

Sounding Board

APRIL 2023

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Reversed?

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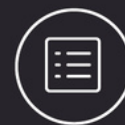


Edge Mode

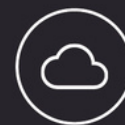
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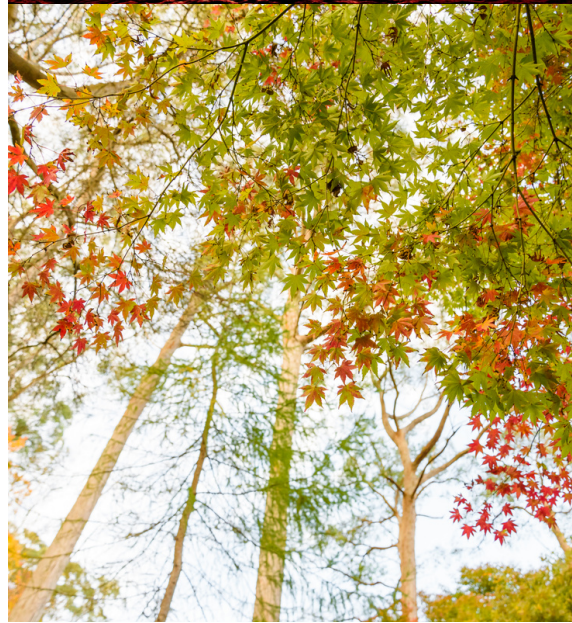
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Board Report

Dear Members,

Welcome to the April edition of Sounding Board – our first issue of 2023! We hope you all had a great long weekend with family and friends.

We've had a busy start to 2023 with continued representation in various industry groups including Helen King's work with the Hearing Health Care Alliance and their current focus on the lack of hearing health training of aged care staff, as well as Glen Carter's work with TAFE NSW and their focus on improving the current industry traineeship. Glen Carter and Lyndon Williams are also set to attend the first Hearing Services Program Business Reference Group meeting of 2023, this month.

In addition, Helen King has continued HAASA representation at the Scope of Practice meetings, a Parliament House Afternoon Tea, and Glen Carter has attended the Department of Health's Hearing Awareness Campaign Stakeholder Meeting.

We've also recently added our support to the MRFF Indigenous Health Application 'Systematically and Together Overcoming Racism Model (SToRM)' – a co-designed approach to addressing racism in the hearing health sector led by Professor Catherine McMahon. Tim Manski and Glen Carter will attend the first SToRM meeting of 2023, later this month.

Kerrie Gibson has continued her work with the Ethics Review Committee, with Lindsay Gillespie, Sharon King and Andrew Sharrock to join the ERC Committee and Pool of Assessors for HAASA. You'll be able to see the Ethics Report from the ERC's Sandra South inside this issue.

Matthew Virgen has produced our new Case Study Requirements and Assessment Guide which updates our Case Study Exam procedure and gives HAASA Associates and Supervisors insight into how best to prepare for the exam. We've already had 5 Associates sit the Competency Examination this year with 4 more to sit in the coming months.

Board Report

Membership numbers have been growing steadily over the last month, at all levels of industry experience. It's nice to see so many students entering the industry as well. Your membership renewal invoices were also released last week. It seems we're all affected by the rising cost of living at the moment, so we've decided against an increase in membership fees for the 2023-24 financial year. We'll be running our renewal competition again this year which means by simply paying your renewal by 30 June 2023, you'll go into the draw to win your fees back.

Sadly, Gary Stevenson stepped down from the HAASA Board last month due to an increase in work commitments. Thank you to Gary for your valuable contribution to the HAASA Board over the past 16 months. Your warm and friendly nature will be sorely missed in the monthly Board meetings.

New faces are always welcome amongst the HAASA Board. If you'd like to know more about joining and making a difference in our industry, please reach out to any of your Directors or get in touch with Jacqui at haasa@haasa.org.au.

There will be some administrative changes for the next few months as our amazing Executive Board Administration Officer Jacqui Peters goes off on maternity leave. Jacqui will be replaced by the very capable Donna Blayney. We wish Jacqui all of the best and also welcome Donna to the role.

Thank you again to everyone who joined us for the 2023 HAASA Biennial Conference in Sydney last month. It was great to catch up with everyone over the two days and listen to some brilliant speakers. A huge thank you to our speakers and sponsors, without which we wouldn't be able to host events like this. If you weren't able to join us this year, you can see photos and highlights inside this issue of Sounding Board. We'll also be hosting our next CPED Day in Melbourne in November so we're looking forward to seeing you all there! If you have any suggestions on speakers or topics you'd like to hear, please email Jacqui at haasa@haasa.org.au.

Your Directors,

Kerrie, Helen, Glen, Lyndon, Tim & Matthew

HEARING SERVICES PROGRAM NEWS

Program Compliance Update

The program works with providers to support delivery of quality hearing services to help program clients achieve their hearing and communication goals. The program has a range of supports available including its website, call centre, provider factsheets and guides, and offers webinars and information sessions with providers on request.

In 2023, the program will focus compliance monitoring on reviewing claims, fittings within five years, client goals and outcomes, replacements and maintenance. The program is also checking Qualified Practitioner information.

Key tips to avoid common issues include:

Vouchers: The date of service must be on or between the start and end dates of the voucher the service is claimed against. Please ensure clients are vouchered and the services are available before services are delivered to clients.

Qualified Practitioners: Only practitioners who have, or are supervised by a practitioner who has, a QP number and are in an approved membership category with a recognised Practitioner Professional Body (PPB) can deliver services to program clients.

Audiology Australia	Australian College of Audiology	Hearing Aid Audiology Society of Australia
Audiologists	Audiologists and Audiometrists	Audiometrists
<ul style="list-style-type: none">• Full Accredited Member	<ul style="list-style-type: none">• Full/Ordinary Member• Fellow Member	<ul style="list-style-type: none">• Full Member• Fellow Member

PPB membership for all practitioners should be checked annually at renewal time. Providers should ensure that practitioner information and links to their business are routinely updated in the portal.

Replacements: A correctly completed statutory declaration for a lost device or a device supplier letter confirming the devices are damaged beyond repair must be received before a replacement device is provided.

Incorrectly completed Statutory declarations are not valid. Invalid examples include declarations written in the client's name but signed by someone else, not witnessed by an authorised person or not including details of the devices lost.

Providers/practitioners must use either the Commonwealth Attorney General's or their state's approved Statutory Declaration form.

Record Keeping: Client records must be complete and contain all required program documentation. This must include client goals. Tick boxes do not provide adequate evidence of actions taken or the information gathered to support continuity of care.

Devices: Only devices listed on the Fully or Partially Subsidised Device Schedule at the date of fitting can be supplied to program clients.

Suitability of a device to a client's circumstance is very important to supporting the client's hearing goals. Neither the program or clients can be charged for refittings if issues existed or should have been considered at the time of fitting. This could include spectacle use, potential dexterity deterioration or not providing adequate device headroom to account for likely hearing deterioration.

Portal Records: Provider and client details must be kept up to date in the portal, including QP links, user accounts, client details, provider contact information etc. Portal guides are available on the program website.

Specialist Clients: Program clients with specialist hearing needs are eligible for additional support through the Community Service Obligations (CSO) component of the program, provided by Hearing Australia. If a client meets the criteria for specialist hearing services, you must provide the client with Specialist Services information and notify the program by clicking the specialist hearing services option on the client's record in the portal.

MHLT Criteria: A Wishes and Needs Tool (WANT) is required for all fittings where the client's 3FAHLs are below the program's minimum hearing loss threshold (MHLT) of 23dB. Clients must complete the WANT without any influence, and sign and date the form. Fittings should only proceed if the client meets both MHLT criteria.

