Title of the study:

Helping patients to make decisions about managing their hearing loss that are right for them.

Assessing a patient-centred online audiological rehabilitation tool to empower patients to manage their hearing loss successfully.

Introduction:

This research study was led by David Maidment at the National Institute for Health Research (NIHR) Nottingham Biomedical Research Centre (BRC), United Kingdom. Other members of the research team included: Eithne Heffernan, Daljit Mehton, Melanie Ferguson, and Melanie Gregory.

Hearing aids are the primary clinical management strategy for adults with hearing loss. However, the majority of adults living with hearing loss that would benefit from using hearing aids do not access them. Failing to manage hearing loss can result in continued communication difficulties, social withdrawal and reduced quality of life for both the individual and their frequent communication partner(s).

Understanding patients' motivations as to why it is important for patients to seek help for their hearing loss may be one approach that can improve hearing aid adoption and use. To this end, the Ida Institute has developed Motivation Tools (Line, Box, and Circle), which are specifically designed to guide the audiologist to identify where the patient lies within the rehabilitation process so that they can better support, engage and coach patients during appointments. The Line Motivation Tool has also been incorporated into the 'Why Improve My Hearing' Telecare Tool. This Tool is intended to be used online by the patient prior to their appointment and asks, 'How important is it for you to improve your hearing?' Encouraging patients to use the Tool to reflect on their individual needs before they come to clinic is intended to better prepare the patient ahead of time to work with the audiologist on matters that are important and relevant to them.

In this study, we examined the effectiveness of the Ida Institute's 'Why Improve My Hearing' Telecare Tool when used prior to the first audiology appointment in the publically-funded UK National Health Service (NHS).

Specific objectives were as follows:

I. To assess the impact of the Tool on patient-reported outcomes (quantitative).
II. To explore the views of both patients and audiologists toward the Tool when used in the audiological rehabilitation process (qualitative).

Method:

All adult patients attending an initial hearing assessment appointment at Nottingham Audiology Service (NAS), Nottingham University Hospitals NHS Trust between November 2017 and June 2018 were invited to take part in the research. A total of 58 patients were recruited, and were randomly allocated to one of two arms: (i) standard care only (n=29), or (ii) standard care plus the 'Why Improve My Hearing' Telecare Tool, which was completed before the patient attended their first hearing assessment appointment (n=29). See Figure 1 for a schematic representation of the study design.

We adopted a mixed-methods approach, which is considered advantageous in the evaluation of patient-centred care, providing a more complete, in-depth understanding of the patient experiences:

I. **Quantitative**. Patient-reported outcome measures of healthcare readiness, self-efficacy for hearing aids, activity limitations and participation restrictions were completed before (baseline) and after patients' attended their initial hearing assessment appointment, as well as 10-12 weeks post-fitting for patients who opted to receive hearing aids.

II. **Qualitative.** A sub-sample of participants (n=10) who completed the Tool were invited to take part in individual, semi-structured interviews. Five audiologists, drawn from a group of 10 audiologists who were trained to discuss the completed Tool with patients in clinic, were also interviewed. Data collection ceased when an examination of field notes and codes demonstrated that data saturation (i.e. the point at which no new salient information is uncovered) had been reached. All interviews were audio-recoded and transcribed verbatim. The data are currently being analysed in accordance with an established inductive thematic analysis procedure (Braun and Clarke 2006).

Key Findings:

Both study objectives were achieved:

I. Patient knowledge, skills, and confidence for self-management of their general health (i.e. readiness to take action) were measured using the patient-reported Short Form Patient Activation Measure (PAM). When assessed before and after patients' initial hearing assessment, PAM scores did not differ for participants in the standard care only group. By comparison, scores significantly improved for patients' who completed the 'Why Improve My Hearing' Telecare Tool prior to their hearing assessment appointment. All other outcomes did not differ statistically. This suggests that the 'Why Improve My Hearing' Telecare Tool improved patient's readiness to take action to manage their health.

   Whether the 'Why Improve My Hearing' Telecare Tool confers longer-term benefits, as measured 10-12 weeks post hearing aid fitting, was also evaluated. While activity limitations and participation restrictions reduced for both groups relative to baseline and post-hearing aid fitting, outcomes did not differ statistically between groups. It could be argued that the 'Why Improve My Hearing' Telecare Tool does not result in longer-term patient benefits. Alternatively, the self-report measures employed may have lacked sufficient sensitivity to changes in functioning (i.e. responsiveness) resulting from the Tool. Our qualitative findings suggest that the 'Why Improve My Hearing' Telecare Tool was beneficial to both patients and audiologists (see below).

