Journal: Ear & Hearing

Title: Evaluation of the AIMER intervention and its implementation targeting the provision of mental wellbeing support within the audiology setting: a RE-AIM analysis

Authors: Rebecca J. Bennett [1,2,3,4], Romola S. Bucks[5,6], Lisa Saulsman[6], Nancy A. Pachana[7], Robert H. Eikelboom[1,2,3,8], and Carly J. Meyer[4,9]

Affiliations

1. Ear Science Institute Australia, Subiaco, Australia.
2. Curtin University, Bentley, Australia.
3. Centre for Ear Sciences, The University of Western Australia, Perth, Australia.
4. School of Health and Rehabilitation Sciences, The University of Queensland, St Lucia, Australia.
5. The Raine Study, School of Population and Global Health, The University of Western Australia, Perth, Australia
6. School of Psychological Science, The University of Western Australia, Perth, Australia.
7. School of Psychology, The University of Queensland, St Lucia, QLD, Australia.
8. Department of Speech Language Pathology and Audiology, University of Pretoria, South Africa
9. Department of Clinical, Educational and Health Psychology, University College London, UK.

Author	Email addresses	ORCID ID
Rebecca J Bennett	bec.bennett@earscience.org.au	0000-0001-9427-5539
Carly J Meyer	carly.meyer@ucl.ac.uk	0000-0002-2268-3055
Nancy Pachana	n.pachana@psy.uq.edu.au	0000-0002-8927-4205
Lisa Saulsman	lisa.saulsman@uwa.edu.au	0000-0002-3301-421X
Robert H Eikelboom	rob.eikelboom@earscience.org.au	0000-0003-2911-5381
Romola S Bucks	romola.bucks@uwa.edu.au	0000-0002-4207-4724

Declarations

Ethics approval and consent to participate. Approval for this study was granted by the Human Research Ethics Office of The University of Western Australia (RA/4/20/5873). All participants provided written consent to participate.

Conflict of Interest Statement: The authors report no relevant conflicts of interest.

Funding Statement: This work was funded by a Raine Medical Research Foundation Priming grant.

Authors' contributions. RJB, CJM and RHE were major contributors to the project conceptualisation and research design, with RSB, LS, and NAP also providing input. RJB lead project execution and managed data collection. All authors were involved in the process of intervention development and contributed to data analysis. RJB was a major contributor in writing the manuscript. All authors (RJB, RSB, LS, NAP, RHE, CJM) read and approved the final manuscript.

Acknowledgements. Not applicable.

Authors information. Dr Bec Bennett, Ear Science Institute Australia, 1 Salvado Road, Subiaco, Western Australia, Australia. P: +61 8 3369 4900 E: bec.bennett@earscience.org.au

Acknowledgement and Author Contribution Statement. RJB, CJM and RHE were major contributors to the project conceptualisation and research design, with RSB, LS, and NAP also providing input. RJB lead project execution and managed data collection. All authors were involved in the process of intervention development and contributed to data analysis. RJB was a major contributor in writing the manuscript. All authors (RJB, RSB, LS, NAP, RHE, CJM) read and approved the final manuscript.

Conflicts of Interest and Source of funding. This project was funded by a Raine Medical Research Foundation Priming grant, including partial salary costs for Dr Bennett. There are no other known conflicts of interest to disclose.

Disclosure of closely related manuscripts that have been published or that have been submitted for publication. The manuscript describing the first part to this study was submitted to Implementation Science Journal, and has undergone two rounds of review, the most recent of which was acceptance with minor revisions. Once published the paper will be available as open access. We are happy to provide a copy of this manuscript to reviewers in the interim if required.

ABSTRACT

Objective: The AIMER (Ask, Inform, Manage, Encourage, Refer) program is a behavior change intervention designed to increase the frequency with which hearing healthcare clinicians (HHCs) ask about and provide information regarding mental wellbeing within adult audiology services. The objective of this study was to systematically evaluate the first iteration of the AIMER program to determine whether the intervention achieved the changes in HHC behaviors anticipated and to evaluate feasibility of implementing the AIMER program based on the implementation protocol.

Design: The Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework was used to guide this evaluation. Data were collected from October 2020 to February 2022 and included both quantitative and qualitative measures (i.e., observation reports, staff survey, clinical diaries, clinical file audits, and interviews).

Results: Comparison between pre- and post-implementation data showed that the AIMER intervention successfully increased: (i) HHC's skills and confidence for discussing mental wellbeing; (ii) how often HHCs ask about mental wellbeing within audiology consultations; (iii) how often HHCs provide personalized information and support regarding mental wellbeing within audiology consultations; and (iv) how often HHCs use mental wellbeing terms within clinical case notes and GP reports. The factors affecting feasibility of implementing the AIMER program within the clinical setting could be classified into three major categories: (i) the AIMER program itself and its way of delivery to clinical staff; (ii) people working with the AIMER program; and (iii) contextual factors. Key recommendations to improve future implementation of the AIMER program were provided by the participants.

Conclusion: The AIMER program was shown to be effective at increasing the frequency with which HHCs ask about and provide information regarding mental wellbeing within routine audiological service delivery. Implementation of the AIMER program was feasible but leaves room for improvement. Use of the RE-AIM framework facilitated systematic evaluation of multiple indicators providing a broad evaluation of the AIMER program. Our analysis helps to better understand the optimal levels of training and facilitation and provides recommendations to improve future scale-up of the AIMER program. The findings of this study will be used to further adapt and improve the AIMER program and to enhance program implementation strategies prior to its further dissemination.

1. INTRODUCTION

Hearing loss is a common chronic health condition that impairs communication and can inhibit the ability to socialize in meaningful ways. While some adults with hearing loss develop helpful coping strategies (such as controlling the listening environment, humor, acceptance, assertiveness, communication repair skill, and accepting support), others adopt maladaptive coping behaviors (such as avoiding social activities or withdrawing within social interactions) (Bennett et al., 2022; Heffernan et al., 2016). Consequently, the social, emotional and mental wellbeing (described as mental wellbeing hereafter) impacts of hearing loss can include frustration, burdensomeness, anxiety, loneliness, isolation, and depression, among others (Laird et al., 2020). Whilst there is considerable individual variability regarding how hearing loss may affect an individual, those with a faster onset, and with more severe hearing loss are considered at the greatest risk for experiencing negative impacts on mental wellbeing (Brodie et al., 2018). Specifically, adults with acquired

hearing loss are at greater risk for social isolation and loneliness (Shukla et al., 2020), anxiety (Shoham et al., 2019) and depression (Lawrence et al, 2020) than their normal hearing counterparts.

Despite this knowledgebase, the mental wellbeing impacts of hearing loss are not often discussed within audiological care (Bennett et al., 2020a), and often go unnoticed and unmanaged (Barker et al., 2017; Bennett et al., 2022). Similarly, although General Practitioners have sound knowledge of mental health pathology and the primary care setting is appropriate to its management, research suggests that recognition, diagnosis, and treatment of mental health within primary care is best described by the rule of diminishing halves: half the patients presenting with symptoms are recognized; half of those recognized are treated; and half of those treated are effectively treated (Wittchen et al., 2022). Access to mental health services for deaf and hard of hearing individuals are further hindered by communication barriers, stigma, and cultural insensitivities (Cabral et al., 2013).

The "no wrong door" approach underscores the principle that individuals requiring mental health support should be able to access the help they require through any point of entry into the health system. This means that all healthcare clinicians should either provide necessary support directly or guide patients towards the right resources or specialists. This approach aims to eliminate barriers to entry and create a seamless pathway to comprehensive mental health care. There is an opportunity for hearing healthcare clinicians (HHCs) to support the mental wellbeing needs of adults with hearing loss, through either providing direct support (within their scope of practice) or referring clients to mental health

practitioners. Our previous research revealed that adults who experience mental wellbeing issues on account of their hearing loss not only want but expect their HHC to discuss and provide support for mental wellbeing in the context of hearing loss and hearing rehabilitation (Bennett et al., 2021a; Bennett et al., 2022). Importantly, HHCs have positive views towards supporting their clients' mental wellbeing needs and wish to broaden their skills and service offerings in order to provide this support (Bennett et al., 2021b; Bennett et al., 2020b; Bennett et al., 2020a). Consequently, we set out to develop an intervention to increase the frequency of mental wellbeing detection, support and referral provided within audiology consultations (Bennett et al., 2021a). We followed the Behavior Change Wheel (Michie et al., 2014), an eight-step systematic process, to develop a multifaceted intervention targeting HHC's behaviors relating to: (1) asking clients about their mental wellbeing; (2) providing general information on the mental wellbeing impacts of hearing loss; and (3) providing personalized information on managing the mental wellbeing impacts of hearing loss (Bennett et al., 2023a; Bennett et al., 2023b; Nickbakht et al., 2022). The resultant intervention, the Ask, Inform, Manage, Encourage, Refer (AIMER) intervention, incorporated a variety of intervention types (including education, training, persuasion, environmental restructuring, modelling, and enablement) and behavior change techniques (including instruction and demonstration, information about approval and support from colleague/peers, adding objects to the environment, use of prompts/cues, and endorsement from credible sources; Bennett et al., 2023a). This process also included development of a context-specific implementation protocol in partnership with a clinical partner. A description of the AIMER intervention program and implementation strategy can be found in **Supplemental Data One**, with full details of the development process reported in Bennett et al. (2023a). In summary, *Arm 1. Training, Education, Enablement, and*

Persuasion were delivered across three 15-minuite videos provided to HHCs two weeks before the workshop; a three-hour live online workshop (to HCPs in clinic, office and home locations); and four 15- minute videos delivered two weeks after the workshop. *Arm 2. Environmental Restructuring* included co-developed clinical resources and changes to the existing customer management system to assist HCCs with executing the three target behaviours. *Arm 3. Modelling* provided video recordings of senior and well-respected staff demonstration of how they use the new resources, providing examples for staff to aspire to or imitate and to complement the ongoing support elements from arms 1 and 2.

Two important steps in the development lifecycle of an intervention are examination of its effectiveness (whether the intervention produces the intended outputs, outcomes and/or benefits) and implementation (the uptake and use of the intervention within a real-world setting) (Moore et al., 2019). However, before undertaking a large-scale effectiveness study, one needs to be sure that it is feasible to deliver and test the intervention within the real-world setting. Similarly, before investing valuable resources in a largescale implementation study, one needs to be confident that the intervention is worth implementing, that is, that the intervention is relevant and sustainable to the target population and appropriate for further testing. We thus conducted a feasibility study, evaluating the implementation and preliminary-effectiveness of the AIMER program in the real-world setting, also described as a Hybrid-3 implementation-effectiveness study (Curran et al., 2012; Pearson et al., 2020).

Evaluation frameworks provide a systematic approach to evaluating the extent to which an intervention has achieved the desired goals, outcomes or impact (Moullin et al., 2020).

These can be applied to evaluate the intervention and/or the implementation of the intervention in a real-world setting. Use of evaluation frameworks and evidence-based implementation strategies within audiology research is limited (Marrone et al., 2022; Studts, 2022). However, there is growing awareness of the importance of using implementation theories, frameworks and models in the broader health research as they summarize the current state of scientific knowledge, help structure thinking about the factors affecting implementation success and failure, and facilitate the accumulation of evidence (Damschroder, 2020; Davidoff et al., 2015; Tabak et al., 2012; Theobald et al., 2018).

One of the more widely cited frameworks to evaluate the implementation of health behavior change interventions is the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance; Glasgow et al., 2019; Skolarus et al., 2017), a theoretical model providing a structure for assessment of implementation pathways. RE-AIM was originally developed as a quantitative post-hoc evaluation framework (Glasgow et al., 1999); however, it is now widely regarded as both a planning and evaluation framework with mixed-methods applications strongly encouraged (Glasgow et al., 2019; Holtrop et al., 2018). RE-AIM comprises five dimensions:

(i) *Reach* - Did I reach the targeted population with the intervention?

(ii) *Effectiveness* - Was the intervention effective?

(iii) *Adoption* - Did I develop organizational support to deliver my intervention?

(iv) *Implementation* - Was the intervention delivered properly?

(v) *Maintenance* - Was the intervention embedded in a way that that it becomes a part of routine organizational practice and ensures long-term delivery?

In accordance with UK Medical Research Council Guidance for development of a complex intervention (Craig et al., 2008), the objective of the current study was to conduct a Hybrid-3 implementation-effectiveness study, underpinned by the RE-AIM framework, to comprehensively evaluate the effectiveness and feasibility of the first iteration of the AIMER program (Curran et al., 2012).

2. METHODS

Study Design and setting

This study employed a mixed-methods research design to collect and analyse information about the AIMER program's activities, characteristics, and outcomes across the five domains of the RE-AIM framework (Table 1). The RE-AIM framework informed study design, interview prompts, data analysis and reporting.

We partnered with a Western Australia-based hearing services organization to design (Bennett et al., 2023a; Bennett et al., 2023b; Nickbakht et al., 2022) and evaluate the AIMER intervention and implementation protocol. Our partner clinic provides audiological services to adults and children, including hearing rehabilitation devices (e.g., assistive listening devices, hearing aids, cochlear implants), services to improve skills development (e.g., communication training), tinnitus support, and vestibular assessment. Clinical staff employed included both audiologists (holding a Masters level university qualification in audiology) and audiometrists (holding a diploma in audiometry, not university trained). Providing mental wellbeing support is within the scope of practice for both audiologists and

audiometrists; however, neither receive comprehensive training on this topic within their training courses, though this is slowly changing. Within our partner clinic, both the audiologists and audiometrists provided adult audiological rehabilitation using the same clinical protocols, employing evidence-based practices, and taking a family-centered care approach to service delivery.

Population

The AIMER targets clinicians' behaviors, thus the population of interest were the HHC employed by our partner clinic. Although the ultimate goal of the AIMER program is to improve mental wellbeing outcomes for adults with hearing loss, the process for this is via clinician behaviors. Thus, this Hybrid-3 study evaluated clinician outcomes and not patient outcomes. Future largescale effectiveness studies could seek to measure patient outcomes as secondary benefits from changes in clinician behaviors.

All clinically practicing HHCs employed by our partner clinic at the commencement of the study (October 2020) were recruited, as well as any new staff employed after the commencement of the study (**Supplemental Data Two**). This included both audiologists (university trained hearing professionals) and audiometrists (non-university trained), none of which had received professional counselling training as part of their audiology training program nor as continued professional development after graduation. Inclusion criteria stipulated that participating HHCs must be actively providing adult audiological rehabilitation services. This excluded three HHCs who serviced only pediatric clients and four managers who no longer carried a clinical caseload; all other clinical staff were recruited into the study and provided written consent to participate.

Measures

Feasibility of the AIMER program and implementation protocol was explored through each domain of the RE-AIM framework. Quantitative and qualitative methods were used to collect and analyses information about the AIMER program's activities, characteristics, and outcomes across the five domains of the RE-AIM framework (Table 1). Data collection methods included: (i) self-report survey; (ii) self-reported clinical diaries; (iii) clinical file audit; and (iv) semi-structured interview. The research team also kept observational records that fed into the evaluation, including, for example, documentation of which HHCs attended the in-person training sessions, who was provided the recorded materials due to being unable to attend the in-person group session, and email correspondence relating to the program.

(i) Self-report survey. A self-report online survey was administered via Qualtrics at two time-points: pre-implementation (October 2020) and post-implementation (December 2021).

The pre-implementation survey included items examined: (i) the frequency with which HHCs enacted the three target behaviors (asking about, providing general info and targeting information regarding wellbeing) in relation to six specified aspects of ill-being (social isolation; loneliness; embarrassment or worry; grief or loss; frustration or anger; hopelessness, worthlessness, or sadness) and scored on a five point-Likert scale (5 = All of my clients; 4 = most of my clients; 3 = some of my clients; 2 = few of my clients; 1 = none of my clients); (ii) how often HHCs refer clients for wellbeing concerns; and (iii) HHC's perceived barriers and facilitators to enacting the three target behaviors within their

workplace. Exploration of barriers and facilitators was underpinned by the COM-B model of behavior change, where the COM-B stands for Capabilities, Opportunities and Motivations that must be addressed in order to change Behaviors; Michie et al., 2014) and informed by our preliminary work (Bennett et al., 2023b; Nickbakht et al., 2022). The COM-B model is a theoretical framework used in behavioral science and public health to understand and analyze behavior change. The model was developed to provide a comprehensive overview of the factors that influence behavior and to help design effective interventions for behavior change (Michie et al., 2014).

The post-implementation survey included the same items as the pre-implementation survey, with the addition of items exploring feasibility and implementation outcomes. These included items examining (i) acceptability and appropriateness of the AIMER training component and the clinical support resources (Sekhon et al., 2017); (ii) how likely the AIMER intervention was to have changed their clinical behaviors, and how much effort was required to implement these changes; and (iii) how much HHCs knowledge, skills and confidence had changed regarding the three target behaviors post implementation.

(ii) Clinical diaries. The clinical diaries task required participating HHCs to document how frequently they performed the three target behaviors each week; i.e. the proportion of clients with whom they asked about wellbeing, provided general information regarding the wellbeing impacts of hearing loss, and provided personalized information regarding wellbeing support / management / referral (Figure 1).

(iii) Clinical file audit. We conducted a file audit to explore how often HHCs used social and emotional terminology in their documentation pre- versus post- AIMER implementation. We retrospectively retrieved three-month blocks of data from the database from March 2021 to May 2021 (pre-implementation) and October 2021 to December 2021 (post-implementation). The clinical file audit comprised screening of (i) clinical case notes; (ii) documented client rehabilitation goals; and (iii) General Practitioner (GP; family doctor) referral reports. These three sub-sections of the clinical case notes were screened for the frequency with which they included mental wellbeing terminology; for example, "social", "distress", "lonely" (The full list of terms is provided in the Data Analysis section below). Participating HHCs were unaware that a file audit would be occurring. This was done so as to have a measure that incurred less potential for participant bias.