Relocations: Clients must not be relocated to a new provider in the portal without their informed consent as this is a breach of privacy. Providers who have accessed a client's personal and health information without consent may have committed a Notifiable Data Breach. If a client has relocated to a new provider, the full and complete file must be transferred to the new provider within 7 business days.

For more information search the relevant topic on the program website - www.hearingservices.gov.au.



HARNESSING AI TO IMPROVE HEARING TECHNOLOGY

RESEARCHER

Professor David
McAlpine

WRITER

Georgia Gowing

24 March 2023

A new research partnership with global tech company Google will explore the use of artificial intelligence to optimise the way hearing devices work.

A new research partnership with global tech company Google will explore the use of artificial intelligence to optimise the way hearing devices work, including seeking to tackle the long-standing problem of listening in noisy environments by 'hyper-personalising' hearing aids and cochlear implants to each user's unique hearing pattern.

The collaboration is part of [Google's Digital Future Initiative](#), and it brings together Google, Macquarie University Hearing, Cochlear, National Acoustic Laboratories, NextSense and the Shepherd Centre.

Hearing loss affects about 3.6 million Australians, and it can have wide-ranging health implications, influencing everything from an individual's educational and employment opportunities to social isolation and the likelihood of developing dementia in later life.

Academic Director of Macquarie University Hearing, Professor David McAlpine, says despite hearing loss being so widespread, it is a severely undertreated problem, and one that often goes undetected.

"About a third of people who have

hearing aids don't use them, and one of the reasons for this is that current technologies don't work for every person in every situation," Professor McAlpine says.

"In normal hearing, the brain is using its 30,000 neural connections from the ear to sift through the sounds we're hearing, helping us focus on the those we want to concentrate on – the classic 'cocktail party problem'.

"The sensory cells of the inner ear, which are most sensitive to damage by noise or as we age, amplify sound and make different sounds distinguishable from each other, and this is difficult for hearing technology to reproduce.

"Hearing aids are highly effective at amplifying sounds to make them audible again, but they struggle to distinguish between sounds.

"In noisy environments, such as bars or restaurants, that means different competing sounds are all amplified to the same degree, making it hard for us to separate out a conversation from the background noise.

"Voice recognition technology has the same challenges, which explains why the digital assistant on your phone might suddenly fire up for what seems like no reason or play Ariana Grande when you asked for AC/DC."

Tackling noise in public spaces

Hearing aids and cochlear implants require adjustments, training, and a period of rehabilitation to ensure the settings are tailored to an individual's needs.

Professor McAlpine says one thing we do not always do well with hearing technologies is match them to each



Party problem: People with hearing devices can struggle to hear in noisy environments.

person's individual experience of hearing loss and what they want to achieve with their devices.

For hearing aids in particular, someone who copes well with their device settings at home in a relatively quiet environment might struggle to cope with loud public spaces, and this can lead to them either reducing their social activities or abandoning their hearing device altogether because they find wearing it to be stressful and exhausting.

"It's a simple fact that people won't use these technologies if they don't fit their lived experience," he says.

"One of the first things we want to explore is whether machine-learning algorithms can replicate things like the National Acoustic Laboratories 'NAL' and 'NL2' formula used by audiologists worldwide when fitting someone with a hearing aid.

"An automated process based on an individual's listening performance – beyond the relatively simple audiogram that is the current clinical tool for fitting hearing aids – would reduce the number

individual's inner ear and listening brain, compare this to a model of normal hearing, and use this information to optimise the settings of their device, thereby restoring their hearing to normal or near-normal performance.

"This mapping would be dynamic, adapting to the environment, and reducing the need to adjust to new hearing devices, as the profile would be transferable."

New hope for individualised technology

This approach could be used to treat all sorts of hearing disorders such as tinnitus (ringing in the ears) and hyperacusis (extreme sensitivity to sound).

In theory, it could also help optimise any listening system, including voice recognition systems and 'hearables' like noise-cancelling headphones, which help improve listening performance for people with clinically normal hearing but who struggle to hear in background noise.

“Hearing technology helps people around the world connect with people and their surroundings, but there are many more people who could benefit.”

of return visits and the amount of tweaking required when someone gets a new device.

"Ideally, we want to map the performance of a hearing-impaired

"This is a tremendously exciting initiative at Macquarie University's Australian Hearing Hub, bringing together leading experts from the commercial, academic, not-for-profit, and government sectors to tackle the most pressing challenges for

people living with hearing loss, and their families,” Professor McAlpine says.

“It could help to transform hearing health in Australia and worldwide, delivering ground-breaking research and innovations, new technologies, therapies, and interventions to support communication, wellbeing and social connectedness.

“These are ambitious goals that cannot be achieved in isolation, and we look forward to seeing what we can accomplish together.”

Simon Carlile is Google Australia’s research lead on the project.

“Hearing technology helps people around the world connect with people and their surroundings, but there are many more people who could benefit,” he says.

“As part of Google’s Digital Future Initiative, this exciting collaboration will help us explore new ways to design and improve machine-learning models that better fit the needs of the individual listener – and develop a more precise and accessible approach to hearing care.”

David McAlpine, pictured, is Distinguished Professor of Hearing, Language and the Brain at Macquarie University, and Academic Director of Macquarie University Hearing.

Macquarie University Hearing, Cochlear, NextSense, NAL and the Shepherd Centre are all members of the Australian Hearing Hub. The Hearing Hub is located on Macquarie University’s Wallumattagal Campus and was established in 2013 to drive innovation and collaboration in health and technology.



HAASA BIENNIAL CONFERENCE 2023

9-10 MARCH 2023

PARKROYAL DARLING HARBOUR

Highlights

Thank you to everyone who joined us for the HAASA 2023 Biennial Conference in beautiful Sydney last month. It was so great to catch up with you all over an exceptional two days filled with incredible speakers as well as our amazing sponsors and exhibitors.

Our lovely Conference Chair, Josephine Khairy, opened the event with Phonak's Louise Rimmer and Dr David Hartley following to kick off our sponsor presentations. The captivating Suzanne Waldron commenced our speaker presentations with her funny, honest and revealing keynote - A Flourishing Mind. After Chris Carlile gave us an update from the Hearing Services Program, Unitron's Hannah Khoury continued the sponsor presentations and Associate Professor Christina Bryant detailed how to overcome barriers to hearing aid use and challenges for clinicians. Widex's Ian Mawby kicked off the afternoon session with the final sponsor presentation before actor, author and comedian, Jean Kittson finished a brilliant first day as our keynote speaker.

The evening brought the HAASA Masquerade Gala Dinner and with it some



outstanding masks. Directors Kerrie Gibson and Helen King received their well-deserved status as Honorary Life Members for their outstanding work with HAASA and the industry. The rest of the night left us with very full bellies and some very sore feet.

Day two of the conference began with Starkey's Judy Grobstein followed by an engaging presentation from Professor Raj Shekhawat on his global experience in the hearing health care sector and how we can future proof hearing health in Australia. John Lucchese discussed remote assistance and better hearing outcomes before Professor Harvey Dillon delivered an interesting presentation on separating the causes of listening difficulties in children. After Signia's Jessica Noonan closed our sponsor presentations for the conference, Jan Pollard held an interactive session for building clinical competence. Associate Professor Zoran Beckarovski closed the 2023 conference with a fascinating presentation on otology for audiometrists.

Thank you to our wonderful MC, Michael Khairy and our amazing Conference Chair, Josephine Khairy. We sincerely appreciate the hard work you put into the event. Thank you to our sponsors Starkey, Phonak, Signia, Widex, Unitron, Cochlear, Oticon, Natus, and Hearing Business Alliance. Events like this would not be possible without you and it was such a pleasure working with you all.