II. Our preliminary qualitative results confirmed that the majority of participants reported that the Tool was beneficial, helping patients to better prepare for their audiology appointments. In addition, the Tool had the potential to support patients who were in denial or are unaware of the severity of their hearing loss. For example, a patient said: "*My perception [was] "I've not got a hearing problem."...[the Tool] was very helpful in making me analyse the different situations that would probably affect me."*

   The majority of participants stated that it was useful for patients and audiologists to discuss the Tool during their appointment. In particular, discussing the tool improved the flow and efficiency of the appointment. One patient said: "*This focused my mind and probably meant that the audiologist got a quicker response from me…I've thought about it because…I've had to write it down*". Furthermore, utilising the tool enhanced the patient-centeredness of the appointment and helped

patients to articulate their experiences. An audiologist reported that: "*When…I ask them about the scenarios that they are struggling in...sometimes they just go blank. Then you have to…probe. But...you kind of influence the answers…But with this tool…[the patients] come preset with the scenarios…and they can actually say everything that they want to say*".

The Tool also had the potential to influence outcomes, such as hearing aid uptake and satisfaction, but this influence may be indirect. According to one audiologist: "*In terms of the outcome, I don't think the Tool influences that entirely. It might influence the process…and the way they think, which might in turn affect the outcome…it just gives the patients a different perspective…"*

Conclusion:

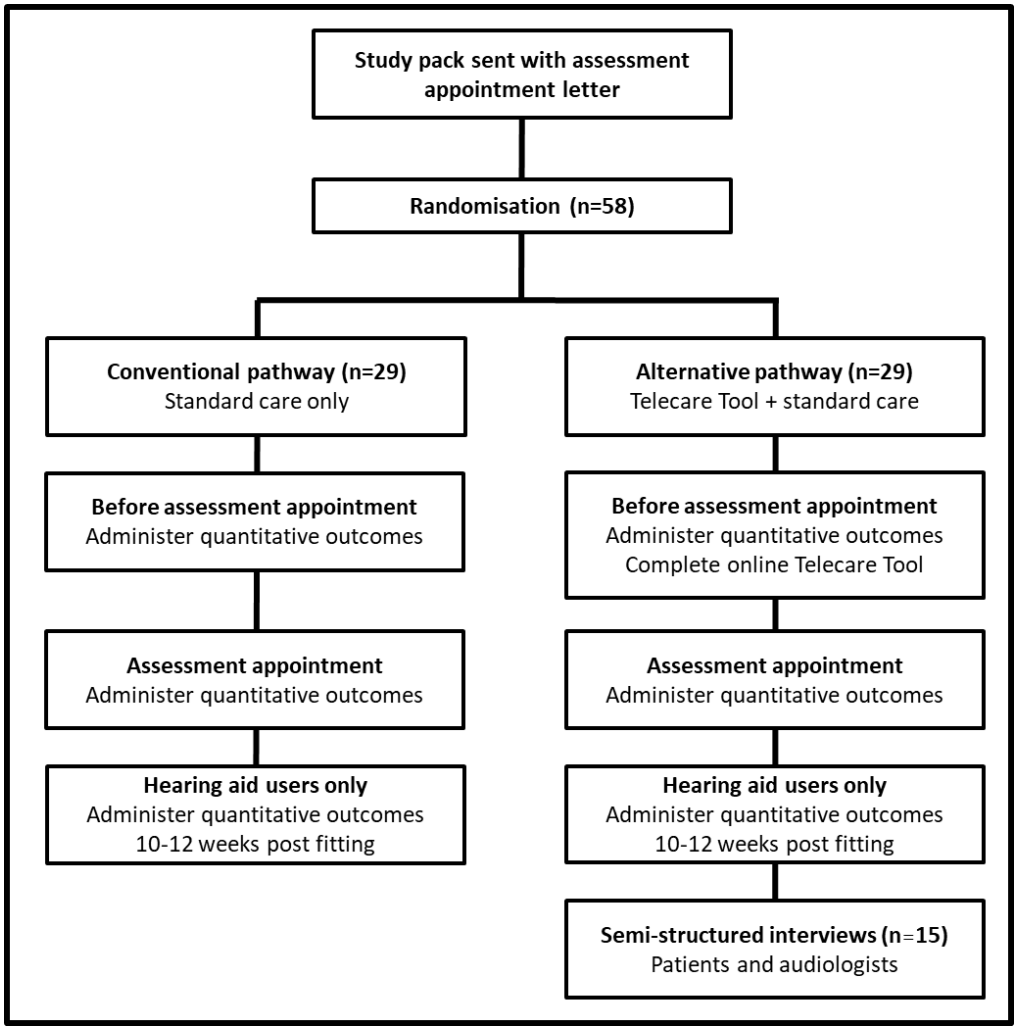
This study is the first application of the Ida Institute's 'Why Improve My Hearing' Telecare Tool in the UK NHS, involving patients who have not yet attended clinic for the first time.