(iv) Interview. A sub-sample of participating HHCs were invited to participate in semi-structured exit interviews (n=8). These participants were purposefully selected to ensure that the sample included experienced and inexperienced staff (recent graduates), males and females, as well as hearing aid specialists and cochlear implant specialists. We also included one of the clinical trainers as well as new staff recruited after the launch of the project, who thus received their training from the clinical trainer, so as to investigate sustainability of the program. The interview guide (**Supplemental Data Three**) was derived from the RE-AIM framework, example literature (Holtrop et al., 2018) and RE-AIM online resources (www.re-aim.org).

Procedures

Approval for this study was granted by the Human Research Ethics Office of The University of Western Australia (RA/4/20/5873).

The study consisted of 8 points of data collection spanning a period of 17 months. All clinicians employed by our partner organization were encouraged to attend the training sessions. No incentivization or penalties were provided. Training was primarily delivered by lead author R.J.B. a clinical and research audiologist with 15 years' experience in training and education, as well as skills in counselling and provision of mental wellbeing support (Graduate Diploma in Counselling). However, a train-the-trainer approach was adopted whereby R.J.B. trained the clinic's internal trainer on how to deliver the program and the internal trainer trained the nine participants who commenced employment after the commencement of the project, as part of their induction program.

Data analysis

Data were analyzed using SPSS Statistics version 28.0.

Participants. At the time of project commencement, our clinical partner employed 45 HHCs (38 adult rehabilitation specialists, three pediatric specialists and four clinical managers). Our clinical partner representatives on the research steering committee made the decision to include all adult rehabilitation staff (including implant, tinnitus and vestibular specialists), but not to involve HHCs that worked solely with pediatric populations as the intervention was designed based on the needs of adult rehabilitation HHCs and the clinical resources developed were not appropriate for younger clients. Additionally, administration staff and management staff were not included as the intervention and implementation program was

not designed for them; specifically, training elements and resources were designed for clinicians. This resulted in a total of 38 HHCs being eligible to participate in the study. **Supplemental Data Two** provides a description of participant characteristics, including the proportion who completed each of the below measures.

Self-report survey. Of 38 participants, 31 completed the pre-implementation survey (M_{age} = 34.6 ± 9.6, range = 24-62, 86.8% female), and 24 completed the post-implementation survey (M_{age} = 35.7 ± 10.4, range = 25-62, 87.5% female), with only n = 23 having completed both (M_{age} = 35.43 ± 10.54, range = 25-62, 87.0% female). Regarding those who completed both pre- and post-implementation surveys, the average years of experience was 10.41 ± 9.85 (range = 0.5-37). Nineteen participants (79.2%) reported specializing in hearing aids and 5 participants (20.8%) reported specializing in implantable devices. Descriptive statistics were calculated in Microsoft Excel and the COM-B model of behavior change was used to guide the presentation of a subset of the results. To explore the effectiveness of the AIMER intervention, the difference in pre- and post-implementation median scores across the three target behaviors were calculated using the Related-Samples Wilcoxon Signed Rank Test, including across the self-reported barriers and facilitators to enacting the target behaviors as based on the COM-B. Potential change in referral behaviors were explored by comparing the difference in pre- and post-implementation median scores across the four referral tasks using the Wilcoxon Matched-pair Signed Rank Test.

Clinical diaries. Clinical diaries were completed by 13 participants, 84.62% female (n=11) and 15.38% male (n=2). Age range 24 to 61, mean 36.85 years (SD 12.76). Years of experience range 0.5 to 36, mean 11.5 years (SD 11.87). Descriptive statistics were

calculated in Microsoft Excel; the participants' aggregate median and range scores (pre- and post- intervention) are presented for each of the three target behaviors. To explore the potential effectiveness of the AIMER intervention, the difference in pre- and post-implementation median scores across the three target behaviors were calculated using the Related-Samples Wilcoxon Signed Rank Test.

Clinical File Audit. Three different sets of clinical file data were extracted: (i) clinical case notes; (ii) client rehabilitation goals; and (iii) GP reports.

First, the raw clinical file data pertaining to the required date ranges was exported into Microsoft Excel. The data was displayed with each patient entry provided in a separate row and coded to the HCs participant ID. A list of mental health terms was generated based on the training materials developed for the AIMER program and through perusing the data to identify any additional common terms or phrases used to describe aspects of mental wellbeing in the data sets. The following mental wellbeing terms were included: *lonely, disappointment, embarrassment, self-conscious, fatigue, tired, distress, stress, isolated, left out, excluded, withdraw, frustrated, annoy, irritation, anger, angry, grief, hopelessness, confidence, rejected, mood, sad, blue, depression, upset, overwhelmed, shame, anxiety, anxious, worry, nervous, mental health, wellbeing, quality of life, psychologist, psychiatrist, feel, engage, participate, join in, take part, keep up, follow, social, confidence*. Then, count formulas were run to identify how many data entries contained the key terms with the entry counted once irrespective of how many times a term was used in an individual entry; i.e., we counted the number of entries (individual client appointments) that contained key terms, not the number of times key terms were used within or across entries. Formulas

were adapted to allow for alternate spellings and derivates of key words (e.g., “depress” to capture depression and depressed). All identified key words were also crosschecked by hand (visual inspection of the electronic files to validate each count) to ensure that they were representing the intended context (e.g., “blue” was counted if it represented feeling blue, but not if it occurred as describing Bluetooth technology).

Next, the number of client entries which contained at least one of the key terms were totaled for each clinician (pre- and post-implementation counts tallied separately; **Supplemental Data Four**). The total number of entries (individual client appointments) which had at least one mental health term were then divided by the total number of entries; this was calculated separately for each HHC, and for pre- and post- training periods. These values were then converted into percentages to reflect the % of entries which included at least one mental health term for each HHC at each time point. Finally, data was assessed for normality. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were statistically significant, suggesting that the data violated normality assumptions. Consequently, Wilcoxon Signed Ranks Test, a non-parametric test, was used to investigate the change in use of mental health terms from pre- to post- training. Effect size was calculated using r= (z/ (sqrtN)). This was repeated separately for each of the three data sets analyzed: (i) clinical case notes; (ii) client rehabilitation goals; and (iii) GP reports.

Clinical case notes data were available for 23 participants, 82.61% female (n=19) and 15.38% male (n=4). Age range 26 to 61, mean 36.57 years (SD 11.15). Years of experience range 0.5 to 36, mean 11.40 years (SD 9.93).

Client rehabilitation goals data were available for 21 participants, 80.95% female (n=17) and 19.05% male (n=4). Age range 26 to 61, mean 36.14 years (SD 11.59). Years of experience range 0.5 to 36, mean 10.67 years (SD 10.10).

GP reports data were available for 23 participants, 78.26% female (n=18) and 21.74% male (n=5). Age range 26 to 61, mean 36.32 years (SD 11.34). Years of experience range 0.5 to 36, mean 11.01 years (SD 9.98).

Semi-structured interviews. Potential participants were invited to participate by email and were provided with an information sheet and consent form (100% consent rate). Each participant attended one interview, either on their own or in pairs. Interviews were conducted online via Microsoft Teams, as participants were all familiar with this platform as they used it regular within their workplace and lasted for an average of 37 minutes (range 26 to 52 minutes). All interviews were conducted by the first author (R.J.B.), a female clinical audiologist with experience in conducting qualitative research. All sessions were video recorded enabling audio-transcription of the dialogue. R.J.B reflected after each of the interviews and revised the topic guide. The topics were not changed but the wording and order of the questions were amended to reflect the language and understanding of the participants. Changes were only made after the first three sessions and were minor in nature. For example, questions relating to effectiveness were moved to earlier in the questioning sequence as participants often wanted to recount this information first and this sequence seemed to flow better for participants. After the first eight participant interviews were conducted, two members of the research team reviewed the transcribed data. As no

new information was obtained from the seventh and eighth participants, it was concluded that data saturation had occurred and participant recruitment ended (Patton, 1990).

Exit interviews were completed by eight staff, 75% female (n=6) and 25% male (n=2). Age range 23 to 35 years (mean 27.29 years; SD 4.07). Years of experience ranged from 0.5 to 10 years (mean 4.0; SD 3.99).

Semi-structured interview audio recordings were transcribed verbatim by a professional transcription service and analyzed in Nvivo. Content analysis, in line with Graneheim and Lundman (2004), was used to analyze the data through an integrated deductive and inductive approach. First, we used a deductive approach, with the RE-AIM framework providing the initial coding structure. Data could be coded into multiple RE-AIM dimensions. Second, we used an inductive approach to identify emerging codes and concepts within each dimension, wherein (i) meaning units within the data were identified; (ii) meaning units were coded by grouping together those most closely related; and (iii) coded meaning units were grouped into categories. Peer debriefing was used to improve the rigor of the analysis, with one author (R.J.B.) completing the initial analysis and one other member of the researcher team (R.E.) crosschecking 20% of the coding. Any disagreements were discussed until consensus was reached. Emerging codes and concepts in each dimension were discussed with research team members (C.M., R.E. & R.J.B.) during formal meetings, and all discrepancies were resolved by consensus. Verification strategies used throughout the research process to ensure data integrity included cross-checking of coding, ensuring methodologic coherence and appropriate sampling.

Detailed information about the qualitative sub-study methods reported in accordance with the Standards for Reporting Qualitative Research (SRQR) checklist (O'Brien et al., 2014) can be found in **Supplemental Data Five**.

3. RESULTS

Results are presented as per the RE-AIM framework (Table 1).

Reach - Did the project reach the targeted population with the intervention?

Reach is measured at the level of the individual – the intended beneficiary of a program (e.g., a patient or employee).

Recruitment. All 38 adult rehabilitation specialists employed at the start of the project were recruited into the study and all 38 provided consent to participate (100% response rate). Over the course of the project, seven dropped out of the study (due to resignation n=3 or maternity leave n=4) and nine new staff were employed by the organization, all of whom were recruited (100% response rate); this resulted in a total of 47 participants over the course of the project.

Participation. Observational records showed that all participants received AIMER training, either delivered by the research team (for those employed at the start of the study) or delivered by the organization's internal trainer (for those employed after June 2021). Completion of the study measures varied greatly: 35 participants completed the pre-implementation self-report survey (92.10% completion rate), 24 participants completed the post-implementation self-report survey (77.42% completion rate) and 13 completed the

clinical diary measure (41.94% completion rate). Reasons for not completing these included time constraints, competing priorities, not wanting to complete clinical diaries as finding them too burdensome, forgetting to complete diary entries on certain weeks, and losing the diary sheets prior to submission. Additionally, we were not able to complete the clinical case note audit for all participants, as some only had pre- and others only post-implementation data available; for example, if they resigned or were on parental leave during the data extraction period. The number of participants that participated in each component of the study and their demographic characteristics are presented in **Supplemental Data Two**.

Interview data showed that participants agreed with the notion of including all clinical staff in the project, but many commented that it would have been advantageous to also include administration and managerial staff:

"Maybe also admin staff could maybe have some basic training on the psychosocial aspects of hearing loss as well." P39, Male

"It would have been good for the managers to also get the training, just because I feel like we learned a lot about the impacts of mental health on hearing loss. So, I think it would have been good for them also to learn about it, so they can understand the importance of it and then drive it more in the clinic as well." P1, Male

Adoption – Did the project develop organizational support to deliver the intervention?

Adoption is measured at one or more levels of the organizational or community setting that delivers the program and the "staff" or delivery agents within those settings (e.g., a healthcare provider or educator decides to offer or be trained in a program).

***Adoption - Setting level*.** We partnered with a single hearing services organization for both the development and evaluation of the AIMER program and implementation. We worked closely with the clinical management team and the internal clinical trainers, taking a train-the-trainer approach to ensure sustainability of the project. Clinical staff across all 15 sites were recruited into this study, including larger clinics supported by full time administration staff as well as visiting clinics (such as where in the clinician provides audiological services within a GP clinic and thus does not have their own onsite administration staff).

Interview data suggested that clinic location had no impact on adoption as all of the client records, workflow procedures and clinical resources were electronic: *"I don't think which clinic you're at would influence how people use the resources, we all have access to the SharePoint [web-based data sharing program]." P39, Male*

Two staff described time as a barrier to adoption due to the time pressures on the busier clinics: *"It is more difficult to implement all of the resources in the busier clinics. Sometimes this clinic gets to the point where there's a high demand of walk-ins and squeezing in 15-minute appointments. I am less inclined to give as much time for mental health discussion on the busy days. It doesn't feel right, but I've got no choice when I have a waiting room full of people." P1, Male*

Adoption - Staff level. All 31 staff attended the in-person AIMER program training workshop, and the 9 staff recruited after the event received in-house AIMER training by the internal trainer.

Regarding the AIMER clinical resources developed, interviewees generally described high rates of adoption; however, some speculated that adoption was lower for older clinicians and greater for younger clinicians.

"I'd say that the much older clinicians perhaps found it more difficult to change habits." P9, Female

"Some auds are just going to be less comfortable with this type of conversation. I imagine the younger audiologists are more comfortable with that mental health conversation, because, I don't know, I feel like I've grown up with it. I've had so many friends that have gone through some form of mental health difficulty." P3, Female

Some suggested that personal disposition played a role in adoption.

"My motivation level, I think, was a bit higher since I have an interest in the area. So, I don't know with other clinicians, if it was the same, but I was very motivated." P1, Male

"I do think part of it is also just personal interest. There are some people who don't talk about feelings and emotions in themselves, and so how are they going to have the skills to be able to have that conversation with a client? And maybe, some of that's a generational thing as well. But there are a lot of people who were open to having and talking about

feelings and emotions, in general, and so they're going to have more skills to be able then do that with clients, and not be triggered by it." P1, Male

Implementation - Was the intervention delivered properly?

Implementation refers to program delivery outcomes at the service provider level (e.g., the interventionist consistently follows the intervention protocol, a healthcare provider consistently performs the required behavior). Implementation seeks to understand how an intervention is integrated into diverse settings and populations, as well as how it is delivered and modified over time and across settings.

Implementation - Program fidelity and adaptations. Changes to the original implementation plan were sometimes intentional and sometimes unintentional.

The original implementation plan included two half-day in-person training sessions with all of the participating clinicians. However, due to COVID-19 lockdowns and physical distancing restrictions, the implementation plan was modified and a series of recorded videos were produced and a single live online half-day training session held. Interview participants reflected on how this adaptation may not have been ideal.

"I think not everyone would have watched all of the videos or they have been watching it in the background while typing case notes or something like that. So, the level of engagement isn't quite as good as if we were all physically in the room for all of the training sessions." P23, Female

The original implementation plan included a behavior change technique to improve remembering and habit forming for asking clients about their mental wellbeing. Specifically, we designed a question to be added to the client case history form so that in cases where clients had indicated concerns about wellbeing impacts of hearing loss, this would prompt HHCs to delve further. Similarly, we developed two new questions to be incorporated into the clinical case notes to prompt the HHCs to ask about wellbeing within the consultations. Although the wording of these questions was carefully co-designed with our clinical partners and processes for putting them into place were outlined, only the case notes were updated and the wellbeing question was not included in the client case history form. It became apparent to the research team that this was missed during the semi-structured exit interviews with staff. We recommend in future that researchers use a system to not only design the implementation pathways, but also to systematically check whether each element has actually been implemented in real-time.

With respect to adaptations of the intervention elements, some interview participants described how they modified use of the resources to better suit their personal way of conducting appointments.

"Although it's great to have that added resource at the end, I think sometimes I forget. If I have to print out right there at the appointment, I often find that I accidentally leave it on the printer just before they leave, whereas if I already have them [fact sheets] pre-printed in my office, I tend to remember to give them out more." P46, Female

Implementation – Barriers. Open text responses on the post-implementation survey revealed time and insufficient training as barriers to adoption.

"They are GREAT resources but too time consuming to be used in an already jampacked appointment." P7, Female

Interview participants noted that some elements of the AIMER program were not implemented as successfully as others, largely due to the implementation process not being sufficiently detailed or not reinforced with follow-up training. Barriers to use of intervention materials persisted, such as opportunity and confidence.

"I'm not sure. I haven't had the opportunity myself to use them [mental health support resources] but I hope people know or remember that they're there. We might need a refresher on what extra information sheets are available, you know, the lists of support groups and stuff. Because I know that our internet is massive and it is hard to navigate unless you're in it all the time." P3, Female

"The [flashcard] content was perfect, the examples were exactly what we needed. It's just that people didn't understand how to use them." P9, Female

"If I'm seeing the client for the first time, I'm still not confident in giving the [mental health] brochure straightaway, because I don't know if I've built enough rapport to go to that level, to explain mental wellbeing, what's good for the client." P23, Female

Some participants described missing out on receiving certain elements of training or resources which impacted successful implementation.

"I don't think we [newly trained interns] got the flashcards." P46, Female

"It would be good if you could revive the flashcards, because some people still say they lack the language and so they still need help with this. I can see how the flashcards were designed to help people feel confident with the language, but I just think they weren't rolled out effectively. I think you need to get people in a room together, with the flashcards and show them how to use them." P17, Female

Participants described how there was a lot to take in from the start, but that they also appreciated having all of the elements delivered together.

"I missed that there was a referral list[1] completely, and so did <<NAME>>. That list would be really helpful. Can you send it to me. There was a lot of new things all at once in the training." P19, Female

"I think, at first it felt like too much. But then, retrospectively now, as we've gone on, like I said, some of these things I'm happy to have in my back pocket. Because if the event then did arise, say for example, with the information sheets on where to get help next, although I'm asking people things, if one client did come up that we thought she'd need a refer, we would now have this instead of having to say, oh Bec, you're getting us to ask people, but we don't know what to do with it." P1, Male

[1] The referral list described here provided a description of and contact details for local psychologists. They were identified by phoning all the psychologists in the areas surrounding the clinics to ascertain who had experience with and was willing to take referrals for adults with hearing loss and/or older adults. We then cross checked this list of practitioners with the Psychological Society of Australia's website to check that they were licenced.

Implementation – Facilitators. Self-report survey suggested that participants found the training and clinical resource elements of the implementation program acceptable (evaluated on a 5-point Likert from "Very Acceptable" to "Very Unacceptable"). Half of the respondents (50%, n=12) reported finding them "Very Acceptable", with the other half (50%, n=12) reporting "Acceptable". When asked to provide comment on why this response was selected, respondents described the training session as insightful/informative (n=5) and professionally done (n=6).