7

out of

10

hearing aid users
are challenged daily by
disruptive sounds¹



1. Gade et al. (2023), Wind & Handling Stabilizer - Evidence and user benefits. Oticon Whitepaper.



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2. Santurette, S., Brændgaard, M., Wang, J., & Sun, K. (2023). SuddenSound Stabilizer - Evidence and user benefits. Oticon Whitepaper. Oticon Real 1, SuddenSound Stabilizer ON vs OFF. Reduced listening effort based on 22% reduced mean pupil size as compared to highest mean pupil size.

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Hearing Business Alliance

The Hearing Business Alliance is proud to be the only business body representing small-medium businesses delivering audiology services in the hearing health sector. Unlike the practitioner professional bodies, where audiologists and audiometrists are the member, HBA membership is for the business itself. HBA member businesses are owned by audiologists, audiometrists and others. HBA was formed in 2016, when the owners of 10 businesses met to find a vehicle to give small business a voice when collaborating with government and other stakeholders, to ensure a level playing field. Today, HBA proudly represents more than 130 business members, who deliver clinical services at over 620 sites across Australia. This includes several new 'start-up' audiology

businesses, whose owners appreciate the support and mentorship graciously given by the other business owners.

Many hearing services providers are 'accidental' business owners, having worked for other providers before setting up their own business. HBA provides support for these business owners, who may be more accustomed to the audiology 'profession' than the hearing 'industry'.

The 2023 HBA seminar was held in Melbourne on 16-18 February. As a business body, the educational content has a business focus. This year we explored important topics including future-proofing independent practices, LinkedIn for business growth, digital



LEFT - BA CEO with HSP Team: Chris Carlile, Jane MacDonald, Gabby Luksza, Rob Aked. RIGHT - HBA Executive and Board: Stephen Logan (HBA Business Manager), Gayle Diceri (Board Director), Lizette Fourie (Board Director), Nicole Bowden (Board Director), Jane MacDonald (HBA CEO), Terry Clayton (Board Director), Diana Bienvenu (Board Director).



Dr Brent Edwards, NAL

consent and cyber security, improving business margins and changing insurance practices. There were also sessions designed for audiologists and audiometrists as small business employers such as ethical business practices, business continuity planning, human resources management to minimise risk, and understanding your legal responsibilities.

The presentation by Chris Carlile, Assistant Secretary of the Hearing Services Program, included an explanation of the funding of the HSP, provider responsibilities, and an update of current and future HSP projects and trends. In addition, Rob Aked and Gabby Luksza from the HSP team answered questions during a dedicated Q&A session. There were also dedicated sessions on DVA client services and post-pandemic consumer behaviour.

As an organisation built around hearing service providers, we are committed to

ensuring our members retain audiological currency. In amongst the business lectures, we found time to consider the basics of our practice including client-centred care, future trends in hearing health care, device features and cerumen management.

The feedback from seminar delegates and sponsors was overwhelmingly positive, and they appreciated the opportunity to network with fellow business owners, who are the 'decisionmakers'. This is testament to how vital it is for small business owners to be members of HBA, to add the weight of their voices to the important topics and conversations HBA raises on behalf of small businesses and their clients.

Jane MacDonald

Chief Executive Officer





Can hearing loss be reversed? Research reveals clues that could regrow the cells that help us hear

By **Kelsie Smith Hayduk**

University of Rochester Medical Center

Taking a bite of an apple is considered a healthy choice. But have you ever thought about putting in earplugs before your favorite band takes the stage?

Just like your future body will thank you for the apple, your future ears (specifically your cochlear hair cells) will thank you for protecting them. The most common cause of hearing loss is progressive because these hair cells—the primary cells to detect sound waves—cannot regenerate if damaged or lost. People who have repeated exposure to loud noises, like military personnel, construction workers, and musicians, are most at risk for this type of hearing loss. But, it can happen to anyone over time (even concert goers).

On the other hand, birds and fish can regenerate these hair cells, and now researchers at the Del Monte Institute for

Neuroscience are getting closer to identifying the mechanisms that may promote this type of regeneration in mammals, as explained in research recently published in *Frontiers in Cellular Neuroscience*.

“We know from our previous work that expression of an active growth gene, called ERBB2, was able to activate the growth of new hair cells (in mammals), but we didn’t fully understand why,” said Patricia White, PhD, professor of Neuroscience and Otolaryngology at the University of Rochester Medical Center. The 2018 study led by Jingyuan Zhang, PhD, a postdoctoral fellow in the White lab at the time, found that activating the growth gene ERBB2 pathway triggered a cascading series of cellular events by which cochlear support cells began to

multiply and activate other neighboring stem cells to become new sensory hair cells.

“This new study tells us how that activation is happening—a significant advance toward the ultimate goal of generating new cochlear hair cells in mammals,” said White.



Patricia White, PhD

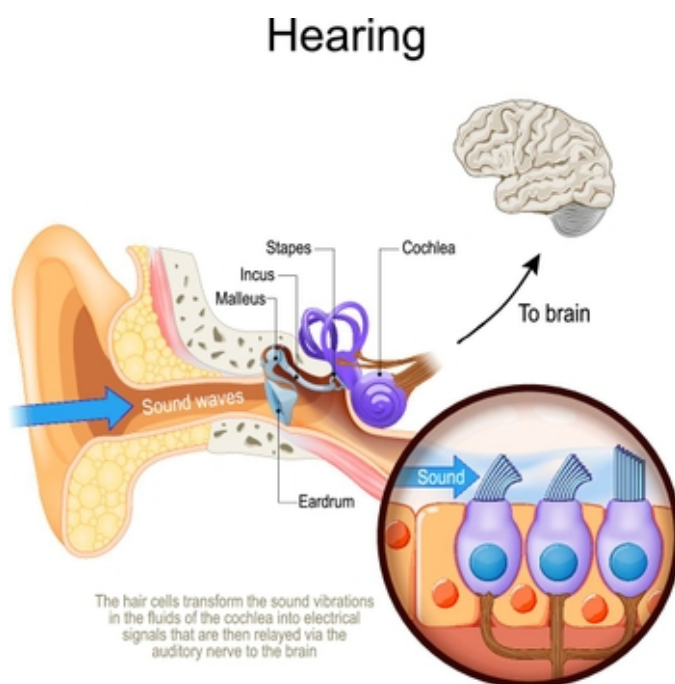
Using single-cell RNA sequencing in mice, researchers compared cells with an overactive growth gene (ERBB2 signaling) with similar cells that lacked such signaling. They found the growth gene—ERBB2—promoted stem cell-like development by initiating the expression of multiple proteins—including SPP1, a protein that signals through the CD44 receptor. The CD44 receptor is known to be present in cochlear-supporting cells. This increase in cellular response promoted mitosis in the supporting cells, a key event for regeneration.

“When we checked this process in adult mice, we were able to show that ERBB2 expression drove the protein expression of SPP1 that is necessary to activate CD44 and grow new hair cells,” said Dorota Piekna-Przybylska, PhD, a staff scientist in the White Lab and first author of the study. “This discovery has made it clear that regeneration is not only restricted to the early stages of development. We believe we can use these findings to drive regeneration in

adults.”

“We plan to further investigation of this phenomenon from a mechanistic perspective to determine whether it can improve auditory function after damage in mammals. That is the ultimate goal,” said White.

Additional authors include Daxiang Na, Cameron Baker, and John Ashton, PhD, at the University of Rochester and Medical Center. The research was supported by the U.S. Army Medical Research and Development Command (USAMRDC), the National Institute on Deafness and Other Communication Disorders, UR Ventures, and the Schmitt Program on Integrative Neuroscience.