Overall, we found that the 'Why Improve My Hearing' Telecare Tool effectively improved patient's readiness to take action to manage their hearing loss when completed prior to the hearing assessment appointment. Furthermore, both patients and audiologists reported that the Tool better prepared patients for their first appointment, enhanced patient-centeredness, and had the potential to improve outcomes.

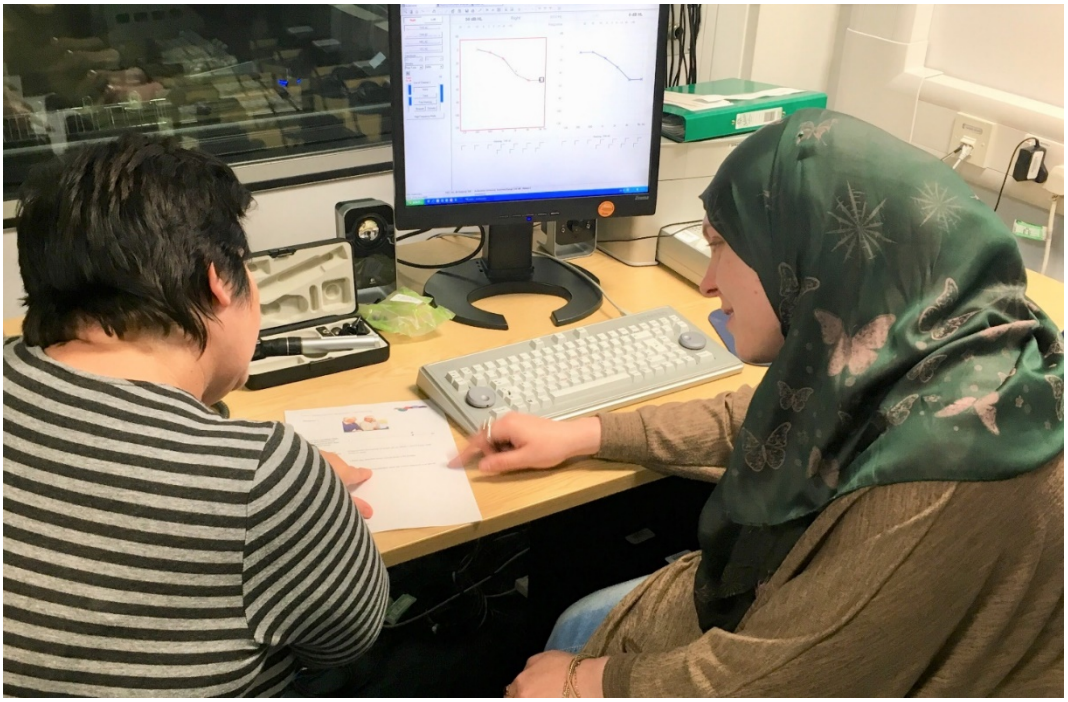
Taken together, this study suggests that the Telecare Tool makes a positive impact on people living with hearing loss and audiologists. Therefore, the 'Why Improve My Hearing' Telecare Tool could be integrated into the hearing rehabilitation process to facilitate holistic, patient-centred strategies to benefit patients with hearing loss

ADDITIONAL INFORMATION

Figure 1. Schematic representation of the study design.



Demonstration of the ‘Why Improve My Hearing’ Telecare Tool being discussed.



About the author(s)

David Maidment BSc, MSc, PhD

David is a Research Fellow within the Mild to Moderate Hearing Loss team at the NIHR Nottingham BRC. His research interests include alternative listening devices and new service delivery models to improve access and uptake of hearing loss interventions. He as expertise in quantitative and qualitative methods, as well as health behaviour change.

Eithne Heffernan BA, MSc, PhD

Eithne is a Research Fellow at the NIHR Nottingham BRC. Her research interests include mild-moderate hearing loss, social isolation, outcome measurement, and health psychology. She has expertise in mixed methods research and psychometrics.

Daljit Mehton

Daljit worked on the project as a Research Assistant. She has over 30 years' experience working as an audiologist in the NHS. She has expertise in tinnitus, as well as paediatric and adult rehabilitation.

Melanie Ferguson BSc, MSc, PhD

Melanie is Research Lead of the Mild to Moderate Hearing Loss group at the NIHR Nottingham BRC, Consultant Clinical Scientist (Audiology) and Associate Professor in Hearing Sciences. Her research programme focusses on eHealth and self-management, listening devices, and listening and cognition, underpinned by principles of health behaviour and patient-centred care.

Melanie Gregory BA

Melanie is the CEO of The Ear Foundation. She has 20 years' experience working with families, children and adults with hearing loss. Her area of interest is person-centred practice and rehabilitative audiology. She has written numerous articles on motivational engagement, the patient journey and person-centred practice.