"This was definitely a skill lacking in our audiology services, an evident gap." P11, Female

"These topics were something that we encounter in our everyday practice and it was interesting to study these topics in a systematic way" P23, Female

"The training was appropriate for my role, it addressed parts of the clinical processes often left out." P4, Male

Feedback on the acceptability of the environmental modifications (i.e., clinical resources and changes to the customer management system) was positive. One third of participants (37.50%; n=9) reported finding them "Very acceptable", nearly half (45.83%; n=11) reported "Acceptable", and 16.67% (n=4) Neutral. Facilitators to adoption of the environmental modification elements included their ease of use and customization.

"The resources were practical and easy to implement for my work setting" P9, Female

"They have been extremely helpful and make discussing these issues significantly easier. Beforehand I thought it would be hard to discuss emotions and wellbeing, but now it seems so natural and part of what we are supposed to do." P1, Male

"Excellent and great to have these at hand for clients- I am more inclined to discuss emotional issues if I have resources to back up my queries" P10, Female

In general, interview participants had positive feedback regarding the implementation process, specifically appreciating the involvement of staff in the ideating and development of the resources and implementation program development. They described the implementation elements as being most successful when they were embedded into routine processes, and that this resulted in an organizational shift.

"It felt more like, as a whole institute we're changing to this way, and this is a new protocol. And, with the in-depth training and the longevity of it I think that it made it more real, in a sense." P1, Male

"I think including the staff in the whole process of intervention development definitely contributed to the success of the program as it provided insight into what the day to day barriers were that clinicians were facing when having psychosocial discussions, and then implementing direct changes to help them." P9, Female

"I think just that it was integrated in lots of things that we already use, so the case notes, the toolkit. So, then it's always front-of-mind, which is good." P17, Female

"It was all very well thought out because the system changes all worked well. We tested it before rolling it out so that helped. No, everything was fine, I think." P23, Female

"It definitely complemented the way that I learn, the way that there were always examples in your training videos following them to make it a really seamless transition into being able to do it yourself." P46, Female

Maintenance - Was the intervention incorporated so that it will be delivered over the long term?

***Maintenance - Setting level*.** Our clinical partners' management team felt that the AIMER program aligned well with their organization's values, in both the customer service experience they deliver, and also the staff training and support they endeavor to achieve. We did not document the actual financial cost of implementing the AIMER program, nor the ongoing cost to the clinic following implementation of the AIMER program; however, these costs would have included staff time in attending the training session and participating in the research activities (completing the surveys and attending the focus groups), and graphic design and printing costs for the clinical resources. While the clinic carried the costs relating to their involvement in this implementation study, the management team reporting that the time and thus cost outlay was worthwhile given the positive feedback from both staff and clients.

Use of the RE-AIM framework to guide implementation planning ensured that maintenance of the AIMER program was considered from the outset. Specific activities addressing the Maintenances component of implementation included: (i) adoption of a train-the-trainer (Pearce et al., 2012) approach so that internal trainers within the partnering clinic could be upskilled to provide in-house training and enablement for future employees; (ii) video recording of all training materials so that staff can revisit them, and managers can use them in future training and refresher programs; (iii) updating the clinic's clinical procedures documentation to describe new protocol and the use of new resources, emphasizing the importance of considering client's mental wellbeing needs within appointments; and (iv)

reference to asking about and providing information on mental wellbeing during clinical consultations is now included in the internal audits maintained by management staff as a quality control measure for the clinics, ensuring that they will remain a vital component of the clinical flow for employees across the organization.

Maintenance of the AIMER program appeared successful and interview participants were optimistic that the AIMER program and its benefits would continue beyond the life of the research study.

"I think that, because of the way that it was implemented on a clinical level, that we'll still be using it routinely in six months, six years. I think, if you go to one of those sessions as an individual audiologist at a conference, or something like that, you'd come back and you might use it for a little bit and then you taper off. But this is fully just what we do now. The new normal." P1, Male

Some of the issues detected with the implementation had flow on effects on maintenance. For example, the clinical trainer said, *"I wasn't given any [flashcards] to hand out to the grads." P17, Female*

Effectiveness – Was the intervention effective?

Effectiveness refers to outcomes at the recipient level (e.g., changes in behaviors or opinions). Effectiveness was determined through evaluation of the three target behaviors underpinning development of the AIMER program:

(1) asking clients about their mental wellbeing;

(2) providing general information on the mental wellbeing impacts of hearing loss; and

(3) providing personalized information on managing the mental wellbeing impacts of hearing loss.

Change in the three target behaviors was determined through a variety of quantitative and qualitative methods: (i) a self-report survey; (ii) clinical diaries; (iii) clinical file audits; and (iv) semi-structured exit interviews.

Effectiveness - Self-report Survey. The post-implementation self-report survey explored participants reflections on the effectiveness of the AIMER program. Participants were asked to reflect upon their skills and confidence in asking about and providing information on the mental wellbeing impacts of hearing loss. The majority of participants indicated improvement in skill (4.17%, n=4 Very Large improvement; 29.17%, n=7 Large improvement; 62.50%. n=15 Small improvement; 4.17%, n=1 No improvement) and confidence (4.17% (n=4) Very Large improvement; 45.83% (n=11) Large improvement; 33.33% (n=8) Small improvement; 16.67% (n=4) No improvement).

The majority of participants noted that the AIMER implementation program increased the likelihood that they would ask about and provide information on mental wellbeing with their clients (41.67% (n=10) Much more likely; 54.17% (n=13) Somewhat more likely; 4.17 (n=1) Neither). When asked to reflect on how easily it had been to incorporate the new skills and resources into their clinical practices, some appeared to find this easier than others (37.50% (n=9) Easily; 45.83% (n=11) Neutral; 12.50 (n=3) With difficulty; 4.17 (n=1) I've been unable to incorporate into clinical practice). When asked to describe what participants **now** need in order to be able to ask about and provide information on mental wellbeing to their clients, five participants described the need for more time within appointments, for example "*More time allocation in the appointment*" *(P7, Female)* or help with time management "*Understanding when they should be discussed and how to ensure appointments do not run over time when discussing these issues would be very helpful*" *(P23, Female)*; four participants described wanting regular refresher courses "*I would like some reinforcement/ revision of the training*" *(P5, Female)* and "*More practice to make it just as regular as asking about tinnitus/vertigo etc.*" *(P20, Male)*; and one participant noted that counselling couples was still a challenge, "*Adding these resources have made such an improvement in terms of how easy it has become to discuss things. I'm not sure what we could add, but often the difficulties are between couples it becomes hard to counsel this as it can [be] deeper than just hearing.*" *(P1, Male).*

Both the pre- and post-implementation self-report surveys asked participants to reflect on how often they refer clients for mental wellbeing support. Specifically, participants were asked "How many clients have you referred on to specialist support in the following ways to

address signs and symptoms of social or emotional distress in the past six months? (Please indicate your best estimate if you are unsure)". No statistically significant differences were found between pre- and post-implementation scores for any of the referral behaviors (all *p* values > .05; see Table 2).

The self-report survey included a section exploring participants' perceived barriers and facilitators (based on the COM-B model of behavior change; Michie et al., 2014) to enacting the three target behaviors within their routine practice. The same list of potential barriers and facilitators were provided within the pre- and post-implementation surveys to facilitate comparisons between the two time points. There was a significant change in participants self-reported agreement for five of the 19 barriers/facilitators noted for Target Behavior One: Asking about Wellbeing, five of the 19 barriers/facilitators noted for Target Behavior Two: Providing General Wellbeing Information, and seven of the 19 barriers/facilitators noted for Target Behaviour Three: Providing Personalised Information and Support (Figure 2). The largest change in scores observed were in the statements relating to clinical resources and processes, habits and routines, and knowledge. The full set of results are presented in **Supplemental Data Six**.

Effectiveness - Clinical diaries. Clinical diaries were completed by 13 participants. A significant increase in the frequency of target behaviours was found between pre- and post-implementation scores for two of the target behaviors, Asking about wellbeing ($W = 2.54$, $p = 0.011$) and Providing personalized information and support ($W = 2.34$, $p = 0.019$), but not for the target behavior Providing general Information ($W = 1.73$, $p = 0.083$) (see Figure 3).

Effectiveness - Clinical file audits. Three different sets of clinical file data were extracted: (i) clinical case notes; (ii) client rehabilitation goals; and (iii) GP reports. The number of client entries which contained at least one of the key terms for each time point (pre- and post-implementation) were tabulated (**Supplemental Data Four**), significant changes are presented below for each of the three types of data.

Clinical case notes. A total of 191 single appointment entries were made by 23 HHCs over the March to May period (pre-implementation), with an average of 29.4% (SD =13) entries per HHC containing at least one mental health term. These clinicians entered 211 single appointment case note entries over the October to December period (post-implementation), with an average of 54.9% (SD ± 13) entries per HHC containing at least one mental health term. A Wilcoxon Signed Ranks Test indicated that the use of mental health terms in case note data was significantly higher after the training (with the percentage of case note entries using mental health terms: Mean = 54.9, Median = 53.8) compared to before (Mean = 29.4, Median = 30.5), $z = 4.167$, $p < 0.001$, with a large effect size, r = 19.98.

Client rehabilitation goals data were extracted for 21 participants. On average, 30.2% (SD ± 20) of client rehabilitation goal data from the March to May period (pre-implementation) and 26.4% (SD ± 17) of client goal data from the October to December period (post-implementation) used at least one mental wellbeing term. A Wilcoxon Signed Ranks Test indicated that the use of mental health terms in client rehabilitation goal data was not significantly different after the training (Mean = 25.86, Median = 26.39) compared to before (Mean = 25, Median = 30.23), z = -1.680, p = 0.093.

GP reports data were extracted for 22 participants. On average, 3.60% (SD ± 3.82) of GP report letters contained at least one of the mental health terms at pre-training. After completing training, this increased to 6.35% (SD ± 7.06) of GP report letters. Overall, this represents an increase of 76.38% from pre- to post- training. A Wilcoxon Signed Ranks Test indicated that the use of mental health terms in GP report letters was significantly higher after the training (Mean = 6.35, Median = 3.92) compared to before (Mean = 3.60, Median = 3.45), z = -2.29, p = 0.022, with a small to medium effect size, r = -0.48.

Effectiveness - Semi-structured exit interviews. Certain elements of the program were utilized more than others, with participants describing how they would pick and choose the resources that best matched their personal workflow/approach. For example, participants described frequent use of the prompts in the case notes, fact sheets, goals templates and GP report templates; however, few had used the flip cards or the mental health brochure. Although, discussion as to why these resources were rarely used revealed issues with implementation rather than issues with the resources themselves. Specifically, participants described not understanding how to use the flip cards and not having access to the mental health brochure in their workplace.

"This program has really helped us to ask the right questions, talk less and listen more. This then helps the clients to tell us what they really need from us and helps us to address their hearing needs as well as help them to overcome all the ways that the hearing loss might be affecting them, at work, at home and in their social world." P23, Female

"I think that's what a lot of this progress has been. It's giving audiologists' permission to talk about it, and then audiologists giving the clients permission to talk about it." P3, Female

"I would say that this wellbeing training program has really helped me to develop my skills and confidence to put the client's wellbeing needs at the center of our service offering." P46, Female

"Different resources work for different clients, and it's about deciding which ones are suited for their particular personality or need or how open they are to discussing mental wellbeing." P1, Male

Even the experienced HHCs felt they benefited from the program.

"I think it's a fantastic program, and what it's done for me, is it has reminded me to focus more, even more, even though I've worked for many decades, to focus even more on the emotional aspect." P19, Female

One less experienced HHC felt that they lacked the confidence even after completing the AIMER program.

"Sometimes as an audiologist I don't feel fully skilled in that area of mental health, and I feel sometimes that I might be overstepping my boundaries as a clinician going into more in terms of mental health if it's brought up by a client." P46, Female

Certain elements of the intervention program really stood out for some HHCs.

"You know that client video that you made saying how audiologists didn't ask about their emotions? That really hit home, and I was like, I don't want my clients to feel like that." P3, Female

"Oh, and that video you made. You need to be there for clients you know, for that emotional side of it, and hearing that they wanted us to talk about it as well, it made space for us to talk about it, do you know what I mean, whereas previously thinking like, maybe it's not our space, our role. For me, it opened up that space and made me more confident to start conversations about mental wellbeing." P39, Male

"It [the discussion prompt], you know, the one with all of the feeling words, works really well, and particularly if there's a communication partner or a significant other in there. It worked really well for me just yesterday, where they came in and they were bickering with each other quite a bit, and you could sense that there was quite a bit of a communication breakdown, so I said, pick three words each or whatever, and then they discussed it and we could address the issue. And, I don't know, it just made the conversation much more open than them just muttering under their breath about little things that they've said. That worked really well." P46, Female

Some staff felt limited by time factors, whereas others felt that the new skills helped them to better manage their time within appointments.

"I think a factor impacting is also maybe just general time constraints of an appointment. We tend to try not to bring it up because there could be that in the back of our mind, it's

going to extend the appointment time or we're not going to get everything done that we need to in the appointment." P39, Male

"I always think about that study where for the GPs that just engaged, used empathy, and engaged in giving psychosocial support, well, well they actually saved time in appointments, and I think that's true for us too. Letting the client get things off their chest and then using that to build the rehabilitation goals saves time as it builds trust and momentum." P3, Female

A couple of participants described how they were more inclined to use the resources that were required more frequently, although they were also grateful for the resources that were designed for use in the more severe but infrequent cases.

"The tools or the resources that were applicable to the majority of my clients were easier to adopt into my routine practice because I would use them every day with every client." P1, Male

"However, some of the resources that were specifically for clients who were having more extreme mental health difficulties, and were therefore far less frequently used, and therefore, were not adopted into general practice. And definitely, for some people, perhaps not even needed." P23, Female

"Yeah, it's about knowing that you have that extra resource for if it does spin out of hand, and if the client does open up and talk about these huge issues that you're having. You do have something that you can say, all right, here is the next step. Here is the resource for the next step. Even if we don't use it often." P1, Male

4. DISCUSSION

The purpose of this study was to evaluate the first iteration of the AIMER program to determine whether the intervention achieved the changes in HHC behaviors anticipated and to evaluate the implementation protocol. Overall, the AIMER program was effective at increasing HHCs' behaviors relating to (i) asking about; (ii) providing general information about; and (iii) providing personalized information and support for the mental wellbeing impacts of hearing loss within routine audiology appointments. The factors affecting feasibility of implementing the AIMER program within the clinical setting could be classified into three major categories: (i) the AIMER program itself and its way of delivery; (ii) people working with the AIMER program; and (iii) contextual factors.

The AIMER program itself and its way of delivery

Overall, participants reported high acceptability and appropriateness for the AIMER program, including the training components and the clinical support resources. Strengths of the program included (i) the co-design approach taken to designing the intervention and implementation approach; (ii) providing HHCs with clinical resources to support discussion within consultations and handouts to supplement what was discussed; and (iii) the conscientious effort to embed new behaviors and resources into the HHC's routine workflow. Although we did not employ a specific theoretical model to inform how we embedded the intervention into the HHCs' workflow, future research could look to the Normalization Process Theory (Murray et al., 2020) to underpin and enhance such efforts.

This feasibility study identified a number of items that would improve future implementation of the AIMER program, including (i) more in-depth training on how to use the flashcards and the activity scheduling worksheet; (ii) greater emphasis on how to incorporate wellbeing needs into rehabilitation goals and how to refer to mental health practitioners; (iii) repeated training for less frequently used clinical resources, such as the Mental Wellbeing brochure; and (iv) digitization of all training materials to better support internal trainers in their endeavors to embed the AIMER program within their staff skills matrix. Regarding referrals, it appears that while some HCCs increased their referral practices, the overall change wasn't substantial enough to yield a statistically significant shift in self-reported referral behaviors across the group. Considering the relatively low demand for mental health referrals among clients, it's conceivable that a more pronounced change in referral behaviors could be observed with extended observation periods. Despite the lack of significant change in the total referral count, a noteworthy rise was observed in routine GP referrals that incorporated elements of mental wellbeing. To elaborate, many clinicians routinely report to GPs as part of their standard practice; our analysis of clinical files revealed an increase in the integration of language related to mental wellbeing within these reports. This development is promising as it underscores the effective communication by HCCs to GPs about the psychological ramifications of hearing loss. Consequently, GPs will be better positioned to identify and address clients' mental wellbeing requirements during their appointments (Wittchen et al., 2022).

People working with the AIMER program

The majority of participants were highly engaged; however, this may not necessarily be the case for other organizations. Drawing on the feedback from participants, key recommendations for future implementation include (i) increasing staff engagement with the program by allowing more time for training and for practicing application of new skills within the work environment; (ii) allowing more time within appointments for staff to provide mental wellbeing support (only required by some staff); (iii) adapting resources to make them more appropriate for varying appointment lengths, and (iv) considering the needs of experienced HHCs who may require special attention to support and encourage their adoption of the AIMER resources.

It is worth noting that participants in the current study explicitly expressed gratitude for being involved in the development of the AIMER program and that this participatory approach helped them to feel ownership towards the program and motivated them to comply more readily with its implementation. Future adoption scale-up activities involving the AIMER program will not have the opportunity to involve staff in the full development of the intervention, but they do have the opportunity to involve staff in the adaptation of the AIMER program and/or adaptation of the implementation strategy. We highly encourage involving as many staff as possible to safeguard the success of the implementation of the program within the clinical setting. This could potentially be achieved through staff survey, workshops, or town meetings. Additionally, having the support of the clinical managers within our partner organization was pivotal to its success. These managers not only allowed us access to their staff when implementing the AIMER program, they also attended the training sessions and spoke of their support and enthusiasm for the implementation of the

889 program within the organization. This was vitally important to many of the staff whose
890 preconceptions at the start of the research project were that their managers would not
891 want them spending clinical time discussing mental wellbeing. Having the managers openly
892 share their support for the program helped bust these myths and gave staff 'permission' to
893 address their client's mental wellbeing needs within appointments.