Ethics Report

Exploring the ethics of hearing screening

The issue of hearing screening in commercial settings, in particular hearing screening conducted by front-of-house non-clinical staff in shopping centres, has been a common theme in requests for information and complaints to the Ethics Officer.

Members' ethical dilemmas regarding hearing screening

There appears to be widespread consensus amongst audiologist and audiometrist members of the professional bodies (Audiology Australia, the Australian College of Audiology and the Hearing Aid Audiology Society) that hearing screening practices, in any setting, are a valuable community awareness activity that encourages people to think about, and respond to, their hearing needs.

However, sometimes the nature of these screening practices poses ethical dilemmas. Members have called the Ethics Officer seeking guidance on their clinical responsibility for front-of-house screening practices. They have raised the issue of not knowing if and how they should act on their concerns about:

- The reliability and/or clinical relevance of

results (e.g. due to background noise, tester training, and test equipment settings).

- Who gets targeted for hearing screening (e.g. older people but not younger people who may be at risk of noise-related hearing loss).
- Messaging to older people during these screening practices (e.g. non-clinical staff offering opinions on the degree of hearing loss, the effects of hearing loss, and/or possible treatment options).

Concerns about screening practices by front-of-house staff often pose a difficult professional and ethical question for members. Item 19.2 of the Code of Conduct for audiologists and audiometrists holds members responsible for people conducting tests and procedures under their

supervision, but in many cases front-of-house staff are not under the direct supervision of a member.

The ethical dilemmas faced by members when considering hearing screening practices were further highlighted during the COVID-19 pandemic. Members called with concerns that opportunistic hearing screening of people who happened to walk past a service was not an essential health service. The response by the Ethics Review Committee and Ethics Officer during the pandemic was to follow the relevant government guidelines regarding essential health services, and to remind members that hearing services were an important part of primary care.

As always, a good first step for members with concerns about how an employer may be providing hearing services is to discuss these concerns with an employer. Take the time before this discussion with your employer to jot down the key issues/contributing factors relating to your concerns, any evidence or regulations relating to the clinical issues to be discussed, and what you think could be done to address your concerns.

Code of Conduct Responsibility

19.2 Members may employ non-member staff to conduct a certain test or procedure provided they are competent to carry out those duties and are under the immediate and personal supervision of the member. Under these circumstances the non-member is bound by this Code of Conduct and the member must maintain full responsibility for the client's welfare.

The public's view

Many complaints and requests for information by clients of hearing services have raised issues relating to hearing screening performed by front-of-house non-clinical staff in shopping centres. However, these practices often fall outside the remit of the Ethics Review Committee due to the fact that the people conducting the screening are not members of the professional bodies or under the direct supervision of a member.

The types of concerns raised by clients include:

- Confusion about the qualifications of the person conducting the screening.
- A misunderstanding that the screening is a comprehensive diagnostic assessment.
- Being so overwhelmed after 'failing my hearing test when I had no idea anything was wrong with me' (i.e. 'failing' the screening) that they then 'couldn't take in what the doctor at the back said' (i.e. the audiologist or audiometrist).
- Front-of-house staff commenting on their clinical prognosis based on the screening results.

These client concerns often escalate further if they have then Googled 'hearing screening guidelines' and found that their screening test did not adhere to the detailed testing equipment, testing environment, and tester qualification requirements of, for example, the government-funded hearing screening programmes in Australia and overseas.

Let's continue the discussion

Perhaps it is time for a further exploration of the professional, clinical and ethical issues relating to hearing screening in different contexts and for different populations/needs groups by the members, together with their professional bodies. Taking the discussion back to first principles of health screening for each population/needs group could help to guide these discussions. The Australian Government's 2018 Department of Health Population Based Screening Framework (the Australian Framework) states that:

“ As screening has benefits, costs and harms, there is an ethical obligation to maximise benefits and minimise harm. The overall benefits should outweigh any harms that result from screening. [...]”¹

The Australian Framework builds on the World Health Organization (WHO) principles of screening for disease². It notes that benefits may include improving disease/condition outcomes and that harms include false positives, over-diagnosis and other physical and psychological harms resulting from the screening. Although these principles can be

applied to the hearing screening context, it is important to note that the Australian Framework distinguishes between population screening and 'case-finding or opportunistic screening' describing this as "[...] where a test is offered to an individual with or without symptoms of the disease when they present to a health care practitioner for reasons unrelated to that disease (for example, when a GP orders blood tests when a patient presents for a flu shot)."

Considering these first principles may assist the audiology and audiometry professions to define more clearly the various hearing screening activities they or their employer undertake. This would include a consideration of the relative benefits and harms, who is targeted for screening, and how the findings of the screening are communicated to clients.

Please do not hesitate to contact me at ethics@auderc.org.au or on (03) 9940 3911 if you would like to discuss the ethics of hearing screening or any other ethical issue. This is a free service and you can remain anonymous should you wish.

References

1. Department of Health, (2018) Population Based Screening Framework. Commonwealth of Australia. P2.
2. Wilson J & Jungner G (1968) Principles and practice of screening for disease. WHO Public Health Paper No 34.

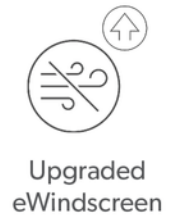


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A top-down view of a desk with a laptop, coffee, flowers, and notebooks. A person's hands are typing on a laptop. A coffee cup is on the desk. A bouquet of pink flowers is wrapped in paper. A notebook with a marble cover is visible. A glass of water is on the desk. A laptop is open in the bottom left corner.

Membership RENEWAL

Pay your membership fees by 30 June for the
chance to win your fees back!

CONVERSATIONS ABOUT MENTAL ILLNESS AND HEALTH IN ADULT AUDIOLOGICAL REHABILITATION

EMMA C. LAIRD^a, CHRISTINA A. BRYANT^b, CAITLIN M. BARR^{a,c} AND REBECCA J. BENNETT^{d,e}

^a Department of Audiology and Speech Pathology, University of Melbourne, Melbourne, Australia; ^b Melbourne School of Psychological Sciences, University of Melbourne, Melbourne, Australia; ^c Soundfair Australia Ltd, Mount Waverley, Australia; ^d Ear Science Institute Australia, Subiaco, Australia; ^e School of Human Sciences, The University of Western Australia, Crawley, Australia

ABSTRACT

Objective: To understand the nature of mental health discussions in audiological rehabilitation, specifically, the types of conversations, when and how they are initiated, and the participant factors associated with discussing mental health.

Design: A cross-sectional descriptive survey including quantitative (multiple choice) and qualitative (freetext) questions regarding mental health discussions between audiologists and clients.

Study sample: A convenience sample of 118 Australian audiologists working in adult audiological rehabilitation.

Results: The majority of participants (95.8%) reported having engaged in discussions with clients about mental illness and health at some point throughout their career. The frequency of these discussions varied across participants: 7% rarely discuss, 50% discuss occasionally, 30% discuss with about half their clients and 13% have discussions with most clients. Many participants (85.6%) reported that clients would initiate these conversations, most often via disclosing the impacts of hearing loss on clients' lives.

Conclusions: Most audiologists will encounter clients with mental health concerns, and many will engage in conversations about psychological symptoms, therefore, training audiologists to recognise and address verbal and non-verbal cues regarding mental health may help to promote person-centred care and potentially improve outcomes.

