Make patient feel heard (1)	Active listening (2)	
	Use active listening (4)	Put the file aside and just listen (1)	
Ask questions to further explore psychosocial experiences			
	Ask questions to further explore psychosocial experiences (5)	Ask questions to further explore psychosocial experiences (5)	Ask questions to further explore psychosocial experiences (11)
		Ask questions about social needs (1)	Investigate changes in social behaviour to determine if onward referral is needed (1)
Express concern for client's well-being			
	Raise a safeguarding concern (1)		
	Express concern for client's mental health (1)		

Use client-centred communication			
	Express sympathy (2) Client-centred counselling (1) Be empathetic (2) Exhibit a friendly attitude (1) Psychosocial counselling (1) Build rapport (1)	Exhibit a caring attitude (1) Express sympathy (5) Be empathetic (3)	Provide counselling that focuses on the things she lost interest in (2) Be empathetic (1)
Acknowledge and validate the client's feelings			
	Acknowledge and validate the client's feelings (4)	Acknowledge and validate the client's feelings (6) Normalise the grieving process (4)	Normalise the client's experiences (1)
Focus on her psychosocial needs			
	Counsel on the need for social interactions (5) Counsel on the impacts of social withdrawal (4) Explore whether psychosocial symptoms are due to hearing loss or other factors (3)	Counsel on the need for social interactions (1)	Counsel on the need for social interaction (2) Counsel on the impacts of social withdrawal (3) Explore whether psychosocial symptoms are due to hearing loss or other factors (5)

	Identify client's support system (4)	Identify client's support system (4)	Discuss psychological benefits of social connection/engagement (1)
Focus on her emotional needs			
	Address emotional needs (6)	Provide client with space to talk about her feelings (2)	
	Introduce a positive perspective (6)	Address emotional needs (3)	
	Counsel on negative emotions that client has been experiencing (1)		
Establish whether she has support during this time			
		Establish whether she has support during this time (4)	
Use therapeutic counselling techniques			
	Adjustment counselling (1)		Adjustment counselling (1)
Psychosocial counselling (non-specific)			
		Counselling within the scope of audiology (1)	Counsel - non-specific (1)
		Spend time counselling (2)	

Impose clinician views on client				
		Offer advice (1) Make assumptions about her situation (1)	Discuss benefits of retirement home move (1) Tell her everything will be alright (1) Lay down a course of action for her (1)	Provide resources for support available for individuals in an abusive relationship (1)
Involve/referral to external help				
	Hostel staff			
		Seek permission to discuss communication needs with hostel staff (3) Contact hostel staff regarding referral to a psychologist/psychiatrist (2)		

	Involve hostel staff in hearing aid management (1) Involve hostel staff in psychosocial management (2) Involve hostel staff in rehabilitation plan (1) Contact hostel staff regarding depressive symptoms (2) Encourage to speak to hostel staff (1) Contact hostel staff regarding tiredness and medication (1) Contact hostel staff regarding current treatments and therapy (1)		
GP	Recommend discussing medication with GP (4) Refer to GP for medication review (2) Refer to GP for medical check-up (1) Refer to GP (1) Report to GP (3)	Ask client's permission to contact GP re. test results and mental health needs (1) Refer to GP (2) Contact GP regarding sadness (1)	Refer to GP for weight loss/ loss of appetite (2) Refer to GP for signs of depression (1) Recommend speaking to her GP (2) Write a report to GP (1) Refer to GP for sleeping problems (1)

	Contact GP regarding depressive symptoms/mental health concerns (3)		
	Contact GP regarding referral to mental health professional (1)		
	Recommend client talking to GP about sleep issues (2)		
	Recommend client talking to GP about possible depression(1)		
	Refer to GP for onward referrals to mental health professionals/ sleep specialists (1)		
Mental health practitioners			
	Referral to a psychologist after discussing with client (3)	Offer referral to counsellor/psychologist for grief counselling (1)	Refer to a psychologist (5)
	Involve psychiatrist (1)	Refer to a psychologist (7)	Refer to counsellor (1)
	Referral to a psychologist (13)	Refer to a psychologist for grief counselling (1)	Recommend counselling (1)
	Convince client to see a psychiatrist regarding suicidal thoughts (1)	Recommend referral to a psychologist/psychiatrist (1)	Recommend couples counselling (1)
	Convince client to see a psychiatrist regarding medication review (1)	Encourage client to contact psychologist (4)	