894

895 ***Contextual factors***

896 There were a number of contextual factors that influenced the implementation of the
897 AIMER program. Factors from within the partner organization included staff turnover,
898 changes in managerial priorities, and adoption of additional projects that posed competition
899 for clinicians' attention. While these sorts of events are unavoidable in the real-world
900 setting, their impact on implementation of the AIMER program must be considered. In this
901 instance, although staff turnover impacted our ability to collect evaluation data, no negative
902 impact of staff turnover was observed on the implementation of the AIMER program thanks
903 to the train-the-trainer approach adopted. Fortunately, staff within our clinical partner
904 organization were highly motivated towards implementing the AIMER program and so other
905 projects rolled out within the clinics at the same time did not appear to impact on
906 implementation success. In general, however, we recommend careful consideration of the
907 internal (e.g., staffing structure, change management, workload) and external (e.g., funding
908 bodies, partner organizations, political landscape) work environment when selecting a start
909 date for implementation of the AIMER program as it can require a large shift in thinking for
910 some clinicians and they will require sufficient mental and emotional capacity to achieve
911 this.

Given the diversity between organizations, both in Australia and around the world, scale-up efforts could look towards developing a version of the AIMER program that is fully digitized making it more modularized and accessible by clinics around the world, much like a recently developed online counselling education program for speech and language pathologists that addresses psychological wellbeing in those affected by post-stroke aphasia (Sekhon et al., 2022).

Did the intervention work via the COM-B mechanisms we predicted?

In developing the AIMER intervention, we first identified barriers and facilitators affecting HHCs ability to enact the three target behaviors through focus group discussion; these included factors identified across all three areas of the COM-B: Capability, Opportunity and Motivation (Bennett et al., 2023b; Nickbakht et al., 2022). Of the 93 factors identified, 19 were selected, and the AIMER intervention was systematically designed to target these 19 barriers (see Bennett et al., 2023a - Supplemental File One).

Similarity between COM-B barriers at pre-implementation and those targeted by the intervention. The key barriers to enacting the target behaviors as self-reported by participants in the current study included lack of resources, time, confidence and habits (Figure 2; Supplemental Data Six), which align with the barriers targeted by the intervention (see Bennett et al., 2023a - Supplemental File One); including for example, “Audiologists require clinical resources to assist with (i) asking about wellbeing, (ii) providing information

on the wellbeing impacts of hearing loss, and (iii) providing information on wellbeing treatment/management strategies", "Audiologists need to develop confidence in their ability to ask about mental wellbeing and respond with empathy when clients describe their challenges", "Audiologists need reminders/prompts to help them remember to ask clients about mental wellbeing", and "Audiologists need to feel responsible for (i) asking about mental wellbeing, (ii) providing information on the mental wellbeing impacts of hearing loss, and (iii) providing information on mental wellbeing treatment/management strategies".

Observed changes in barriers and facilitators relative to those areas that were targeted by the intervention. The greatest observed changes in barriers and facilitators to enacting the three target behaviors (Figure 2) related to lack of resources and clinical processes, confidence and habit formation which were specifically targeted by the AIMER intervention. These findings further support the efficacy of the AIMER program as an intervention to improve audiologists' ability to provide mental wellbeing support to within routine care. Other barriers, such as *Time,* were not specifically targeted within the AIMER intervention and so it is not surprising that no significant reduction in these barriers were observed.

Strengths and challenges of the RE-AIM framework

The RE-AIM framework proved to be a useful roadmap for evaluation of the implementation strategy, and in hindsight, we should have also used it to guide implementation planning. Use of the RE-AIM framework helped us to focus on contextual and setting factors that had implications for what works in "real life." For example, we designed the flash cards as a self-

directed learning tool to help HHCs improve their language skills for discussing mental wellbeing with clients; however, evaluation of the implementation process helped us to understand that the flashcards failed not because of their design, but due to how we implemented this specific intervention component. The HCCs who used the flashcards appeared to really like them, but many others did not fully understand how to use them and so gained no benefit from them.

Advantages of using the RE-AIM framework included that it prompted us involve stakeholders in the development, execution and evaluation phases, and it was easy to work with. The website (https://re-aim.org/) provides guidance and there are many peer review publications dedicated to guide researchers in how to apply the RE-AIM framework (e.g., Holtrop et al., 2018; Glasgow et al., 2019). We appreciated the modular approach afforded by the RE-AIM framework, in that not all measures need be applied to every study, but rather we could select the measures within each domain that related to our study design and context.

One of the challenges we faced with using the RE-AIM framework was delineating between adoption and reach; however, this may be in part because our intervention targeted HHCs and our outcomes measured the impact of the intervention on the HHCs involved, and not on the patients who would ultimately benefit from the HHCs improved service delivery.

The role of the HCC in supporting their client's wellbeing needs

It is well-established that hearing loss can significantly impact an individual's mental wellbeing (Shukla et al., 2020; Shoham et al., 2019; Lawrence et al, 2020), yet unfortunately, many affected individuals remain underserved in this regard—neither by their HHCs nor by their GPs. HHCs possess the unique opportunity to bridge this gap by acquiring the necessary skills to identify, discuss and support the mental wellbeing impacts of hearing loss during their clinical interactions. This process would not only bolster their clients' overall wellbeing but also facilitate appropriate referrals to specialist mental health services. Our research provides compelling evidence that training HHCs to enhance their skill set, confidence, and clinical approach is entirely feasible. The AIMER intervention can empower and equip HCCs to effectively ask about mental wellbeing, provide information on the mental wellbeing impacts of hearing loss, and provide much-needed support to adults with hearing loss, thereby paving the way for a more comprehensive and integrated approach to hearing healthcare.

Limitations

While the benefits of working with a single clinical partner for this study include the ability to co-design and fully customize the implementation strategy, the consequence of this is that the appropriateness of this implementation approach to the broader industry may be limited. Future research on scale-up and multicenter implementation of the AIMER program will explore this notion. Additional limitations relating to execution of this study within a single organization include (i) sample bias, in that staff within our partner organization were generally supportive of the AIMER program which is not likely the case across all audiology service providers; (ii) response bias, in that given the relationship between the research

team and the participating HHCs, some participants may have inflated their positive responses; and (iii) the study was conducted in an affluent part of Australia, further research is needed to understand the applicability and feasibility of the AIMER in less affluent areas and in other countries.

Another limitation of the study is that although adults with hearing loss contributed to the design of the research program and the design of the AIMER intervention, we did not investigate the efficacy of the AIMER on client outcomes; however, we will endeavor to do so in our subsequent work. Also, we did not collect information on cost and economic impact of implementation of the AIMER program. As cost is often one of the primary concerns of potential adopters and decision makers, it should be the focus of future research exploring the scale-up of the AIMER program.

It was our presumption that an increase in use of mental wellbeing terms within client case notes was a measure of mental wellbeing related conversations occurring more frequently. We acknowledge that this was an assumption, as some interactions may have taken place without these being noted. However, it was good to see that self-reported increase in these behaviors occurred alongside the increase in use of terms within the case notes; especially as the HHC participants were not aware that the case note audit was occurring.

Conclusion

The key findings of this study were: (i) the AIMER program is effective at changing clinician's behaviors related to provision of mental wellbeing support within routine audiological appointments; (ii) implementation of the AIMER program in a real-world setting was feasible; (iii) HHCs enjoyed receiving AIMER training and felt that it benefitted them and their clients, and they especially valued being involved in the planning process; and (iv) the RE-AIM provided a comprehensive framework for the planning and evaluation of the implementation effort.

References

Barker, A. B., Leighton, P., & Ferguson, M. A. (2017). Coping together with hearing loss: A qualitative meta-synthesis of the psychosocial experiences of people with hearing loss and their communication partners. *International Journal of Audiology*, *56* (5), 297-305.

Bennett, R. J., Bucks, R. S., Saulsman, L., Pachana, N. A., Eikelboom, R. H., & Meyer, C. J. (2023a). Use of the Behaviour Change Wheel to design an intervention to improve the provision of mental wellbeing support within the audiology setting. . *Implementation science communications*, Submitted 24/05/2022. Preprint available in Research Square. DOI: https://doi.org/2010.21203/rs.21203.rs-1688309/v1688301.

Bennett, R. J., Donaldson, S., Kelsall-Foreman, I., Meyer, C., Pachana, N. A., Saulsman, L., . . . Bucks, R. S. (2021a). Addressing emotional and psychological problems associated with hearing loss: Perspective of consumer and community representatives. *American Journal of Audiology*, *30* (4), 1130-1138.

Bennett, R. J., Kelsall-Foreman, I., Donaldson, S., Olaithe, M., Saulsman, L., & Badcock, J. C. (2021b). Exploring Current Practice, Knowledge, and Training Needs for Managing Psychosocial Concerns in the Audiology Setting: Perspectives of Audiologists, Audiology Reception Staff, and Managers. *American Journal of Audiology*, *30 (3)*, 557-589.

Bennett, R. J., Meyer, C. J., Ryan, B., Barr, C., Laird, E., & Eikelboom, R. H. (2020b). Knowledge, beliefs, and practices of Australian audiologists in addressing the mental health needs of adults with hearing loss. *American Journal of Audiology*, *29* (2), 129-142.

Bennett, R. J., Meyer, C. J., Ryan, B., & Eikelboom, R. H. (2020a). How do audiologists respond to symptoms of mental illness in the audiological setting? Three case vignettes. *Ear and Hearing*, *41* (6), 1675-1683.

Bennett, R. J., Nickbakht, M., Saulsman, L., Pachana, N. A., Eikelboom, R. H., Bucks, R. S., & Meyer, C. J. (2023b). Providing information on mental well-being during audiological consultations: exploring barriers and facilitators using the COM-B model. *International Journal of Audiology*, *62*(3), 269-277.

Bennett, R. J., Saulsman, L., Eikelboom, R. H., & Olaithe, M. (2022). Coping with the social challenges and emotional distress associated with hearing loss: a qualitative investigation using Leventhal's self-regulation theory. *International Journal of Audiology*, *61 (5)*, 353-364.

Cabral, L., Muhr, K. & Savageau, J. (2013). Perspectives of People Who Are Deaf and Hard of Hearing on Mental Health, Recovery, and Peer Support. *Community Ment Health Journal 49*, 649–657.

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2008). Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ*, *337*, a1655.

Curran, G. M., Bauer, M., Mittman, B., Pyne, J. M., & Stetler, C. (2012). Effectiveness-implementation hybrid designs: combining elements of clinical effectiveness and implementation research to enhance public health impact. *Medical Care*, *50* (3), 217.

Damschroder, L. J. (2020). Clarity out of chaos: use of theory in implementation research. *Psychiatry research*, *283*, 112461.

Davidoff, F., Dixon-Woods, M., Leviton, L., & Michie, S. (2015). Demystifying theory and its use in improvement. *BMJ Quality & Safety*, *24* (3), 228-238.

Glasgow, R. E., Harden, S. M., Gaglio, B., Rabin, B., Smith, M. L., Porter, G. C., . . . Estabrooks, P. A. (2019). RE-AIM planning and evaluation framework: adapting to new science and practice with a 20-year review. *Frontiers in Public Health*, *7*, 64.

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health*, *89* (9), 1322-1327.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, *24* (2), 105-112.

Heffernan, E., Coulson, N. S., Henshaw, H., Barry, J. G., & Ferguson, M. A. (2016). Understanding the psychosocial experiences of adults with mild-moderate hearing loss: An application of Leventhal's self-regulatory model. *International Journal of Audiology*, *55* (sup3), S3-S12.

Holtrop, J. S., Rabin, B. A., & Glasgow, R. E. (2018). Qualitative approaches to use of the RE-AIM framework: rationale and methods. *BMC Health Services Research*, *18* (1), 1-10.

Laird, E. C., Bennett, R. J., Barr, C. M., & Bryant, C. A. (2020). Experiences of Hearing Loss and Audiological Rehabilitation for Older Adults With Comorbid Psychological Symptoms: A Qualitative Study. *American Journal of Audiology*, *29* (4), 809-824.

Lawrence, B. J., Jayakody, D. M., Bennett, R. J., Eikelboom, R. H., Gasson, N., & Friedland, P. L. (2020). Hearing loss and depression in older adults: a systematic review and meta-analysis. *The Gerontologist, 60(3),* e137-e154.

Marrone, N. L., Nieman, C. L., & Coco, L. (2022). Community-based participatory research and human-centered design principles to advance hearing health equity. *Ear and Hearing*, *43* (Supplement 1), 33S-44S.

Michie, S., Atkins, L., & West, r. (2014). *The behaviour change wheel: A guide to designing interventions*. Silverback, Great Brittan, UK.

Moore, G. F., Evans, R. E., Hawkins, J., Littlecott, H., Melendez-Torres, G., Bonell, C., & Murphy, S. (2019). From complex social interventions to interventions in complex social systems: future directions and unresolved questions for intervention development and evaluation. *Evaluation*, *25* (1), 23-45.

Moullin, J. C., Dickson, K. S., Stadnick, N. A., Albers, B., Nilsen, P., Broder-Fingert, S., . . . Aarons, G. A. (2020). Ten recommendations for using implementation frameworks in research and practice. *Implementation Science Communications*, *1* (1), 1-12.

Murray, E., Treweek, S., Pope, C., MacFarlane, A., Ballini, L., Dowrick, C., ... & May, C. (2010). Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Medicine, 8,* 1-11.

Nickbakht, M., Meyer, C. J., Saulsman, L., Pachana, N. A., Eikelboom, R. H., Bucks, R. S., & Bennett, R. J. (2022). Barriers and facilitators to asking adults with hearing loss about their emotional and psychological well-being: a COM-B analysis. *International Journal of Audiology*, 1-9.

O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: a synthesis of recommendations. *Academic Medicine*, *89* (9), 1245-1251.

Pearce, J., Mann, M. K., Jones, C., Van Buschbach, S., Olff, M., & Bisson, J. I. (2012). The most effective way of delivering a train-the-trainers program: a systematic review. *Journal of Continuing Education in the Health Professions*, *32* (3), 215-226.

Pearson, N., Naylor, P.-J., Ashe, M. C., Fernandez, M., Yoong, S. L., & Wolfenden, L. (2020). Guidance for conducting feasibility and pilot studies for implementation trials. *Pilot and Feasibility studies*, *6* (1), 1-12.

Sekhon, J. K., Oates, J., Kneebone, I., & Rose, M. L. (2022). A phase II randomised controlled trial evaluating the feasibility and preliminary efficacy of an education program on speech-language pathologist' self-efficacy, and self-rated competency for counselling to support psychological wellbeing in people with post-stroke aphasia. *Topics in Stroke Rehabilitation*, *(ahead-of-print)*, 1-23.

Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Services research*, *17* (1), 1-13.

Shoham, N., Lewis, G., Favarato, G., & Cooper, C. (2019). Prevalence of anxiety disorders and symptoms in people with hearing impairment: a systematic review. *Social Psychiatry and Psychiatric Epidemiology, 54*, 649-660.

Shukla, A., Harper, M., Pedersen, E., Goman, A., Suen, J. J., Price, C., ... & Reed, N. S. (2020). Hearing loss, loneliness, and social isolation: a systematic review. *Otolaryngology–Head and Neck Surgery, 162*(5), 622-633.

Skolarus, T. A., Lehmann, T., Tabak, R. G., Harris, J., Lecy, J., & Sales, A. E. (2017). Assessing citation networks for dissemination and implementation research frameworks. *Implementation Science*, *12* (1), 1-17.

Studts, C. R. (2022). Implementation Science: Increasing the Public Health Impact of Audiology Research. *American Journal of Audiology*, *31*(3S), 849-863.

Tabak, R. G., Khoong, E. C., Chambers, D. A., & Brownson, R. C. (2012). Bridging research and practice: models for dissemination and implementation research. *American Journal of Preventive Medicine*, *43*(3), 337-350.

Theobald, S., Brandes, N., Gyapong, M., El-Saharty, S., Proctor, E., Diaz, T., . . . Elsey, H. (2018). Implementation research: new imperatives and opportunities in global health. *The Lancet*, *392* (10160), 2214-2228.

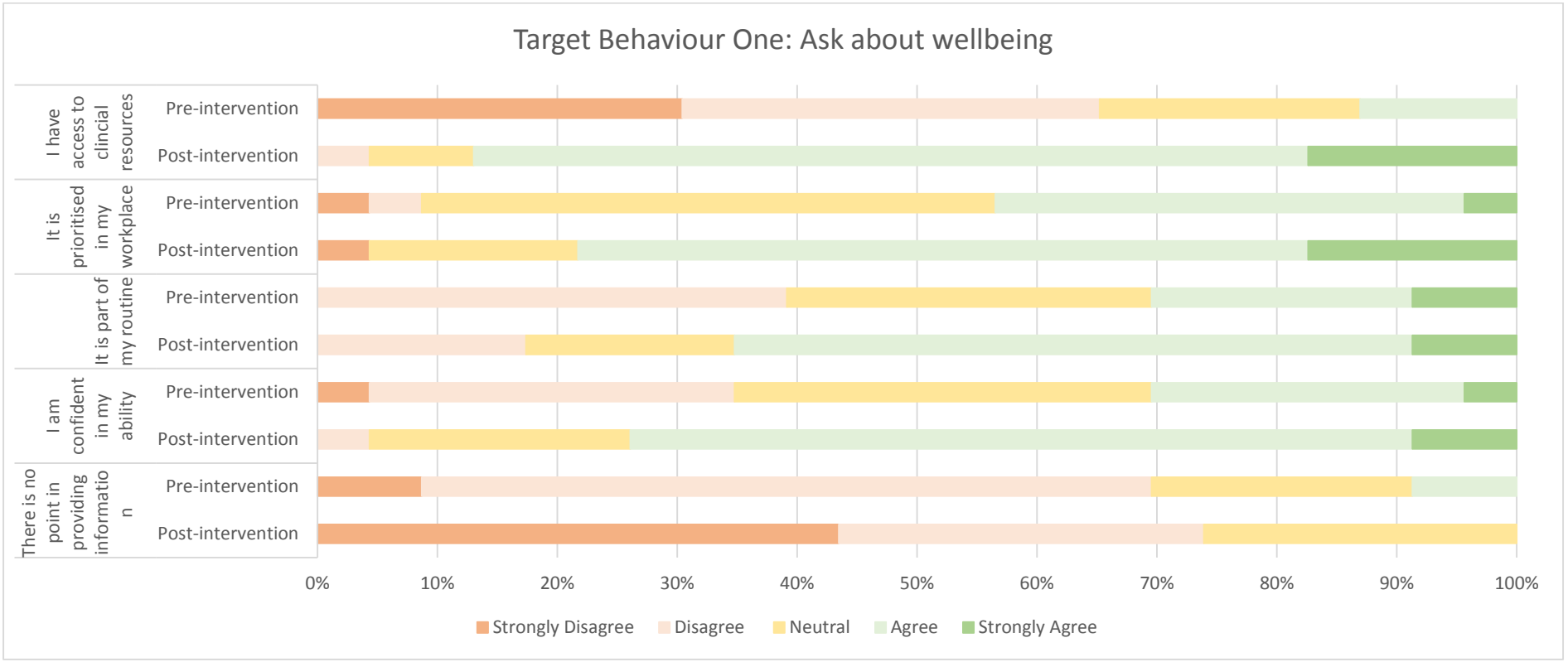
Wittchen, H. U., Mühlig, S., & Beesdo, K. (2022) Mental disorders in primary care. *Dialogues in Clinical Neuroscience, 5*:2, 115-128.