INTRODUCTION

The interplay between hearing loss and psychology has been of interest to researchers for many years, with many reports of the deleterious impact of hearing loss on psychological, emotional, and social wellbeing (Heffernan et al. 2016; Vas, Akeroyd, and Hall 2017). Evidence of the association between hearing loss and mental disorders and symptoms, such as depression, anxiety, and psychosis continues to expand (Blazer 2018). Whilst there is some variability across individual studies, a recent meta-analysis of 35 publications reported significantly greater odds of depressive symptoms in older adults with hearing loss (OR = 1.47, 95% CI = 1.31–1.65) than those without (Lawrence et al. 2020). Similarly, a meta-analysis of 49 studies reported significantly increased odds of psychotic symptoms, such as hallucinations (OR = 1.40, 95% CI = 1.18–1.65) and delusions or paranoia (OR = 1.55, 95% CI = 1.36–1.78) in adults with hearing loss compared to their normal hearing counterparts (Lawrence et al. 2020). A systematic review of 25 studies also revealed significantly greater prevalence of anxiety symptoms in participants with hearing loss compared to those with normal hearing (Shoham et al. 2019). The largest of these studies reported that hearing loss significantly increased the odds of experiencing symptoms of anxiety (OR = 1.50, 95% CI = 1.29–1.74) in participants across 42 countries (Vancampfort et al. 2017). In addition to the extensive quantitative evidence, a recent qualitative study utilising in-depth interviews reported on the experiences of older adults with hearing loss and found a bidirectional relationship between hearing loss and psychological symptoms (Laird et al. 2020). Participants reported that hearing loss exacerbated their psychological symptoms and they also reported that psychological symptoms influenced their perceived hearing ability (Laird et al. 2020). Given this bidirectional relationship between hearing loss and psychological symptoms, and the high prevalence of each condition, audiologists may find they regularly encounter clients with comorbid psychological symptoms during audiological rehabilitation.

Defining mental illness and mental health

Mental illness (also referred to as mental disorder, psychological symptoms, or psychopathology) describes the relative presence or absence of psychological dysfunction in the areas of cognition, emotion, or behaviour (American Psychiatric Association 2013). Whilst this broad definition incorporates neurodevelopmental (e.g. autism spectrum disorder) and neurocognitive disorders (e.g. dementia), this study will focus specifically on psychological disorders such as anxiety, depression, and psychosis. The World Health Organisation (WHO) states that ‘Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (World Health Organisation 2014), so it is therefore equally important to consider mental health (also referred to as mental wellbeing, subjective wellbeing, or positive wellbeing), which describes the positive mental functioning (psychological, emotional, and social wellbeing) of an individual to enable successful functioning in their life (Ryff and Keyes 1995). Several studies report that the presence or absence of mental illness is correlated with, but independent, of this construct of mental health (Keyes 2005; Westerhof and Keyes 2010). This has been conceptualised in the two-continua model of mental illness and health (also known as the complete state of mental health) (Keyes 2005), that describes the relative presence or absence of mental disorder on one continuum and the positive (flourishing) or negative (languishing) status of mental health on the second continuum. Given that both mental illness and health will be relevant to the overall psychological functioning of a client during audiological rehabilitation, both constructs are important to consider. For simplicity, where we have used the term ‘mental health’, we refer to the complete state of mental illness and mental health.

Person-centred care and counselling

Like many healthcare professions, audiology services have extended beyond the traditional biomedical or paternalistic application of healthcare, to deliver a more widely encompassing model of biopsychosocial or person-centred care (Grenness et al. 2014). The audiologist would therefore provide hearing services that address not only the hearing loss, but the

impact of the hearing impairment on the emotional, physical, and social aspects of that person's life (Bennett et al. 2021; Ekberg, Grenness, and Hickson 2014). Counselling is one method in which person-centred care can be implemented and is often provided by audiologists in two ways - through informational counselling (i.e. providing information and education to the client about hearing loss, communication strategies, and amplification options) and psychosocial or personal adjustment counselling (i.e. assisting the client to accept their hearing loss and adopt effective self-management skills) (Meibos, Muñoz, and Twohig 2019). Counselling is specifically listed within the scope of practice for audiologists in several professional organisations (e.g. Audiology Australia, Australian College of Audiology, & Hearing Aid Audiometrist Society of Australia, 2016) and is associated with increased patient-satisfaction, empowerment, adherence to rehabilitation and hearing aid uptake (Borg and Borg 2015; Meibos, Muñoz, and Twohig 2019; Poost-Foroosh et al. 2011). These psychosocial counselling skills are even more important given the potential frequency of clients presenting with hearing loss and comorbid psychological symptoms, and the possible impacts these can have on rehabilitation (Laird et al. 2020). Despite recommendations to implement psychosocial counselling, several studies have suggested that it is rarely conducted within routine clinical audiology consultations (Bennett et al. 2020a, 2020b; Grenness et al. 2015a, 2015b). There is a distinct preference for audiologists to provide biomedical and technical information, and client initiated psychosocial discussions are seldom sustained by the audiologist (Bennett et al. 2020b; Dockens et al. 2017; Ekberg, Grenness, and Hickson 2014).

Addressing psychological factors in other areas of healthcare and rehabilitation, such as physiotherapy, improves emotional and physical outcomes (Bennell et al. 2016). Studies have demonstrated that psychological interventions delivered by non-psychologists are acceptable to clients (Aazh, Bryant, and Moore 2019) and may overcome barriers to accessing mental health services, such as stigma and cost (Crowe, 2017; Egerton et al. 2021). In Australia, mental health services are provided at state, territory, and national levels, with both public (governmentfunded) and private services available,

however, it is estimated that only 35–46% of Australians with mental health issues will access mental health services (Australian Institute of Health and Welfare 2021). Therefore, healthcare professionals, including audiologists, should have the knowledge and skills to recognise clients' mental health issues and refer to relevant healthcare professionals to address concerns outside their scope of practice.

Conversations about mental illness and mental health

Recent studies suggest that audiologists may be apprehensive when encountering conversations about client mental health. Bennett et al. (2020a) conducted a survey of 95 audiologists in Australia and found that fewer than one third of audiologists would routinely ask their clients about mental health, but 96% wanted to expand their knowledge and skills in this area. This was consistent with the reported barriers to addressing mental health, such as insufficient training, and lack of knowledge and comfort in discussing mental health (Bennett et al. 2020a). The survey also investigated how audiologists may respond to psychological symptoms via presentation of three case vignettes (Bennett et al. 2020b); two cases presented clients with symptoms of depression (case one and three) and one described grief (case two). When audiologists responded to these vignettes, 33% (case one), 43% (case two) and 53% (case three) of participants did not recognise or address the psychological symptoms presented in each of the cases (Bennett et al. 2020b). While these studies revealed that audiologists have a need and desire for further skill development relating to the detection and discussion of psychological and psychosocial wellbeing, little is known about the content and quality of mental health conversations currently occurring within clinical practice. A better understanding of the mental health conversations that occur within audiology consultations would help to identify audiologists' specific education requirements and pinpoint potential targets for the development of interventions that address client mental health in audiological rehabilitation.

Therefore, the aim of this study is to further understand the current practices of audiologists regarding discussions of client mental illness and health. Specifically, this study will explore four research questions: (1) *What types of mental health discussions occur in adult audiological rehabilitation?* (2) *When and how often do mental health discussions occur?* (3) *How are discussions about mental health initiated by audiologists and clients?* and (4) *Are any professional or demographic factors associated with engaging in mental health conversations?*

METHODS

A convenience sample of Australian audiologists participated in a cross-sectional descriptive survey. Ethical approval was obtained from The University of Melbourne Behavioural and Social Sciences Human Ethics Sub-Committee (1749305).