	Referral for hearing therapy (1)		
	Involve counsellor/therapist (1)		
Family and significant others			
	Seek permission to discuss communication needs with family (1)	Involve family in hearing rehabilitation (1)	Discuss with family how they can support her (1)
	Counsel significant others in how they can help client (1)	Speak to family re. client's emotional state (2)	Encourage husband to support her with social reengagement (1)
	Discuss with family how they can support her (3)	Inform next of kin of session findings (1)	
	Discuss referral to psychologist with family (1)	Seek permission to talk with family (1)	
	Encourage client to speak to family (1)	Include family in counselling process (1)	
Social workers			
	Seek social worker support (3)	Referral to social worker (1)	Referral to social worker (1)
	Referral to social worker (2)		
Community services			
	Recommend support groups (1)	Involve religious leader (2)	

Professional support - general

Refer for counselling services (1)

Suggest speaking to medical professional about feelings (1)

With client's permission, contact medical professional re medication (1)

Recommend medical consultation for sleep problems (1)

Refer for grief counselling (5)

Refer for medical management (1)

Refer for counselling (1)

Referral for family therapy (1)

Ask if she would like to be referred to a professional to help her grieve (1)

I might suggest that she speaks to a professional (1)

May consider referral to investigate if she is depressed (1)

Ask if she would like to speak to somebody who may help her to boost her self-esteem (1)

Ask if she would like to speak to somebody who may be able to help her with her sleeping and eating habits (1)

Expert assessment requested (1)

External help - non-specific

Refer for possible depression (1)

Occupational therapist

OT for some form of occupational/recreational activities. (1)

Neurologist

		Refer to neurologist for MRI to assess brain abnormalities (1)	
	Physiotherapist		
			Refer for physiotherapy (1)
	Dietician		
			Refer to dietician (1)
Clinician is unsure what to do			
	Clinician is unsure what to do		
		Contact psychologist for advice on how best to treat client (1)	Cases like this are difficult for me (1)
			Clinician is unsure what to do (1)

Analysis was deductive according to pre-determined themes from Bennett, Meyer, Ryan and Eikelboom's (2020) study.

Appendix U: Participants’ perceptions on the attitudes clients towards mental health during audiology appointments.

Theme (number of participants)	Meaning unit (number of participants)
Client will open up to audiologist once trust is built and they feel safe (4)	With time, as trust is built, the client is more open to conversations regarding emotional well-being (2) If the client trusts you, they are willing to open up (1) Client will open up if they feel safe (2)
Client willingness to confide depends on the audiologist's behaviours (5)	If the audiologist engages, clients may be more willing to open up (5)
Willingness to engage depends on individual factors (6)	It depends on the person (5) It depends on cultural beliefs (1)
Clients with tinnitus are more likely to open up (2)	Clients with tinnitus are more likely to open up (2)
Clients are willing to engage (11)	Clients are open to talking about emotional well-being (7) Client initiates the conversation (1) Client will engage up to a point (1) Clients become emotional (1) If client opens up, it is not usually related to their hearing (1)
Audiologist does not initiate conversations on mental health (3)	Audiologist does not initiate conversations on mental health (2) It is rarely discussed (1)
Stigma prevents willingness to open up (5)	Stigma prevents willingness to open up (5)
Client is not willing to open up in audiology setting (8)	Clients do not see the link between audiology and mental health and are therefore not open (2) Clients want to focus on hearing (3) Clients may feel the setting is wrong (1) Clients do not feel it is important (1) Physical illness is the primary source of complaints (1)
Clients have negative emotional reactions (9)	Clients are in denial (2) Clients try to hide their feelings (1) Clients are uncomfortable discussing mental health (1) Clients may not want to acknowledge their feelings (1) It is a difficult conversation for clients (4)
Clients not willing to engage (5)	Clients feel that they do not need help (1) Clients prefer to avoid the subject (1) Clients do not regularly engage (1) Clients are reluctant (1) Clients do not want to burden audiologist (1)