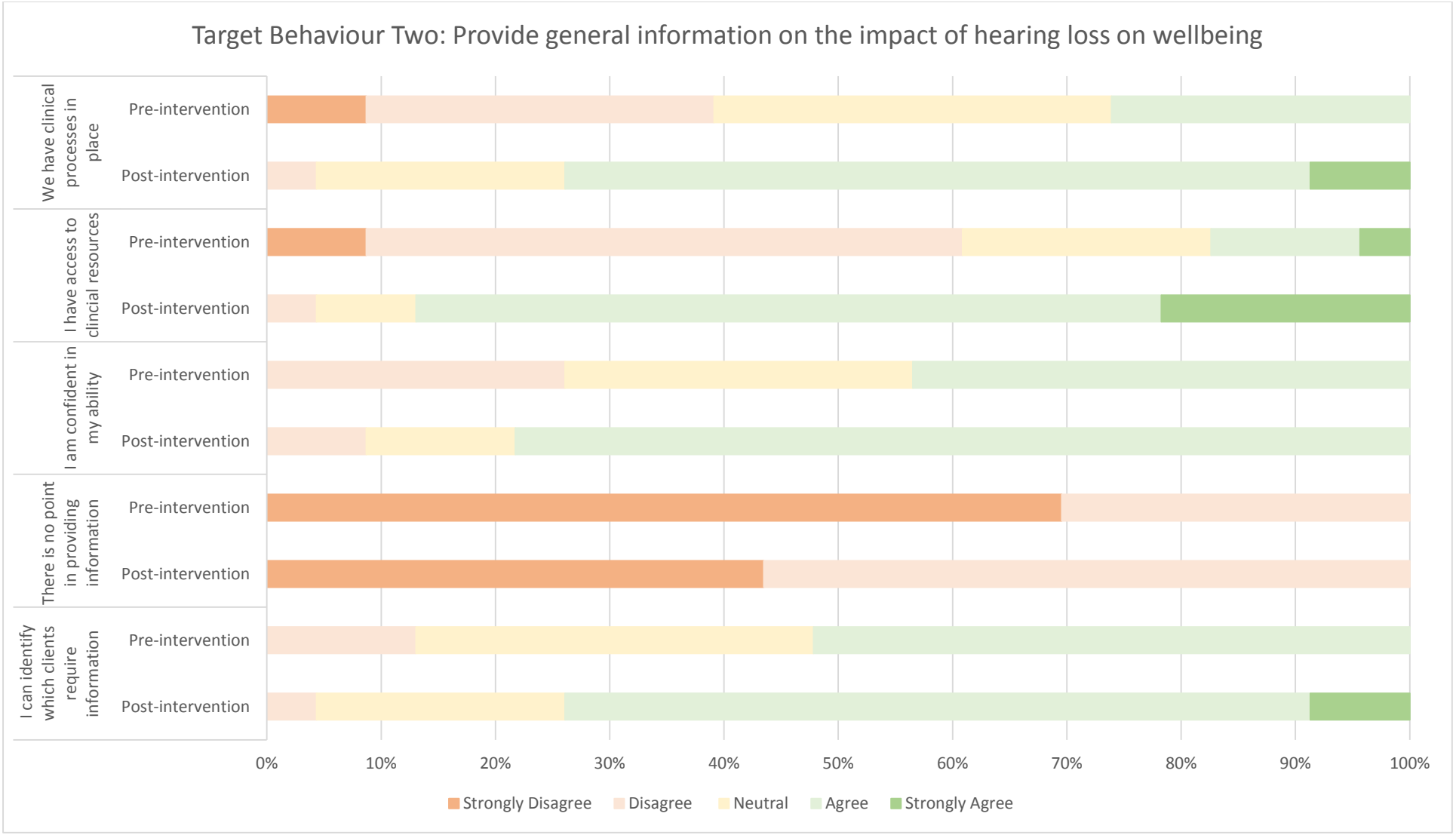
Figure 1. Weekly clinical diary template used to ascertain how frequently participants performed the three target behaviours each week.

	5 = all clients (100%)	**4 = most clients (70-99%)**	**3 = some clients (30-69%)**	**2 = few clients (1-29%)**	**1 = no clients (0%)**	**HHC Initials**
ASK about	all clients	most clients	some clients	few clients	no clients	
GENERAL information	all clients	most clients	some clients	few clients	no clients	
Management / Support / Referral information	all clients	most clients	some clients	few clients	no clients	

Figure 2

Figure 2. These graphs depict the self-reported barriers and facilitators that changed significantly between the pre- and post-intervention data collection points. Values for all significant and non-significant factors are provided in **Supplemental Data Six**.




Target Behaviour Two: Provide general information on the impact of hearing loss on wellbeing
We have clinical processes in place
I have access to clincial resources
I am confident in my ability
There is no point in providing information
I can identify which clients require information
Pre-intervention
Post-intervention
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

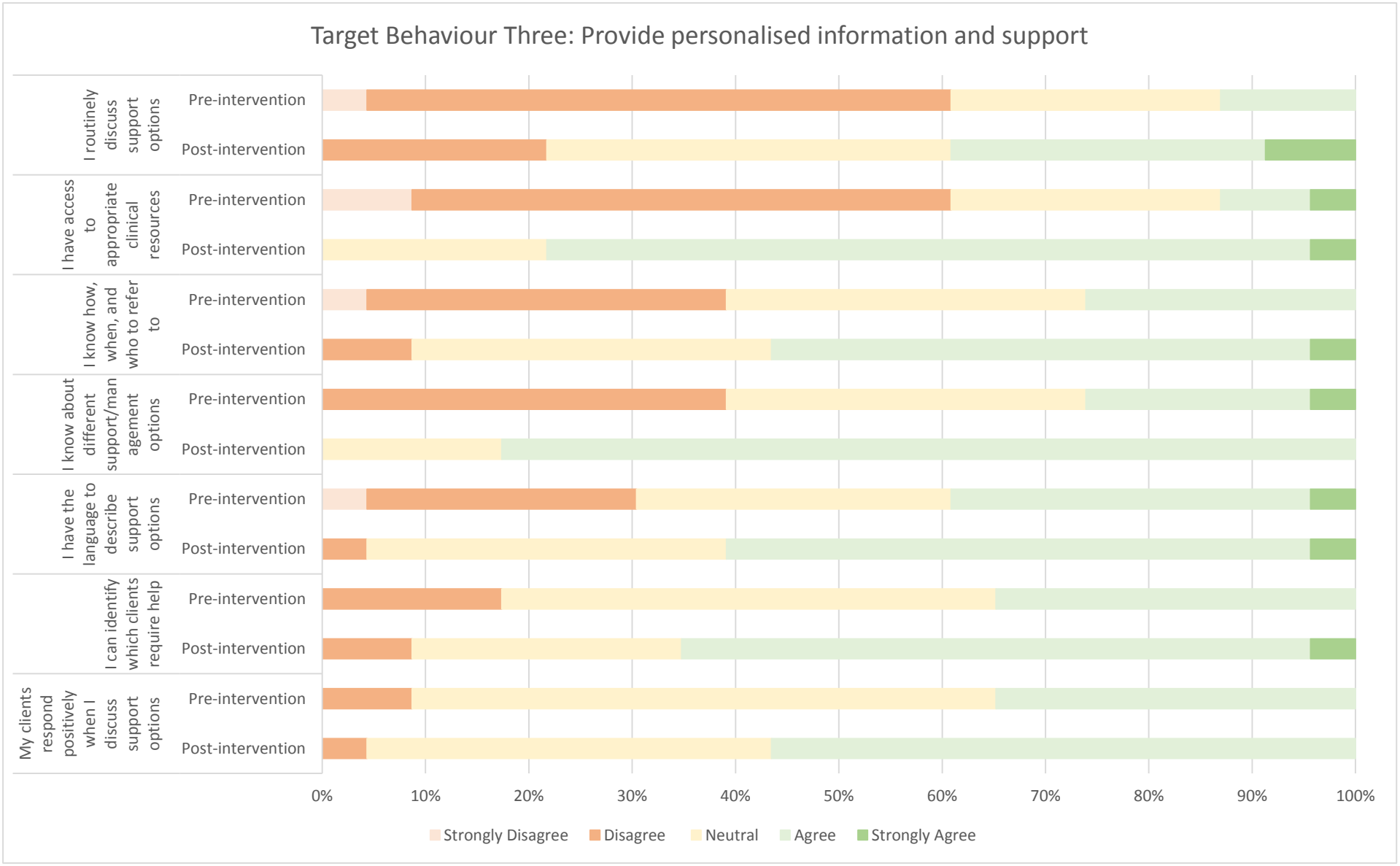

Target Behaviour Three: Provide personalised information and support
I routinely discuss support options
I have access to appropriate clinical resources
I know how, when, and who to refer to
I know about different support/management options
I have the language to describe support options
I can identify which clients require help
My clients respond positively when I discuss support options
Pre-intervention
Post-intervention
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree

Figure 3. Box Plots depicting changes in the frequency of target behaviors before and after implementation. Two of the target behaviors, Asking about wellbeing (W = 2.54, p = 0.011) and Providing personalised information and support (W = 2.34, p = 0.019), exhibited a significant increase in frequency following implementation, as depicted by the asterisks.

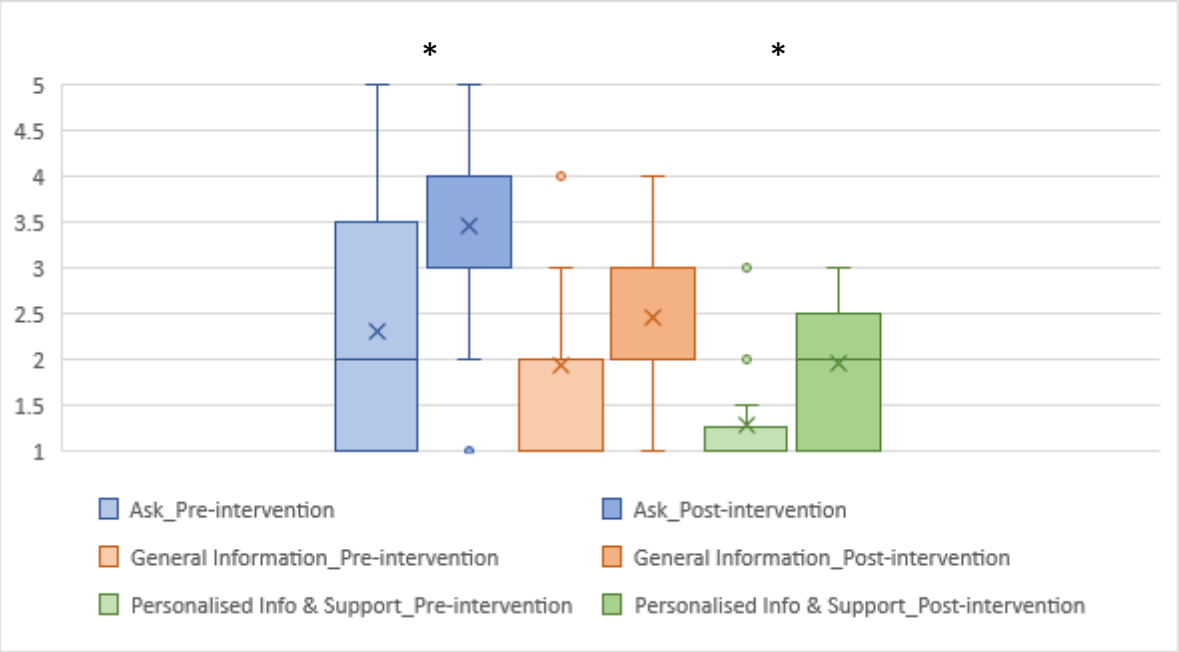


Table 1. The AIMER program's activities, characteristics, and outcomes were evaluated across the five domains of the RE-AIM framework.

RE-AIM domains*	**Evaluation indicators and Data sources**
Reach. "The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention, or program, and reasons why or why not."	**Observational records (Quantitative)** • Number (%) of HCCs invited for the implementation study • Number (%) of HCCs who were excluded from participating in the study by direction of managers; reasons for exclusion • Number (%) of HCCs who declined to participate; reasons for non-participation • Number (%) non-completion; reasons why HCCs dropped out of the study • Characteristics of participant *reach* included age, gender, years of clinical experience and eligibility determination. **Exit interviews (Qualitative)** • Exit interviews explored who was / wasn't involved in the study; whether anyone else should have been excluded / included; and which participants were more / less engaged in the project
Adoption. "The absolute number, proportion, and representativeness of settings and staff who are willing to initiate a program or approve a policy, and reasons why or why not."	**Observational records (Quantitative)** • % of HHCs who received the AIMER program **Exit interviews (Qualitative)** • Exit interviews explored barriers and facilitators to staff's participation in the program
Implementation. "At the setting level, implementation refers to how closely staff members follow the program that the developers provide. Importantly, this includes consistency of delivery as intended, adaptations made to the intervention or implementation strategies, and the time and cost of the program."	**Self-report survey (Quantitative)** • HHCs' barriers and facilitators for changed behaviours (based on the COM-B model of behaviour change) – this allowed for process evaluation to explore whether the intervention worked through the mechanisms originally intended (i.e. addressing the underlying behavioural determinants) • The extent to which HHCs - indicated to have gained enough knowledge to change the target behaviours - felt they were sufficiently supported by management - indicated to be motivated to carry out the three target behaviours in practice - used the clinical support resources within the AIMER program **Exit interviews (Qualitative)** • Participants' experiences with the training, resources and system changes implemented as part of the AIMER program

Maintenance. "The extent to which a program or policy becomes part of the routine organizational practices and policies."	**Self-report survey (Quantitative)** • The proportion of HHCs intending to continue using their newly acquired skills and resources • The organisational structures in place to support ongoing use of resources and to train new staff as they enter the organisation **Exit interviews (Qualitative)** • The extent to which the AIMER program had been institutionalised and incorporated into the staff's routine practices
Effectiveness. "The impact of an intervention on important outcomes. This includes potential negative effects, quality of life, and economic outcomes. Also, important to understand variability across subgroups (heterogeneity) and why."	**Self-report survey, Clinical diaries and Case file audits (Quantitative)** • Self-reported engagement with the intervention components and change in target behaviours following completion of the intervention program • The self-reported proportion of clients that HHCs asked about and provided information about social and emotional wellbeing before versus after intervention implementation • The frequency with which HCCs used social and emotional wellbeing terminology in their clinical case notes, client goals for rehabilitation, and GP reports **Exit interviews (Qualitative)** • Perceptions relating to the whole project was effective in terms of improving the frequency with which you ask about and provide information on mental wellbeing within the clinical setting; which elements were successful / unsuccessful; and whether particular staff or clinical sites may have experienced greater success, and why

* The authors of the RE-AIM framework provide a website to support researchers and practitioners in understanding and applying the framework (http://www.re-aim.org/). Definitions for each of the domains included in this table are as cited on the RE-AIM website.

Table 2. Comparing referral behaviours pre- and post-implementation (N = 23).

	Pre-implementation		Post-intervention		Difference in medians[a]
	Median	**Range**	**Median**	**Range**	
Recommended the client talk to their GP about the social/emotional concerns raised	2	1-5	2	1-8	$p = 0.394$
Included my concerns about the social/emotional concerns raised in my report to their GP	2	1-7	2	1-8	$p = 0.791$
Recommended the client talk to a psychologist/counsellor about the social/emotional concerns raised	2	1-4	2	1-8	$p = 0.244$
Wrote a referral letter to a psychologist/counsellor describing my concerns about the social/emotional concerns raised	1	1-4	1	1-8	$p = 0.776$

Note. A score of 1 = 0 clients, 2 = 1-5 clients, 3 = 6-10 clients, 4 = 11-15 clients, 5 = 16-20 clients, 6 = 21-25 clients, 7 = 26-30 clients, and 8 = >30 clients. [a]Wilcoxon matched-pair signed-rank test (2 samples). Asymptotic *p*-values are reported.

Supplemental Data One - Summary of the AIMER intervention program and implementation strategy, targeting the three behaviours: (i) asking clients about their mental wellbeing; (ii) providing general information on the mental wellbeing impacts of hearing loss; and (iii) providing personalised information on managing the mental wellbeing impacts of hearing loss.