Participants

Participants were Australian audiologists who were currently, or within the past year, working in adult audiological rehabilitation. The only inclusion criterion was that participants were literate and fluent in English. Participants were recruited through advertisements in an electronic monthly newsletter provided to members of the professional association, Audiology Australia, via email invitations to hearing healthcare providers, and via recruitment at a professional workshop in Ballarat, Victoria, and conference in Sydney, New South Wales during 2018. An optional prize draw incentive of a \$100 gift card was used to encourage participation. In order to identify associations between survey items with an alpha level of 0.05, power of 0.95 and medium effect size ($w=.35$), a priori power analysis in G*Power 3.1.9.2 revealed a target sample size of 107 participants (Faul et al. 2007).

Procedure and materials

Table 1. Participant demographic and professional characteristics

Participant characteristics (N = 118)	n (%)
Sex	
Female	98 (83.1)
Male	20 (16.9)
Years of clinical experience	
Less than 1 year (intern)	11 (9.3)
2–5 years	26 (22.0)
6–10 years	25 (21.2)
More than 10 years	56 (47.5)
Employment sector	
Audiology Clinic (Government)	38 (32.2)
Audiology Clinic (Private)	68 (57.6)
Hospital	3 (2.5)
Research and/or University	4 (3.4)
Not for Profit	4 (3.4)
Advisory/Management	1 (0.9)
Location of employment	
Australian Capital Territory	2 (1.7)
New South Wales	17 (14.4)
Northern Territory	1 (0.9)
Queensland	13 (11.0)
South Australia	10 (8.5)
Tasmania	5 (4.2)
Victoria	57 (48.3)
Western Australia	12 (10.2)
Other	1 (0.9)
Region of employment	
Metropolitan	83 (70.3)
Regional / Rural	35 (29.7)
Services provided	
Hearing aids	111 (94.1)
Hearing assistive technology	107 (90.7)
Communication training	86 (72.9)
Implantable devices	17 (14.4)
Other	3 (2.5)

Participants completed survey responses via pen and paper or through a secure digital platform in a time and place of their choice, with completion time estimated to be approximately 15 minutes. Digital survey responses were imported into Microsoft Excel and pen and paper responses were manually added to the spreadsheet by E.C.L. The survey was constructed to elicit descriptive information related to the study aims. The survey consisted of demographic information and three topic sections, of which one, *Questions about mental health discussions*, will be reported here. The remaining two sections, *Barriers and facilitators to addressing mental health and Opinions about delivering psychologically informed interventions*, will be reported in a subsequent paper (see Supplementary Document 1, which shows full survey). Demographic and professional information included multiple choice questions regarding sex, duration of clinical experience, employment sector, workplace location, and types of rehabilitation services provided.

The *Questions about mental health discussions* survey section was introduced to participants with a preamble: *'The following questions ask about any conversations that you have had with your clients*

regarding their mental health, psychological symptoms, emotions or feelings' to ensure that both mental illness and mental health were considered in responses. The survey items included multiple choice and free-text questions about:

- Whether audiologists have encountered conversations regarding client mental health, symptoms of depression (e.g. sadness, loss of pleasure in usual activities, hopelessness), anxiety (e.g. excessive worry, panic attacks, phobias), psychosis (e.g. hearing voices, paranoid thoughts, unusual beliefs), or other emotions and feelings (e.g. loneliness, poor self-esteem, stress, anger).
- The frequency with which mental health conversations occur (with most clients, about half of clients, occasionally, very rarely) and the rehabilitation appointment when they most frequently arise (initial, fitting, follow-up, review).
- The person or tool that introduces the discussions regarding mental health (audiologist, client, significant other, screening tool), and how these conversations are initiated.
- Whether disclosure of client psychological concerns alters rehabilitation services e.g. when offering recommendations, instructions, or advice.
- Whether audiologist or workplace uses any outcome measures of client mental health and wellbeing.

Data Analysis

Statistical analysis of categorical and ordinal quantitative data was conducted in Minitab 19 Statistical Software (Minitab 19 Statistical Software 2020) using an alpha level of 0.05 to determine statistical significance. Descriptive statistics (count, median, inter-quartile range) and the non-parametric chi-square test of association (χ^2) was used to report summary data and explore relationships between participant characteristics and attributes of mental health discussions. In analyses where chi-square test assumptions were violated (expected cells counts lower than minimum), categories of data were logically condensed. Effect size was calculated for significant results using Cramer's V2 (ϕ^2), with an approximate interpretation of weak (>0.05), moderate

(>0.10), and strong (>0.15) effects. Qualitative content analysis of written free-text responses was conducted in Microsoft Excel by E.C.L. and cross-checked by C.A.B. Any discrepancies were discussed until consensus was reached. Inductive content analysis was used to report open ended written survey answers; participant written answers were condensed into meaning units that described their content (Erlingsson and Brysiewicz 2017), similar meaning units were then grouped into categories that described distinct concepts. Written data was also quantified by reporting the frequencies at which meaning units were identified in the answers.

RESULTS

Participants were 118 audiologists (83.1% female) working within adult audiological rehabilitation across all Australian states and territories. The participant sample represents approximately 4.1% of Australian audiologists, however exact recruitment rates cannot be reported given the snowballing recruitment methods utilized (Audiology Australia 2019). Nearly half of the participants (47.5%) had more than ten years of clinical experience and private audiology clinics were the most represented sector (57.6%). Majority of participants in audiological rehabilitation provide hearing aid (94.1%) and hearing assistive technology (90.7%) fitting, with many also providing communication skills training (72.9%). Participant demographic and professional characteristics are presented in Table 1.

Most participants reported that they had engaged in discussions with clients about mental health and illness at some point throughout their career (95.8%, $n=113$). Many participants reported they have previously engaged in conversations about symptoms of depression (81.4%, $n=96$) and anxiety (80.5%, $n=95$), with fewer reporting previous discussions about symptoms of psychosis (43.2%, $n=51$). Many participants also reported they have had conversations with clients about other emotions and behaviours such as stress (94.9%, $n=112$), loneliness (84.8%, $n=100$), avoidance (79.7%, $n=94$), poor self-esteem (61.9%, $n=73$), and anger (47.5%, $n=56$). Thirteen percent ($n=16$) of participants reported that

conversations about client mental health would occur with most clients, 30% (n=36) reported conversations occurred with approximately half of their clients, 50% (n=58) of participants occasionally had these conversations with clients, and 7% (n=8) participants reported that mental health discussions rarely occur. The majority of participants (85.6%, n=101) reported that their clients would introduce conversations about mental health, however many (69.5%, n=82) also reported that they (the audiologist) would initiate these discussions. Results regarding the frequency and timing of mental health discussions are presented in Table 2.

Three quarters (n=90) of participants provided written answers as to how they would initiate a conversation about client mental health or psychological symptoms. Content analysis revealed 15 sub-categories across five categories: The audiologist (1) is guided by client verbal and non-verbal cues, (2) determines the impacts of hearing loss, (3) investigates via routine case history, (4) creates a safe space for clients to share, and (5) recognises emotional responses to rehabilitation. Categories, subcategories, and the frequency of condensed meaning units in survey responses are reported in Supplementary Table 1.

Eighty-six (72.9%) participants also provided written answers to how clients typically initiate conversations about psychological symptoms. Eleven sub-categories were generated by participant responses, and these were grouped into five categories: The client (1) leads disclosure when they feel comfortable, (2) conveys the impacts of hearing loss, (3) links from general health questions, (4) provides non-verbal signals, and (5) describes emotional responses to rehabilitation. Categories, sub-categories, and the frequency of condensed meaning units from survey responses are provided in Supplementary Table 2.