	Intervention components	Implementation strategies
Arm 1. Training, Education, Enablement and Persuasion		
	We provided information on the Australian Scope of Practice guidelines, as well as the USA guidelines to emphasise that provision of wellbeing support is within current practice guidelines.	Training provided as part of the live in-person workshop. Self-directed learning facilitated through provision of workshop recordings made available after the workshop.
	Training & Education on the signs and symptoms of emotional and psychological distress in adults with hearing loss.	Training provided as part of the live in-person workshop. Self-directed learning facilitated through provision of workshop recordings made available after the workshop.
	Training & Education on how to ask about emotional wellbeing, with examples of language and sentence structure.	Training provided as part of the live in-person workshop. Self-directed learning facilitated through provision of workshop recordings made available after the workshop.
	We provided instruction on how to respond with empathy, and opportunity to practice responding to difficult statements put forward by clients.	Training provided as part of the live in-person workshop. Self-directed learning facilitated through provision of workshop recordings made available after the workshop.
	We developed a video recording of a local clinical psychologist describing various treatment/management options and pathways available to adults with hearing loss who experience emotional and psychological distress.	The videos were played during the workshop.
	We developed two videos recorded by (i) a local clinical psychologist and (ii) a local GP describing referral processes for psychological support in Australia.	The videos were played during the workshop.
	We developed referral report templates to provide structure and language to help HHCs report on mental wellbeing needs.	The electronic referral templates were embedded into the patient management system used so that they could be accessed in the same way as the other report templates used by the clinicians. As part of the in-person workshop. HHCs were shown how to use the newly developed report templates. The importance of aligning wording in reports with the exact wording used by clients was emphasised.
	Prior to the training, HHCs were asked to put forward phrases that their clients have said that they found difficult to respond to (e.g., "*All my friends are dead now*", "*I've got no one left*"). In partnership with clinical psychologists and	In the workshop, HHCs were given a set of flashcards in their workshop packs. The flashcards and how to use them to promote development of language skills for discussion mental wellbeing was discussed within the in-person

	HHCs, we developed a deck of training flashcards, each stating one of the "difficult" client statements followed by a few suggested responses that demonstrate empathy and understanding.	workshop. To facilitate self-directed learning, HHCs were encouraged to use the flashcards in their own time to continue practicing using language to discuss mental wellbeing.
	We developed a list of local referral partners, including identification of those who specialise in psychological support for people with hearing loss.	Audiologists were presented with the list of local referral partners during the workshop and shown how to locate the list from within the organisations document storage systems.
	We developed a persuasive resource wherein adults with hearing loss described their personal experiences of living with hearing loss, how this impacted on their mental wellbeing and how they wish their HHC had helped them to better understand and address these mental wellbeing impacts of hearing loss. (https://www.youtube.com/watch?v=zQbM2NPmU_Y)	The video was played within the workshop and HHCs were prompted to reflect as a group on how receptive clients are to these conversations within general clinical appointments. The recording was emailed to staff after the training session.
	We developed an educational resource wherein adults with hearing loss described how they cope with the mental wellbeing impacts of hearing loss and how grateful they were to receive this information and support from their HHC. (https://www.youtube.com/watch?v=rmu4e4hNlKs)	The video was played within the workshop and HHCs were prompted to reflect as a group on how receptive clients are to these conversations within general clinical appointments. The recording was emailed to staff after the training session.
	To address HHCs' insecurities regarding how clients would react to being given information on mental wellbeing, we developed a video of clients describing positive stories of how their HHCs helped them to gain an understanding of how wellbeing is impacted by hearing loss, how they are interested to learn more about psychological treatment/management options during audiological appointments, and that management strategies are effective	The video was played within the workshop and HHCs were prompted to reflect as a group on how receptive clients are to these conversations within general clinical appointments. The recording was emailed to staff after the training session.
	We developed a video interviewing three local GPs on their views regarding the role of the HHC in detecting the mental wellbeing impacts of hearing loss, and how GPs and HHCs can work together to provide multidisciplinary care. Within these videos the GPs explicitly stated how they would be pleased to accept referrals from HHCs regarding the mental wellbeing needs of their clients.	The videos were played during the workshop.
	We developed a video interviewing a local clinical psychologist describing the many ways that psychologists can support the mental wellbeing needs of adults with hearing loss.	The video was played during the workshop.
	The Chief Operating Officer and clinical managers demonstrated their support for focussing clinical time on clients' mental wellbeing needs.	The Chief Operating Officer and clinical managers attended the training workshop and stated their support for the research program and the benefits of addressing mental wellbeing needs within routine audiological care.

Arm 2. Environmental Restructuring		
	Clinical Resources: • Client factsheets: describing the social impacts of hearing loss, the emotional impacts of hearing loss, and how hearing loss can impact relationships • Help-seeking lists: Information sheets providing lists on where to get help (e.g., lists of local psychologists, socialization opportunities, mental wellbeing websites) • A brochure on help-seeking pathways for mental wellbeing • Discussion tools to promote and normalise discussion about the mental wellbeing impacts of hearing loss and support shared decision making for mental wellbeing help-seeking • Changes to the customer management system, including: (i) Additional questions within the clinical case notes section; (ii) Modifications to the client rehabilitation goals table; (iii) Changes to the reports and referrals templates; and (iv) Ability to more easily print out factsheets and client rehabilitation goals • Flash cards to support self-directed learning about appropriate language when asking about and discussing mental wellbeing • Activity scheduling form to facilitate encouragement of social re-engagement behaviours • A client educational video to be routinely sent to clients to help them think about the mental wellbeing impacts of their hearing loss prior to their first appointment at the clinic	Within the workshop, HHCs were provided with hard copies of the new clinical resources and shown how to locate electronic copies within the organisations document storage systems. They were shown why and how the resources were developed, and provided with demonstration of how to use them within routine clinical practice. To promote self-directed learning, the workshop recording was made available after the training session, including links to the clinical resources and directions on where to locate digital copies. Audiologists were encouraged to practice using the resources with each other and patients.
	To improve remembering and habit forming for asking clients about their mental wellbeing, we added a question on wellbeing to the electronic client case history form and in the clinical case notes (1st appointment and annual recall appointment templates).	Within the workshop, we showed HHCs where the changes had been made, and demonstrated how to use the new questions within the regular work flow.

	We modified the client goals template to promote inclusion of goals relating to mental wellbeing impacts of hearing loss. To embed the new goal setting template within the HHCs' workflow, we altered the customer management software used by the clinic staff to set up an automated printing system. After the HHC completes the goals within the data management system, they can now easily print the goals to assist discussion with the client.	Within the workshop, we showed HHCs where the changes had been made, and demonstrated how to use the new questions within the regular work flow.
	Senior HHCs with advanced skills in providing mental wellbeing support were identified as mental wellbeing champions.	We advised the HHCs as to who the champions were and how to contact them should they need support. The members of the research team with dual research and clinical expertise also made themselves available to answer any question throughout the duration of the project.
Arm 3. Modelling		
	After the in-person training day, senior and well-respected HHCs (including the mental wellbeing champions) from the partner clinic were engaged to record themselves describing which of the new clinical resources were their favourite to use and why, as well as providing a demonstration of how they use the resource (s) within their routine workflow.	Videos were distributed to HHCs in the months following the in-person workshop.

Supplemental Data Two - Participant characteristics and participation

Employment status	Age	Gender	Years of Experience	Area of speciality	AIMER intervention received	Pre-implementation Survey	Post-implementation Survey	Clinical Diary	Clinical Notes Audit	Rehab Goals Audit	GP Reports Audit	Exit Interviews
Employed throughout entire project	26	Male	1	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	**y**
Employed throughout entire project	32	Female	6	Hearing aids, Balance and vestibular, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	26	Female	4	Hearing aids, Tinnitus, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	y
Employed throughout entire project	40	Male	11	Hearing aids, Tinnitus, Adult Rehab	Researchers: via recordings	y	y	y	y	y	y	
Employed throughout entire project	26	Female	1	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	28	Female	6	Implantable devices, Hearing aids, Tinnitus, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	

Employed throughout entire project	55	Female	23	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	36	Female	8	Hearing aids, Paediatric assessment, CAPD, Tinnitus, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	27	Female	3	Hearing aids, Tinnitus, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	y
Employed throughout entire project	61	Female	36	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	46	Female	20	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y	y	y	y	
Employed throughout entire project	30	Female	6	Hearing aids, Adult Rehab	Researchers: in-person	y	y		y	y	y	
Employed throughout entire project	35	Female	8	Hearing aids, Adult Rehab	Researchers: in-person	y	y		y	y	y	
Employed throughout entire project	26	Female	3	Hearing aids, Adult Rehab	Researchers: in-person	y	y		y	y	y	
Employed throughout entire project	26	Female	0.6	Hearing aids, Adult Rehab	Researchers: in-person	y	y		y	y	y	

Employed throughout entire project	26	Female	3	Implantable devices, Hearing aids, Adult Rehab	Researchers: in-person	y	y		y	y	y	
Employed throughout entire project	35	Female	10	Hearing aids, Adult Rehab	Researchers: in-person	y	y				y	y
Employed throughout entire project	24	Female	0	Hearing aids, Adult Rehab	Researchers: in-person	y	y	y				
Employed throughout entire project	52	Female	30	Implantable devices, Adult Rehab	Researchers: in-person	y	y	y				y
Employed throughout entire project	38	Male	15	Hearing aids	Researchers: in-person	y	y					
Employed throughout entire project	26	Female	3	Hearing aids, Adult Rehab	Researchers: in-person	y	y					
Employed throughout entire project	45	Female	22	Implantable devices, Adult Rehab	Researchers: in-person	y	y					
Employed throughout entire project	30	Female	9	Hearing aids, Adult Rehab	Researchers: in-person	y	y					y
Employed throughout entire project	40	Female	17	Hearing aids, Adult Rehab	Researchers: in-person	y			y	y	y	
Employed throughout entire project	51	Female	27	Hearing aids, Adult Rehab	Researchers: in-person	y			y	y	y	

Employed throughout entire project	36	Male	9	Hearing aids	Researchers: in-person	y			y	y	y	
Employed throughout entire project	29	Female	6	Implantable devices, Paediatric assessment	Researchers: in-person	y						
Employed throughout entire project	28	Female	5.5	Hearing aids, Balance and vestibular, Adult Rehab	Researchers: in-person	y			y	y	y	
Employed throughout entire project	42	Female	20	Implantable devices	Researchers: in-person		y		y			
Employed throughout entire project	58	Male	26	Hearing aids, Adult Rehab	Researchers: in-person				y	y	y	
Employed throughout entire project	40	Female	18	Hearing aids, Adult Rehab	Researchers: in-person				y		y	
Withdrew - Maternity leave	36	Female	13	Hearing aids, Adult Rehab	Not received	y						
Withdrew - Maternity leave	30	Female	7	Hearing aids, Adult Rehab	Not received	y						
Withdrew - Maternity leave	29	Female	6	Implantable devices, Hearing aids	Not received	y						
Withdrew - Maternity leave	26	Female	1	Hearing aids, Tinnitus,	Not received	y						

				Adult Rehab								
Withdrew - Resigned	30	Male	3	Hearing aids, Tinnitus, Adult Rehab	Not received	y						
Withdrew - Resigned	30	Female	8	Hearing aids, Balance and vestibular, Adult Rehab	Not received	y						
Withdrew - Resigned	36	Female	10	Hearing aids, Adult Rehab	Not received	y						
Newly appointed	23	Male	0.5	Hearing aids, Adult Rehab	Internal trainer							**Y**
Newly appointed	44	Female	22	Hearing aids, Adult Rehab	Internal trainer							
Newly appointed	23	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							
Newly appointed		Female	0.5	Hearing aids, Adult Rehab	Internal trainer							
Newly appointed	23	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							
Newly appointed	23	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							

Newly appointed	25	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							
Newly appointed	24	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							y
Newly appointed	23	Female	0.5	Hearing aids, Adult Rehab	Internal trainer							

Supplemental Data Three – Exit interview prompts, informed by the RE-AIM framework.

Reach

- If you think about this research project as a whole, do you think that all of the **right people** were involved?
  - Did some people miss out? Why should they be included?
  - Were there some staff that didn't need to have been involved? Who and why?
- Where some staff more eager to **participate** than others? Why?
- Were some staff more **engaged in the project** than others?
  - What affected staffs' engagement with the project?
  - Are there any ongoing barriers to engagement with the intervention components?
  - Was the intervention program appropriate for the audiological setting? Easy to understand and follow?

Adoption

- What likely influenced staff's **participation** in the program?
  - Did staff find the program beneficial? Enjoyable? Worthwhile?
- Was **adoption** of the new skills or the new clinical resources easier for certain **staff**? Or for staff working in certain **clinics**?
  - Were the clinical support resources (feasible) appropriate / acceptable / useable?
  - What changes are required to improve their use?
- **[For managers]** Why did you agree to implement the AIMER program across your clinics?
  - What would you say to other clinics who may be considering implementing the AIMER?

Implementation

- How did you find the **training** sessions delivered within the AIMER program?
- Thinking about the different **clinical support resources** (the factsheets, case notes, COSI goals, wellbeing brochure, etc.), which resources have you used the most? Why?
  - Which resources have you used the least? Why?
  - What affected you and your colleagues' ability to use the resources?
  - Were the clinical support resources (feasible) appropriate / acceptable / useable?
  - What changes are required to improve their use?

- Are people using the clinical resources in the way that they were **intended** (e.g., printing the factsheets through the system)? Or are staff using them differently?
    - Why do you think that is so?
- Which resources do you think people are **less likely to use**? Why?
    - What are the underlying barriers preventing people from using the resources and how might we address them?
- What **system changes** were required to support integration of the new resources into the existing clinical practices?
    - Were these changes effective?
    - What else do we need to change? (social/physical environment)

Maintenance

- To what extent have the AIMER program components become **embedded** into your routine workflow?
    - Do you use the resources routinely?
    - Are new staff trained in how to use the resources?
- How will the intervention be **sustained** within the clinical setting in the long run?
    - What modifications were made to support long-term use of the intervention, if any?
- Is there anything **limiting the ongoing use** AIMER elements within the clinic?

Effectiveness

- To what extent do you think the whole project was effective in terms of improving the **frequency** with which you ask about and provide information on psychosocial / mental wellbeing within the clinical setting?
- What was it about the intervention program that made it **successful / unsuccessful**?
- Which elements were most **unsuccessful / successful**?
- Do you think all of the participating **staff** had the same amount of success? Did success vary across **sites**?
    - Why might this be the case?

Supplemental Data File (.doc, .tif, pdf, etc.)

Supplemental Data Four. Three different sets of clinical file data were extracted: (i) clinical case notes; (ii) client rehabilitation goals; and (iii) GP reports. The number of client entries which contained at least one of the key terms for each time point (pre- and post-implementation) were tabulated, significant changes are presented below for each of the three types of data.

Table (i) Clinical case notes

Clinician ID	# of Case Note entries		# Entries with Mental Health Terms		% with Mental Health Terms	
	Pre (Mar-May)	***Post (Oct-Dec)***	***Pre (Mar-May)***	***Post (Oct-Dec)***	***Pre (Mar-May)***	***Post (Oct-Dec)***
1	260	219	84	127	32.31	57.99
2	57	245	19	147	33.33	60
3	235	218	100	134	42.55	61.47
4	231	216	30	96	12.99	44.44
5	233	236	95	172	40.77	72.88
6	253	255	59	98	23.32	38.43
7	201	263	36	67	17.91	25.48
8	89	275	14	148	15.73	53.82
9	241	253	67	134	27.8	52.96
10	115	105	16	56	13.91	53.33
11	258	243	90	119	34.88	48.97
12	59	79	19	30	32.2	37.97
13	206	247	34	158	16.5	63.97
14	275	301	116	193	42.18	64.12
15	202	213	86	86	42.57	40.38

16	197	187	51	82	25.89	43.85
17	210	227	64	134	30.48	59.03
24	220	276	62	147	28.18	53.26
25	148	130	91	100	61.49	76.92
26	64	53	9	40	14.06	75.47
28	189	161	71	97	37.57	60.25
30	276	251	37	101	13.41	40.24
31	102	126	39	73	38.24	57.94

Table (ii) Client rehabilitation goals

Clinician ID	**# of Rehabilitation Goal entries**		**# entries with Mental Health Terms**		**% with Mental Health Terms**	
	Pre (Mar-May)	***Post (Oct-Dec)***	***Pre (Mar-May)***	***Post (Oct-Dec)***	***Pre (Mar-May)***	***Post (Oct-Dec)***
1	58	92	25	36	43.1	39.13
2	32	27	11	10	34.38	37.04
3	59	79	0	6	0	7.59
4	99	88	12	6	12.12	6.82
5	84	102	52	35	61.9	34.31
6	41	54	31	36	75.61	66.67
7	129	134	25	44	19.38	32.84
8	62	63	29	27	46.77	42.86

9	60	68	9	8	15	11.76
10	39	35	17	8	43.59	22.86
11	41	40	10	7	24.39	17.5
12	16	41	4	8	25	19.51
13	20	95	0	5	0	5.26
14	71	39	15	17	21.13	43.59
15	27	58	6	15	22.22	25.86
16	20	13	9	5	45	38.46
24	51	50	22	23	43.14	46
25	24	31	10	5	41.67	16.13
26	20	20	0	0	0	0
28	52	39	10	4	19.23	10.26
30	75	57	31	17	41.33	29.82

Table (iii) GP reports

Clinician ID	**# of GP report letters**		**# Letters with MH Terms**		**% of GP Letters with Mental Health Terms**	
	Pre	***Post***	***Pre***	***Post***	***Pre***	***Post***
1	86	78	2	7	2.33	8.97
2	46	35	2	1	4.35	2.86
3	90	84	5	3	5.56	3.57
4	101	86	3	3	2.97	3.49
5	86	82	0	2	0	2.44

6	103	112	4	28	3.88	25
7	53	72	2	3	3.77	4.17
8	70	63	9	14	12.86	22.22
9	68	74	10	15	14.71	20.27
10	42	29	1	2	2.38	6.9
11	58	51	0	2	0	3.92
12	40	38	0	1	0	2.63
13	14	53	0	3	0	5.66
14	79	66	3	3	3.79	4.55
15	26	52	1	3	3.85	5.77
16	42	22	3	0	7.14	0
17	21	3	1	0	4.76	0
24	40	39	0	0	0	0
25	54	31	2	2	3.7	6.45
26	21	39	0	1	0	2.56
28	58	66	2	8	3.45	12.12
30	44	41	0	1	0	2.44
31	30	14	1	0	3.33	0

Supplemental Data Five - Detailed information about the qualitative sub-study methods, reported in accordance with the Standards for Reporting Qualitative Research (SRQR) checklist (O'Brien et al., 2014).