Less than a quarter of participants (22.9%, n=27) reported that their workplace implements any structured outcome measure of client wellbeing or psychological symptoms during audiological rehabilitation. Over half of participants (54.2%, n=64) reported that client mental wellbeing was only assessed via informal conversations and less than a quarter (22.9%, n=27) reported that their workplace would only assess hearing outcomes. Participants reported the structured outcome measures utilised in

Table 2. Initiation, frequency, and timing of mental health discussions

Characteristics of mental health discussions	n (%)
Who initiates conversations?	
Audiologist	82 (69.5)
Client	101 (85.6)
Family member or friend of client	61 (51.7)
Screening tool	41 (34.8)
Other	1 (0.9)
When do audiologists initiate discussion?	
Routinely	33 (28.0)
When prompted by client distress	82 (69.5)
Only when required (otherwise avoided)	3 (2.5)
Other	4 (3.4)
Which rehabilitation appointment do audiologists initiate discussions?	
Initial appointment	98 (83.1)
Fitting appointment	11 (9.3)
Follow-up appointment	12 (10.2)
Review appointment	15 (12.7)
Other	12 (10.2)
Which rehabilitation appointments do clients initiate discussions?	
Initial appointment	89 (75.4)
Fitting appointment	4 (3.4)
Follow-up appointment	15 (12.7)
Review appointment	19 (16.1)
Other	6 (5.1)
How frequently do mental health conversations occur?	
Most clients	16 (13.6)
About half the clients	36 (30.5)
Occasionally	58 (49.2)
Very rarely	8 (6.8)

Total numbers may exceed N=118 as participants could endorse multiple answers.

their workplace, with the most frequently reported being the Client Oriented Scale of Improvement (COSI, n=18) (Dillon, James, and Ginis 1997), the Tinnitus Reaction Questionnaire (TRQ, n=7) (Wilson et al. 1991) and the International Outcome Inventory for Hearing Aids (IOI-HA, n=2) (Cox & Alexander 2002). The majority of participants (78.63%, n=92) reported that they would modify their rehabilitation recommendations, instructions, or advice if a client informed them of mental health concerns. Ten participants (8.6%) reported that this would not alter how they provided services and the remaining participants (17.1%, n=20) were unsure if client psychological symptoms would alter their rehabilitation services.

Participant demographic and professional characteristics were compared with reported frequency of mental health discussions, when audiologists asked about client mental health and whether audiologist service provision would be altered in response to client mental health (Table 3). Participants with more than ten years' experience were more likely to routinely ask about client mental health and less likely to report rarely having mental health conversations (compared to other responses). Additionally, audiologists from metropolitan regions were more likely to report they routinely ask clients about their mental health. Participants who did not

use any measure of client wellbeing were more likely to report that they rarely engaged in mental health discussions. Conversely, participants who used a structured measure of client wellbeing were more likely to routinely ask about client mental health. Lastly, the reported frequency of mental health discussions was significantly related to whether service provision would be modified in response to client mental health ($\chi^2(3)=8.18$, $p=.042$, $\phi c^2=0.07$) and when audiologists asked clients about mental health ($\chi^2(3)=18.57$, $p<.001$, $\phi c^2=0.16$). Post hoc examination of adjusted standardised residuals showed that participants who rarely engaged in mental health conversations were more likely to report that they were unsure or would not alter service provision if clients reported psychological symptoms. Participants who routinely asked clients about mental health were more likely to engage in mental health discussions with most or half of their clients (compared to occasionally or rarely). Adjusting service provision was not related to when audiologists asked about client mental health ($\chi^2(2)=5.63$, $p=.060$).

DISCUSSION

This study aimed to explore the nature of mental illness and health conversations during audiological rehabilitation, from the perspective of audiologists via a cross-sectional descriptive survey. The results described the types of discussions that participants have encountered, how often and when mental health conversations have occurred, how these discussions are initiated by audiologists and clients, and participant characteristics associated with mental health conversations.

All participants in the current study had previously had conversations with clients in at least one aspect of mental health, most reporting previous conversations with clients about 'psychological symptoms or mental health', symptoms of depression, and symptoms of anxiety. Four participants were unsure if they had discussed 'psychological symptoms or mental health', but subsequently reported that they have had conversations about several negative emotions (e.g.

loneliness, avoidance, stress), as demonstrated by one participant stating they have 'not [discussed] mental health specifically but have discussed feelings/emotions related to hearing loss'. This response exemplifies the difficulties associated with terminology surrounding mental illness and mental health; participants may deem that some of their previous emotional, behavioural, or psychological conversations (e.g. a discussion about loneliness or stress) do not meet the threshold of being a 'mental health' discussion. Despite this, the results suggest that almost all audiologists will encounter psychological or emotional conversations in audiological rehabilitation, further highlighting the need for audiologists to develop their knowledge and skills and heighten their vigilance towards detecting and addressing the mental health needs of their clients (Clark, English, and Montano 2021).

Nearly half of the participants reported that they have had at least one previous conversation with a client about symptoms of psychosis (prompted in the survey with 'e.g. Hearing voices, paranoid thoughts, unusual beliefs'). One participant provided some insight by stating that discussions about psychosis 'would be more in relation to describing tinnitus-like symptoms rather than being specific to symptoms of psychosis'. Prevalence of psychosis is only approx. 0.39% in the general population (Moreno-Kustner, Martin, and Pastor 2018) and hearing loss has been estimated to increase the odds of experiencing psychosis by 2.23 times (95% CI = 1.83–2.72) (Linszen et al. 2016). However, when auditory hallucinations have been studied in isolation, Linszen et al. (2019) found that 16.2% of people with hearing loss had experienced auditory hallucinations over the past month. Most auditory hallucinations involved hearing voices and music, and these symptoms were found to increase with the severity of hearing loss (Linszen et al. 2019). This may help to explain why many audiologists have reported previous discussions of client psychotic experiences, where information about auditory hallucinations may arise from enquires about tinnitus experiences. Many auditory hallucinations experienced by people with hearing loss are, however, not a product of psychopathology, but rather an experience of tinnitus or musical hallucinations (Musiek et al. 2007). Nevertheless, audiologists should still endeavour to establish the

Table 3. Relationship between participant characteristics (demographic and professional) and aspects of mental health discussions.

	Frequency of mental health discussions (<i>most clients, about half the clients, occasionally, rarely</i>)	When do audiologists ask about client mental health (<i>routinely, notice signs, only when required</i>)	Service provision adjustment due to client mental health disclosure (<i>yes, no, unsure</i>)
Duration of clinical experience (<i>≤1 year, 2–5 years, 6–10 years, >10 years</i>)	$\chi^2(6)=12.61, p = 0.050, \phi_c^2=0.05$	$\chi^2(2)=11.76, p = 0.003, \phi_c^2=0.10$	$\chi^2(3)=2.22, p = 0.528$
Employment sector (<i>public, private, other</i>)	$\chi^2(3)=3.28, p = 0.350$	$\chi^2(3)=2.76, p = 0.430$	$\chi^2(4)=1.90, p = 0.754$
Region of employment (<i>metropolitan, regional/rural</i>)	$\chi^2(3)=2.18, p = 0.536$	$\chi^2(1)=4.29, p = 0.038, \phi_c^2=0.04$	$\chi^2(2)=4.27, p = 0.118$
Gender (<i>male, female, other</i>)	$\chi^2(3)=2.04, p = 0.564$	$\chi^2(1)=0.58, p = 0.448$	$\chi^2(2)=2.09, p = 0.351$
Outcome measures of wellbeing (<i>yes, via conversation only, no</i>)	$\chi^2(6)=15.36, p = 0.018, \phi_c^2=0.07$	$\chi^2(2)=9.16, p = 0.010, \phi_c^2=0.08$	$\chi^2(4)=0.55, p = 0.969$

χ^2 chi-square statistic (degrees of freedom), *p*-value, ϕ_c^2 Cramer's V Effect Size. Values in bold denote statistical significance ($p \leq 0.05$).

psychological impact of these experiences on their clients.