S4. Purpose or research question

The aim of this exploratory study was to determine whether the AIMER intervention achieved changes in hearing healthcare clinicians' (HHCs) behaviours relating to three core behaviours (i) asking about, (ii) providing general information regarding, and (iii) providing personalised information on managing psychosocial wellbeing within adult audiology services; and to evaluate the implementation protocol. Both quantitative and qualitative methods were used to collect and analyse information about the program's activities, characteristics, and outcomes across the five domains of the RE-AIM framework.

S5. Qualitative approach and research paradigm

This report focuses on the qualitative analysis of exit interviews conducted to explore participants views on the Reach, Effectiveness, Adoption, Implementation and Maintenance of the AIMER intervention after implementation within their workplace. Semi-structured individual and group interviews were conducted, involving eight participants purposefully selected to ensure that the sample included those who participated in the initial implementation of the intervention (training conducted by the research team), as well as new staff trained by the clinic's internal trainer during the maintenance phase of the study.

This research was conducted within the pragmatism paradigm, a deconstructive paradigm that advocates the use of mixed methods in research, and focuses on 'what works' as the truth regarding the research questions under investigation" (Tashakkori & Teddlie, 2003). This paradigm allows the researcher to select methodological approaches that are best suited to

Employment status	Age	Gender	Years of Experience	Area of speciality	AIMER intervention received

Employed throughout entire project	26	Male	1	Hearing aids, Adult Rehab	Researchers: in-person

S6. Researcher characteristics and reflexivity

Qualitative data collection and analysis were performed by Dr Rebecca Bennett (RB), a clinical and research audiologist at the Ear Science Institute Australia. RB has 18 years of clinical audiology experience, 9 years of research experience and extensive experience conducting qualitative interviews and focus groups with audiology clients and clinicians. RB educational history include a Bachelor of Science (Honours in Molecular Genetics), Masters in Clinical Audiology, Masters in Business, Graduate Diploma in counselling, PhD, and short courses in qualitative research and statistical analysis. RB was part of the research team that developed the AIMER intervention. She was not involved in the collection or analysis of the quantitative data from evaluation study and was not aware of the results of the quantitative data when she performed or analysed the qualitative data. RB has worked at Ear Science for 13 years and is well known to many of the audiologists working there; however, she had no close professional relationship with the HHCs that participated in the exit interviews.

Reflexivity was maintained by RB through data collection and analysis through (i) jotting notes about participants' comments and researcher's thoughts during the interview (researcher diary), (ii) conducting data analysis shortly after the interviews (2-4 weeks), (iii) discussing and challenging the interpretations, assumptions, and conclusions drawn from the data and written report with the research team, and (iv) purposefully reflecting on the research process (mentored by co-author Dr Carly Meyer – expert in Behaviour Change Research).

S7. Context

A sub-sample of eight HHCs participated in 1 hour semi-structured exit interviews (either individual or in pairs) to explore their experiences of implementation of the AIMER program, inline with the RE-AIM framework for implementation evaluation, and to inform the AIMER intervention's mechanisms of impact, and barriers and facilitators to implementation. Interviews were conducted online via Microsoft Teams. RB was situated in her home office and the participants were all situated in their work office; all using work computers and

their work login to Teams. All sessions were video recorded and the recordings sent for transcription of the audio content only. Participants were paired if the time preference suited them, and we ensured that none of the younger/newer participants were paired with senior or supervisory staff to ensure power balance between pairs.

S8. Sampling strategy

The participants were a sub-sample recruited from the full set of HHCs that participated in the AIMER implementation program. All participants were employed by the partner organisation (Ear Science) and had some interaction with the AIMER program. Six participants had been employed for the full duration of the project and thus had received training on the AIMER as delivered by the research team (one of which was a member of the internal clinical training team), and two had commenced employment after the AIMER had been launched and thus received training on the AIMER by the internal clinical staff ("real-world").

Potential participants were identified by the management team as available for interview (had space in their clinical diaries to meet with the researchers within the following 2 months). They were contacted via email and invited to participate in an exit interview. All those contacted agreed. They were provided with a detailed Study Information Sheet and were given the opportunity to speak to a researcher before consenting to participate. Participants received a $30 gift card as a token of appreciation for their time.

Maximum variation sampling, a type of purposeful sampling, was used (Suri, 2011). The aim of this sampling strategy was to recruit participants who varied in terms of characteristics that could affect the data collected. Specifically, participants who varied in terms of age, gender, years of clinical experience, clinical speciality (adult rehabilitation, cochlear implantation, tinnitus), and whether they had received AIMER training as part of the research implementation or in the "real world" setting.

Participant	**Employment status**	**Age**	**Gender**	**Years of Experience**	**Area of speciality**	**AIMER intervention received by**

A	Employed throughout entire project	26	Male	1	Hearing aids, Adult Rehab	Researchers
B	Employed throughout entire project	26	Female	4	Hearing aids, Tinnitus, Adult Rehab	Researchers
C	Employed throughout entire project	27	Female	3	Hearing aids, Tinnitus, Adult Rehab	Researchers
D	Employed throughout entire project	35	Female	10	Hearing aids, Adult Rehab	Researchers
E	Employed throughout entire project	52	Female	30	Implantable devices, Adult Rehab	Researchers
F	Employed throughout entire project	30	Female	9	Hearing aids, Adult Rehab	Researchers
G	Newly appointed	23	Male	0.5	Hearing aids, Adult Rehab	Internal trainer
H	Newly appointed	24	Female	0.5	Hearing aids, Adult Rehab	Internal trainer

Sampling ceased when both maximum variation and saturation had been achieved. Saturation is the point at which no new relevant patterns or salient information are identified. The research team determined that saturation had been reached by reviewing the field notes and transcripts and by discussing the initial data analysis results.

S9. Ethical issues pertaining to human subjects

Ethical approval for this study was granted by the Human Research Ethics Office of The University of Western Australia (RA/4/20/5873). The data collected were treated confidentially and stored securely in password protected computers on the Ear Science Institute Australia's secure network.

S10. Data collection methods

This sub-study utilized semi-structured interview, using the RE-AIM framework to guide interview question generation, but also allowing for a flexible interview schedule with potential follow-up/probing questions facilitating a deeper dive in to participants thoughts and experiences. Individual and paired interviews were as they can uncover detailed information about individuals' experiences, and more convenient than group interviews for the participants in terms of scheduling. Onine interviews were conducted as these were most convenient for the participants and they were all confident with the platform used (Teams) as they use it regularly at work.

S11. Data collection instruments and technologies

Semi-structured interview schedules were developed based on the RE-AIM framework for implementation evaluation (Supplemental Data Two). The schedule was drafted by RB, reviewed by CM, piloted on a research assistant involved in the study by RB and then re-reviewed by RE. Though the core content of schedule remained consistent across the interviews, the flexibility of the semi-structured interview approach allowed for: interviewees to lead the direction of the interview (address items in the order that was most comfortable for them); the exploration of unanticipated responses; and the in-depth discussion of complex issues. Interviewees received a copy of the core questions (not the probe questions) the day prior to the interview as an attachment to the session confirmation email. The research team anticipated that the schedule would be refined over

time (e.g. wording of questions altered to improve clarity, additional probes included), however no refinements were deemed necessary. The interviews were recorded using Microsoft teams. RB made paper-and-pen field notes after each interview. Participants were invited to email RB with any further thoughts following the interviews, but none did.

S12. Units of study

Eight participants took part in semi-structured interview; four were individual interviews and two interviews were conducted in pairs (demographic information provided in Table 1 above). Each interview lasted for an average of 37 minutes (range 26 to 52 minutes).

S13. Data processing

Audio files were extracted from the video recordings and transcribed verbatim by professional transcribers (waywithwords.com). RB reviewed the transcripts and the video files to check the quality of the transcription and no issues with accuracy were detected. Unique identification codes were assigned to each participant (e.g. P1). QSR International's NVivo 11 qualitative data analysis software was used to support the organisation and analysis of the data.

S14. Data analysis

Content analysis, in line with Graneheim and Lundman 20, was used to analyse the data through an integrated approach. First, we used a deductive approach, with the RE-AIM framework providing the initial coding structure. Data could be coded into multiple RE-AIM dimensions. Second, we used an inductive approach to identify emerging codes and concepts within each dimension, wherein (i) meaning units within the data were identified; (ii) meaning units were coded by grouping together those most closely related; and (iii) coded meaning units were grouped into categories. Peer debriefing was used to improve the rigour of the analysis, with one author (RJB) completing the initial analysis and one other member of the researcher team (RE) crosschecking. Any disagreements were discussed until consensus was reached. Emerging codes and concepts in each dimension were discussed with research team members (CM, RE & RB) during formal meetings, and all discrepancies were resolved by consensus.

S15. Techniques to enhance trustworthiness

Lincoln and Guba's (1985) four criteria for establishing trustworthiness: credibility, confirmability, dependability and transferability were employed to establish rigour in this study. Credibility was ensured by the use of more than one method to study the same phenomenon, that is, searching for evidence from multiple sources of information, including via quantitative and qualitative approaches. Confirmability was achieved both by methodological triangulation and confirmation of the findings by the participants. Triangulation was achieved through gathering multiple sources of data, including self-report survey, interview and file audits, and exploring themes common across all data sources. Dependability was achieved through ensuring that the research process was consistent and standardized throughout the study, in so that focus group prompts and procedures were standard across each interview session. Dependability was also maintained through use of inter-coder reliability checks, which involved having RE independently check the coding completed by RJB to establish the consistency and reliability of the data analysis process. Transferability refers to whether the findings of the study are applicable to other groups of people or contexts beyond the specific group of participants and setting that were studied. In this case, transferability was considered by using maximum variation sampling to select interview participants and by continuing to recruit until data saturation was achieved. However, the limitations of working with a single clinical partner and the potential impact on transferability of the results are outlined in the limitations section of the manuscript. Finally, to enhance trustworthiness, the research team acted as a 'peer reviewers' during the data analysis process. This involved CM and RE meeting with RJB on several occasions to review the data, challenge RJ's interpretations and assumptions, and assist with refining the themes. As part of preparing the final written report, RJB, CM and RE met to discuss the relationship between the qualitative and quantitative findings.

Results / Findings

S16. Synthesis and interpretation

Semi-structured interview audio recordings were transcribed verbatim by a professional transcription service and analyzed in Nvivo. Content analysis, in line with Graneheim and Lundman (2004), was used to analyze the data through an integrated approach. First, we used a deductive approach, with the RE-AIM framework providing the initial coding

structure. Data could be coded into multiple RE-AIM dimensions. Second, we used an inductive approach to identify emerging codes and concepts within each dimension, wherein (i) meaning units within the data were identified; (ii) meaning units were coded by grouping together those most closely related; and (iii) coded meaning units were grouped into categories. Peer debriefing was used to improve the rigor of the analysis, with one author (RJB) completing the initial analysis and one other member of the researcher team (RE) crosschecking 20% of the coding. Any disagreements were discussed until consensus was reached. Emerging codes and concepts in each dimension were discussed with research team members (CM, RE & RJB) during formal meetings, and all discrepancies were resolved by consensus. Verification strategies used throughout the research process to ensure data integrity included cross-checking of coding, ensuring methodologic coherence and appropriate sampling.

S17. Links to empirical data

Interview data were coded against the five domains of the RE-AIM framework, with inductive content analysis then used to identify themes within each domain. A summary of the results are as follows:

Domain	Themes within the domain
Reach	• Participants agreed with the notion of including all clinical staff in the project • Many commented that it would have been advantageous to also include administration and managerial staff
Effectiveness	• Certain elements of the program were utilized more than others, with participants describing how they would pick and choose the resources that best matched their personal workflow/approach • Even the experienced HHCs felt they benefited from the program • One less experienced HHC felt that they lacked the confidence even after completing the AIMER program • Some staff felt limited by time factors, whereas others felt that the new skills helped them to better manage their time within appointments • A couple of participants described how they were more inclined to use the resources that were required more frequently, although they were also grateful for the resources that were designed for use in the more severe but infrequent cases
Adoption	• Clinic location had no impact on adoption as all of the client records, workflow procedures and clinical resources were electronic • Time was a barrier to adoption due to the time pressures on the busier clinics

	• Interviewees generally described high rates of adoption for the AIMER clinical resources developed; however, some speculated that adoption was lower for older clinicians and implant specialists (who also tended to be older, more experienced clinicians) • Some staff suggested that the newer, and often younger, staff would find it easier to adopt these new practices because of their age and fewer years of ingrained habits • Some suggested that personal disposition played a role in adoption
Implementation	• Some interview participants described how they modified use of the resources to better suit their personal way of conducting appointments • Interview participants noted that some elements of the AIMER program were not implemented as successfully as others, largely due to the implementation process not being sufficiently detailed or not reinforced with follow-up training • Barriers to use of intervention materials persisted, such as opportunity and confidence • Some participants described missing out on receiving certain elements of training or resources which impacted successful implementation • Participants described how there was a lot to take in from the start, but that they also appreciated having all of the elements delivered together • Generally positive feedback regarding the implementation process, specifically appreciating the involvement of staff in the ideating and development of the resources and implementation program development

	• They described the implementation elements as being most successful when they were embedded into routine processes, and that this resulted in an organizational shift
Maintenance	• Maintenance of the AIMER program appeared successful and interview participants were optimistic that the AIMER program and its benefits would continue beyond the life of the research study • Some of the issues detected with the implementation had flow on effects on maintenance, such as access to clinical resources

References

Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative research journal*, *11*(2), 63-75.

Tashakkori, A., & Teddlie, C. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. *Handbook of mixed methods in social & behavioral research*, 3-50.

Supplemental Data Six. Participants' perceived barriers and facilitators (based on the COM-B model of behaviour change) to enacting the three target behaviours within their routine practice. While n = 35 participants completed the pre-implementation survey, n = 24 participants completed the post-implementation survey, and only n = 23 completed both.

Data provided by participants who completed both pre- and post-intervention surveys (n=23) and whether their scores changes significantly between these two time points (Wilcoxon Signed Ranks Test) are presented in Tables 1-3.

Data provided by all participants are presented in Tables 4-6.

Table 1. Self-reported barriers and facilitators to why participants may or may not **ASK their clients** about how their hearing loss is impacting on their social and emotional wellbeing; a comparison of pre- and post-interventions survey results providing counts (number of participants who responded with each response option) and p-values for whether the change in responses pre- to post-intervention was significant (total n=23).

	Pre-intervention Scores					Post-intervention Scores					
Factors (Barriers and Facilitators)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	***p*-value**
I know how to ask my clients whether they are experiencing any social or emotional distress relating to their hearing loss	0	5	5	12	1	0	1	4	15	3	0.05562
I am too busy or in a hurry to think about asking my clients how they are coping socially and emotionally	5	9	4	4	1	4	6	4	8	1	0.07521
I know why it is important to ask my clients whether they are experiencing any social or emotional distress relating to their hearing loss	0	1	2	12	8	0	0	0	13	10	0.1658
I have access to the clinical resources (e.g. client brochures or discussion aids) to ask my clients about their social/emotional distress	7	8	5	3	0	0	1	2	16	4	**0.00005**

I have enough time in appointments to ask my clients about whether they are experiencing social and/or emotional distress on account of their hearing loss	1	12	6	4	0	2	9	7	5	0	0.6873
My clients respond well when I ask about their social and emotional well-being in relation to the hearing loss	0	1	14	8	0	0	2	9	12	0	0.3506
Asking about social and emotional well-being in relation to hearing loss is a priority at my workplace	1	1	11	9	1	1	0	4	14	4	**0.02772**
My colleagues/manager are supportive of me asking my clients whether they are experiencing social or emotional distress relating to their hearing loss	0	1	2	11	9	0	0	1	11	11	0.2117
Asking clients about whether they are experiencing social and/or emotional distress on account of their hearing loss is worthwhile as it can lead to improved client well-being	0	0	0	14	9	0	0	0	14	9	1
I tend not to ask my clients about their social/emotional well-being as there is nothing that I can do to help them improve it	2	14	5	2	0	10	7	6	0	0	**0.02364**
I am confident in my ability to ask my clients about their social and emotional well-being	1	7	8	6	1	0	1	5	15	2	**0.002365**
As an audiologist/audiometrist it is my duty to ask my clients whether they are experiencing social or emotional distress relating to their hearing loss	0	1	5	12	5	0	0	5	11	7	0.2755
I routinely ask my clients about their social/emotional well-being	0	9	7	5	2	0	4	4	13	2	**0.02843**
I tend to avoid conversations about social and emotional distress	2	12	7	2	0	6	11	4	2	0	0.1235
I tend to feel uncomfortable when clients describe their social and emotional distress	5	8	5	5	0	4	14	4	1	0	0.1177

I worry about what others might think if I ask my clients whether they are experiencing social and/or emotional distress on account of their hearing loss	8	13	0	2	0	10	11	2	0	0	0.4541
I enjoy discussing social and emotional well-being with my clients	1	6	9	5	2	1	2	14	5	1	0.6738
Discussing COSI goals with a client triggers me to ask about their social and emotional well-being in relation to the hearing loss	0	4	7	9	3	0	1	10	9	3	0.4637

Table 2. Self-reported barriers and facilitators to why participants may or may not **provide their clients with general information** on the social and emotional impacts of hearing loss; a comparison of pre- and post-interventions survey results providing counts (number of participants who responded with each response option) and p-values for whether the change in responses pre- to post-intervention was significant (total n=23).