Twenty-eight percent of participants reported they would routinely ask clients about their mental health. This finding was consistent with Bennett et al. (2020a), who reported that 31.6% of participants would routinely ask clients about their mental wellbeing. The participants who routinely asked clients about mental health were significantly more likely to engage in mental health conversations 'with about half' or 'with most' of their clients. This is important as it suggests that clients may have psychological and emotional concerns they wish to discuss, but they may require audiologists to open the dialogue or provide opportunity for them to disclose their concerns. The use of open-ended questions to invite client discussion of mental health was reported in less than a quarter of participant free-text responses. This finding was consistent with previous studies suggesting that audiologists predominately use close-ended questions that typically do not allow for clients to elaborate further (Dockens et al. 2017; Grenness et al. 2015a, 2015b).

This study, which specifically investigated mental health, adds to the previous body of research regarding psychosocial conversations. Clients often raise psychological and psychosocial concerns in response to hearing aid recommendations (Ekberg, Grenness, and Hickson 2014; Meyer et al. 2017), however, participants in the current study seldom mentioned client reactions to hearing aids in the free-text responses asking how mental health discussions arise in the clinic. It is possible that audiologists are not recognising the psychological nature of client's concerns regarding hearing aids or may not be comfortable allowing further exploration

of the conversation, and instead tend to provide informational counselling (Ekberg, Grenness, and Hickson 2014; Grenness et al. 2015b; Meyer et al. 2017), especially within initial appointments and when encountering clients with complex diagnostic or management requirements (Dockens et al. 2017; Grenness et al. 2015a). Unlike the previous studies suggesting psychosocial concerns are infrequently discussed in the initial appointment (Grenness et al. 2015a, 2015b; Meyer et al. 2017), participants in the current study reported that the initial audiological rehabilitation appointment was where conversations about mental health were most often initiated. Participants reported that mental health conversations were primarily prompted by questions in routine case history and when discussing the impact of hearing loss on the client's life. For example, one participant stated 'If they bring up hearing concerns, I will ask them how that makes them feel to get an idea of whether their hearing is having an impact on their emotional/social/psychological wellbeing. If they aren't overly concerned, I won't spend too much time on it, but if they raise concerns, I will follow up on this and have a more in-depth conversation.' Conversely, some participants reported that mental health discussions would often not occur until rapport and trust had been established, for example, one participant stated that 'Often it is not possible to get the full story until there is good rapport with me, often after several appointments'. Rapport is an important aspect of person-centred care, and undoubtedly plays a role in client comfort discussing mental health (Grenness et al. 2014). Participant responses suggested that mental health, psychological symptoms, and emotions may be

elicited in the initial audiological rehabilitation appointment, but clients may not elaborate on these until later appointments when better rapport has been developed.

Clinical Implications

This study builds on previous work focussed on psychosocial conversations and suggests that most audiologists will encounter clients with psychological concerns and audiologists will at least occasionally need to go beyond conversations about feelings and social impacts, and discuss client mental health throughout audiological rehabilitation. This understanding of how and when mental health discussions arise could help audiologists better tailor their services. For example, it was found that clients, rather than audiologists or family members, most often initiated discussions about mental health, suggesting that the audiologist needs to be receptive to client non-verbal and verbal communication. Ekberg, Grenness, and Hickson (2014) found that clients that disclose psychosocial concerns will continue to raise them if the audiologist does not adequately address them, and ultimately found that acknowledging and validating the client's concerns could save time in future appointments. It is reasonable to expect that this would also occur when client's disclose psychological concerns. Training audiologists to competently recognise and respond to client disclosure regarding mental health may help to create a more person-centred service (Clark, English, and Montano 2021).

The results of this study also suggest that the use of structured outcome measures of client wellbeing could increase the frequency of mental health discussions and promote audiologists to routinely ask clients about psychological health. The COSI was the most frequently reported outcome measure utilised, and whilst not specifically used to monitor wellbeing, some participants stated that they included goals relevant to mental health, for example 'we always include a wellbeing or QoL [quality of life] goal rather than just a hearing goal'. Given the relationship between mental health and hearing loss, including an emotional or psychological focussed goal may be

beneficial in prompting discussions, targeting behaviours, determining ways to modify rehabilitation, and identifying clients who may require referral to mental health specialists (Campos and Launer 2020). Since this survey was conducted, a subjective wellbeing measure for people with hearing loss has been developed (SWB-HL) and it will be interesting to follow its uptake and use within the clinical profession (Humes 2021). This may be a step towards a holistic, high-quality, structured outcome measure for hearing healthcare that assesses the impact of audiological rehabilitation on the whole person (i.e. a person-centred or biopsychosocial perspective). Whilst structured outcome measures themselves typically use close-ended questions, these tools may nonetheless act as enablers and initiators for audiologists to discuss mental health with follow-on open-ended questions.

Limitations and future research

It is important to note that the survey used in this study was constructed with the purpose of exploring specific aims. Whilst the survey was cross-checked by our research team for ease of comprehension and comprehensiveness, no formal validity or reliability analyses were performed. However, given the exploratory nature of the study, this was deemed acceptable for its purpose. Additionally, given that participants were a convenience sample of audiologists, there are potential biases that may have been introduced into results. Some locations (e.g. Victoria) had greater representation of participants due to the nature of some recruitment methods (i.e. in-person workshops or conferences) however the overall demographics of participants in the sample are similar to available Australian audiologist data (Job Outlook 2016). It is also important to consider that audiologists who participated in the survey may be more interested in the topic of mental health than those who chose not to participate, and there may be participants with lived experience of mental health concerns. Participant experience and exposure to mental health and illness was not measured and therefore its impact on results is unknown. The inclusion of a prize-draw incentive

was incorporated to reduce a portion of this possible bias. Once again, the terminology surrounding mental illness and mental health may have affected how participants responded to some questions, but descriptions and prompts included throughout the survey were added to reduce the impact of these challenges.

Whilst previous studies have analysed audiologist-client interactions regarding psychosocial and emotional content (Dockens et al. 2017; Ekberg, Grenness, and Hickson 2014; Grenness et al. 2015a, 2015b), no studies have investigated how psychological symptoms are discussed in any audiology appointments. The current study provides some insight into these interactions, bearing in mind potential participant reporting bias. Future studies that record and objectively analyse conversations occurring in audiological rehabilitation could provide further confidence in the results obtained here.

The current study provides information about the 'what, when and how' of mental health discussions in audiological rehabilitation. Given that audiologists will encounter client-reported mental health concerns, but do not always engage in conversations about mental health, future research is needed to understand the audiologist-perceived barriers and facilitators to discussing and addressing client mental health. These findings from the survey will be reported in a subsequent publication. Additional studies are required to understand if, and what, modifications to audiological rehabilitation would improve outcomes for people with hearing loss and mental health concerns. Research utilising a co-design process, that involves both clients and audiologists, would assist in identifying potential adaptations or additions to audiological rehabilitation that would address client mental health concerns.

CONCLUSION

This study expands current knowledge about how audiologists discuss client mental illness and health in an adult audiological rehabilitation setting. Most audiologists will encounter clients with mental health concerns, and many will engage in at least occasional conversations about psychological symptoms. Clients

are most likely to initiate mental health discussions, therefore, training audiologists to recognise and address verbal and nonverbal cues regarding mental health may help to promote person-centred care and potentially improve outcomes.

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