	Pre-intervention Scores					**Post-intervention Scores**					
Factors (Barriers and Facilitators)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	***p*-value**
I am aware of the social and emotional impacts of hearing loss	0	0	0	12	11	0	1	0	9	13	0.8244
I can easily identify those of my clients who require information about the social and emotional impacts of hearing loss, and those who do not	0	3	8	12	0	0	1	5	15	2	**0.02459**
We have clinical processes in place that help me provide my clients with information about the social and emotional impacts of hearing loss	2	7	8	6	0	0	1	5	15	2	**0.000931**
I have access to sufficient resources to inform my clients of the social and emotional impacts of hearing loss in my workplace (e.g. discussion aids, client brochures)	2	12	5	3	1	0	1	2	15	5	**0.000114**

I have enough time to provide my clients with information about the social and emotional impacts of hearing loss	1	8	9	5	0	4	7	8	4	0	0.2661
My clients want me to provide them with information about the social and emotional impacts of hearing loss	0	3	12	7	1	0	3	12	8	0	0.8514
Providing my clients with information about the social and emotional impacts of hearing loss is a priority at my workplace	1	2	12	6	2	0	2	1	16	4	0.10345
As an audiologist/audiometrist, it is my duty to provide my clients with information about the social and emotional impacts of hearing loss	0	0	6	10	7	0	0	4	13	6	0.7897
My colleagues/manager are supportive of me providing my clients with information about the social and emotional impacts of hearing loss	0	1	2	15	5	0	0	1	14	8	0.1446
Providing my clients with information about the social and emotional impacts of hearing loss will lead to improved outcomes for my clients well-being	0	0	2	13	8	0	0	2	14	7	0.7897
I am confident in my ability to provide my clients with information about the social and emotional impacts of hearing loss	0	6	7	10	0	0	2	3	18	0	**0.009178**
Providing my clients with information about the social and emotional impacts of hearing loss is not financially worthwhile for our clinic	6	9	6	1	1	3	14	1	4	1	0.6016
There is no point in providing my clients with information about the social and emotional impacts of hearing loss as nothing can be done to help these people	16	7	0	0	0	10	13	0	0	0	**0.04108**
I just want to focus on the hearing loss and not talk about social and emotional well-being	10	12	1	0	0	8	13	1	1	0	0.2273

The benefits of providing my clients with information about the social and emotional impacts of hearing loss outweigh the time and effort required to discuss them	2	5	6	8	2	1	4	4	11	3	0.3186
I feel uncomfortable providing my clients with information about the social and emotional impacts of hearing loss	2	11	7	3	0	3	15	2	3	0	0.3088
Discussing COSI goals triggers me to also discuss the social and emotional impacts of hearing loss	0	4	6	11	2	0	2	7	11	3	0.4154
I am in a habit of providing my clients with information about the social and emotional impacts of hearing loss	0	13	5	4	1	1	5	8	8	1	0.0626

Table 3. Self-reported barriers and facilitators to why participants may or may not **provide their clients with personalized information on management options** for the social and/or emotional distress they may be experiencing in relation to the hearing loss; a comparison of pre- and post-interventions survey results providing counts (number of participants who responded with each response option) and p-values for whether the change in responses pre- to post-intervention was significant (total n=23).

	Pre-intervention Scores					**Post-intervention Scores**					
Factors (Barriers and Facilitators)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	***p*-value**
I know about different support/management options that could help people address their social and emotional distress relating to hearing loss	0	9	8	5	1	0	0	4	19	0	**0.000865**
I can easily identify those of my clients who require information on the various social and emotional support options, and those who do not	0	4	11	8	0	0	2	6	14	1	**0.02768**
I have the language skills to describe support options to help my clients manage their social/emotional distress relating to hearing loss	1	6	7	8	1	0	1	8	13	1	**0.04357**

I understand the benefits of providing my clients with information on the various social and emotional support options	0	1	3	15	4	0	0	0	17	6	0.0593
I know how, when, and who to refer my clients for professional mental health support	1	8	8	6	0	0	2	8	12	1	**0.00927**
I have access to appropriate informational resources on social and emotional support options to use with my clients (e.g. discussion aids)	2	12	6	2	1	0	0	5	17	1	**0.000169**
I have enough time in appointments to provide my clients with information on social and emotional support options	1	8	10	4	0	3	7	10	3	0	0.3555
My clients respond positively when I discuss social and emotional support options with them	0	2	13	8	0	0	1	9	13	0	**0.04108**
My colleagues/manager are supportive of me providing my clients with information on options to help manage social/emotional distress relating to the hearing loss	0	1	4	11	7	0	0	1	16	6	0.3075
Providing intervention options to help clients manage social/emotional distress relating to the hearing loss is a priority at my workplace	0	3	12	4	4	0	1	6	13	3	0.0806
The types of social/emotional interventions that an audiologist/audiometrist can provide are unlikely to result in any real benefit	4	13	6	0	0	3	14	5	1	0	0.6646
Discussing hearing management options with a client triggers me to also discuss options that help with managing social/emotional distress relating to hearing loss	1	5	8	9	0	0	2	8	12	1	0.07101
Providing information on the various social and emotional support options to adults with hearing loss will result in improved outcomes for my clients	0	1	1	14	7	0	0	3	14	6	0.8244

As an audiologist/audiometrist it is my duty to assist my clients to better manage their social/emotional distress relating to hearing loss	0	2	1	14	6	0	1	4	13	5	0.6655
I often forget to provide my clients with information on social and emotional support options	2	5	7	8	1	0	9	7	6	1	0.6016
I worry about what others might think if I provide my clients with information on options	7	12	1	3	0	9	10	4	0	0	0.2869
I tend to feel uncomfortable when providing my clients with information on social and emotional support options	3	10	7	3	0	3	13	5	2	0	0.513
When at work, I just want to focus on the hearing interventions and not social and emotional support options	4	13	4	1	1	5	12	4	2	0	0.6745
I routinely discuss social and emotional support options with my clients	1	13	6	3	0	0	5	9	7	2	**0.003344**

Table 4. Self-reported barriers and facilitators to why participants may or may not **ASK their clients** about how their hearing loss is impacting on their social and emotional well-being; a comparison of pre- and post-interventions survey results (n=35).

	Pre-intervention survey results										Post-intervention survey results									
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree		Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
As an audiologist/audiometrist it is my duty to ask my clients whether they are experiencing social or	0	0	2	5.71	9	25.71	19	54.29	5	14.29	0	0	0	0	6	25	11	45.83	7	29.17

emotional distress relating to their hearing loss																			
Asking about social and emotional well-being in relation to hearing loss is a priority at my workplace	1	2.86	6	17.14	15	42.86	12	34.29	1	2.86	1	4.17	0	0	5	20.83	14	58.33	4	16.67
Asking clients about whether they are experiencing social and/or emotional distress on account of their hearing loss is worthwhile as it can lead to improved client well-being	0	0	0	0	0	0	23	65.71	12	34.29	0	0	0	0	0	0	15	62.5	9	37.5
Discussing COSI goals with a client triggers me to ask about their social and emotional well-being in relation to the hearing loss	1	2.86	9	25.71	10	28.57	11	31.43	4	11.43	0	0	1	4.17	11	45.83	9	37.5	3	12.5
I am confident in my ability to ask my clients about their social and emotional well-being	1	2.86	12	34.29	12	34.29	9	25.71	1	2.86	0	0	1	4.17	5	20.83	16	66.67	2	8.33
I am too busy or in a hurry to think about asking my clients how they are coping socially and emotionally	6	17.14	14	40	7	20	7	20	1	2.86	4	16.67	7	29.17	4	16.67	8	33.33	1	4.17
I enjoy discussing social and emotional well-being with my clients	1	2.86	10	28.57	12	34.29	9	25.71	3	8.57	1	4.17	2	8.33	15	62.5	5	20.83	1	4.17
I have access to the clinical resources (e.g. client brochures or discussion aids) to ask my clients about their social/emotional distress	11	31.43	13	37.14	8	22.86	3	8.57	0	0	0	0	1	4.17	2	8.33	17	70.83	4	16.67
I have enough time in appointments to ask my clients about whether they are experiencing social and/or	2	5.71	18	51.43	8	22.86	6	17.14	1	2.86	2	8.33	9	37.5	7	29.17	6	25	0	0

emotional distress on account of their hearing loss																			
I know how to ask my clients whether they are experiencing any social or emotional distress relating to their hearing loss	0	0	8	22.86	8	22.86	18	51.43	1	2.86	0	0	1	4.17	4	16.67	16	66.67	3	12.5
I know why it is important to ask my clients whether they are experiencing any social or emotional distress relating to their hearing loss	0	0	1	2.86	3	8.57	21	60	10	28.57	0	0	0	0	0	0	14	58.33	10	41.67
I routinely ask my clients about their social/emotional well-being	1	2.86	13	37.14	10	28.57	9	25.71	2	5.71	0	0	4	16.67	4	16.67	14	58.33	2	8.33
I tend to avoid conversations about social and emotional distress	3	8.57	18	51.43	10	28.57	4	11.43	0	0	6	25	12	50	4	16.67	2	8.33	0	0
I tend to feel uncomfortable when clients describe their social and emotional distress	6	17.14	14	40	9	25.71	6	17.14	0	0	4	16.67	15	62.5	4	16.67	1	4.17	0	0
I worry about what others might think if I ask my clients whether they are experiencing social and/or emotional distress on account of their hearing loss	12	34.29	18	51.43	2	5.71	3	8.57	0	0	10	41.67	12	50	2	8.33	0	0	0	0
My clients respond well when I ask about their social and emotional well-being in relation to the hearing loss	1	2.86	2	5.71	22	62.86	10	28.57	0	0	0	0	2	8.33	10	41.67	12	50	0	0
My colleagues/manager are supportive of me asking my clients whether they are experiencing social or emotional distress relating to their hearing loss	0	0	1	2.86	7	20	18	51.43	9	25.71	0	0	0	0	1	4.17	12	50	11	45.83

Table 5. Self-reported barriers and facilitators to why participants may or may not **provide their clients with general information** on the social and emotional impacts of hearing loss; a comparison of pre- and post-interventions survey results (n=35).

	Pre-intervention survey results										Post-intervention survey results									
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree		Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
I am aware of the social and emotional impacts of hearing loss	0	0	0	0	0	0	21	60	14	40	0	0	1	4.17	0	0	10	41.67	13	54.17
I can easily identify those of my clients who require information about the social and emotional impacts of hearing loss, and those who do not	0	0	5	14.29	16	45.71	14	40	0	0	0	0	1	4.17	5	20.83	16	66.67	2	8.33
We have clinical processes in place that help me provide my clients with information about the social and emotional impacts of hearing loss	3	8.57	11	31.43	12	34.29	9	25.71	0	0	0	0	1	4.17	5	20.83	16	66.67	2	8.33
I have access to sufficient resources to inform my clients of the social and emotional impacts of hearing loss in my workplace (e.g. discussion aids, client brochures)	5	14.29	17	48.57	8	22.86	4	11.43	1	2.86	0	0	1	4.17	2	8.33	16	66.67	5	20.83
I have enough time to provide my clients with information about the social and emotional impacts of hearing loss	1	2.86	14	40	12	34.29	8	22.86	0	0	4	16.67	7	29.17	9	37.5	4	16.67	0	0
My clients want me to provide them with information about the social and emotional impacts of hearing loss	1	2.86	6	17.14	19	54.29	8	22.86	1	2.86	0	0	3	12.5	13	54.17	8	33.33	0	0
Providing my clients with information about the social and emotional impacts of hearing loss is a priority at my workplace	1	2.86	4	11.43	19	54.29	9	25.71	2	5.71	0	0	2	8.33	2	8.33	16	66.67	4	16.67
As an audiologist/audiometrist, it is my duty to provide my clients with	0	0	0	0	11	31.43	17	48.57	7	20	0	0	0	0	5	20.83	13	54.17	6	25

information about the social and emotional impacts of hearing loss																				
My colleagues/manager are supportive of me providing my clients with information about the social and emotional impacts of hearing loss	0	0	1	2.86	7	20	22	62.86	5	14.29	0	0	1	4.17	1	4.17	14	58.33	8	33.33
Providing my clients with information about the social and emotional impacts of hearing loss will lead to improved outcomes for my clients well-being	0	0	0	0	4	11.43	22	62.86	9	25.71	0	0	0	0	3	12.5	14	58.33	7	29.17
I am confident in my ability to provide my clients with information about the social and emotional impacts of hearing loss	0	0	8	22.86	10	28.57	17	48.57	0	0	0	0	2	8.33	3	12.5	19	79.17	0	0
Providing my clients with information about the social and emotional impacts of hearing loss is not financially worthwhile for our clinic	7	20	16	45.71	9	25.71	2	5.71	1	2.86	3	12.5	14	58.33	2	8.33	4	16.67	1	4.17
I just want to focus on the hearing loss and not talk about social and emotional well-being	12	34.29	20	57.14	2	5.71	1	2.86	0	0	8	33.33	14	58.33	1	4.17	1	4.17	0	0
The benefits of providing my clients with information about the social and emotional impacts of hearing loss outweigh the time and effort required to discuss them	2	5.71	7	20	11	31.43	13	37.14	2	5.71	1	4.17	4	16.67	4	16.67	12	50	3	12.5
I feel uncomfortable providing my clients with information about the social and emotional impacts of hearing loss	3	8.57	15	42.86	13	37.14	4	11.43	0	0	3	12.5	16	66.67	2	8.33	3	12.5	0	0
Discussing COSI* goals triggers me to also discuss the social and emotional impacts of hearing loss	1	2.86	6	17.14	11	31.43	15	42.86	2	5.71	0	0	2	8.33	7	29.17	12	50	3	12.5
I am in a habit of providing my clients with information about the social and emotional impacts of hearing loss	2	5.71	16	45.71	11	31.43	5	14.29	1	2.86	1	4.17	5	20.83	9	37.5	8	33.33	1	4.17

* = Client rehabilitation goals

Table 6. Self-reported barriers and facilitators to why participants may or may not **provide their clients with personalised information on management options** for the social and/or emotional distress they may be experiencing in relation to the hearing loss; a comparison of pre- and post-interventions survey results (n=35).

	Pre-intervention survey results										Post-intervention survey results									
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree		Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
I know about different support/management options that could help people address their social and emotional distress relating to hearing loss	1	2.86	14	40	10	28.57	9	25.71	1	2.86	0	0	1	4.17	4	16.67	19	79.17	0	0
I can easily identify those of my clients who require information on the various social and emotional support options, and those who do not	0	0	8	22.86	17	48.57	10	28.57	0	0	0	0	2	8.33	7	29.17	14	58.33	1	4.17
I have the language skills to describe support options to help my clients manage their social/emotional distress relating to hearing loss	1	2.86	6	17.14	17	48.57	9	25.71	2	5.71	0	0	1	4.17	9	37.5	13	54.17	1	4.17
I understand the benefits of providing my clients with information on the various social and emotional support options	0	0	1	2.86	5	14.29	25	71.43	4	11.43	0	0	0	0	1	4.17	17	70.83	6	25
I know how, when, and who to refer my clients for professional mental health support	4	11.43	11	31.43	12	34.29	8	22.86	0	0	0	0	2	8.33	9	37.5	12	50	1	4.17

I have access to appropriate informational resources on social and emotional support options to use with my clients (e.g. discussion aids)	3	8.57	20	57.14	9	25.71	2	5.71	1	2.86	0	0	0	0	6	25	17	70.83	1	4.17
I have enough time in appointments to provide my clients with information on social and emotional support options	1	2.86	14	40	14	40	6	17.14	0	0	3	12.5	7	29.17	11	45.83	3	12.5	0	0
My clients respond positively when I discuss social and emotional support options with them	0	0	3	8.57	21	60	11	31.43	0	0	0	0	1	4.17	10	41.67	13	54.17	0	0
My colleagues/manager are supportive of me providing my clients with information on options to help manage social/emotional distress relating to the hearing loss	0	0	2	5.71	8	22.86	18	51.43	7	20	0	0	0	0	2	8.33	16	66.67	6	25
Providing intervention options to help clients manage social/emotional distress relating to the hearing loss is a priority at my workplace	0	0	8	22.86	17	48.57	6	17.14	4	11.43	0	0	1	4.17	7	29.17	13	54.17	3	12.5
The types of social/emotional interventions that an audiologist/audiometrist can provide are unlikely to result in any real benefit	6	17.14	18	51.43	10	28.57	0	0	1	2.86	3	12.5	14	58.33	6	25	1	4.17	0	0
Discussing hearing management options with a client triggers me to also discuss options that help with managing social/emotional distress relating to hearing loss	1	2.86	7	20	13	37.14	14	40	0	0	0	0	2	8.33	9	37.5	12	50	1	4.17
Providing information on the various social and emotional support options to adults with hearing loss will result in improved outcomes for my clients	0	0	2	5.71	5	14.29	21	60	7	20	0	0	0	0	4	16.67	14	58.33	6	25

As an audiologist/audiometrist it is my duty to assist my clients to better manage their social/emotional distress relating to hearing loss	0	0	3	8.57	5	14.29	21	60	6	17.14	0	0	1	4.17	5	20.83	13	54.17	5	20.83
I often forget to provide my clients with information on social and emotional support options	2	5.71	7	20	10	28.57	15	42.86	1	2.86	0	0	9	37.5	8	33.33	6	25	1	4.17
I worry about what others might think if I provide my clients with information on options	10	28.57	19	54.29	3	8.57	3	8.57	0	0	9	37.5	10	41.67	5	20.83	0	0	0	0
I tend to feel uncomfortable when providing my clients with information on social and emotional support options	4	11.43	16	45.71	11	31.43	4	11.43	0	0	3	12.5	13	54.17	6	25	2	8.33	0	0
When at work, I just want to focus on the hearing interventions and not social and emotional support options	5	14.29	20	57.14	6	17.14	3	8.57	1	2.86	5	20.83	12	50	5	20.83	2	8.33	0	0
I routinely discuss social and emotional support options with my clients	3	8.57	18	51.43	9	25.71	5	14.29	0	0	0	0	5	20.83	10	41.67	7	29.17	2	8.33