University of Pretoria
Faculty of Humanities
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THE IMPORTANCE OF THE AUDIOLOGIST DURING THE HEARING AID JOURNEY

In partial fulfilment of the requirements for the degree BA Audiology in the Department of Speech-Language Pathology and Audiology, Faculty of Humanities, University of Pretoria.

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Abstract

Objective: This study aimed to understand hearing aid user perspectives on the importance of the audiologist in the hearing aid journey and their perceived ability to fit and adjust to over-the-counter (OTC) hearing aids.

Design: A qualitative analysis design was utilised with secondary data from an existing data set of responses from semi-structured interviews.

Study sample: Adults who were unilateral or bilateral hearing aid users from the United States were recruited through the Hearing Tracker and Lexie Hearing databases. Forty-one participants with an average age of 69 years (SD = 11.72) participated in the virtual interviews.

Results: The analysis revealed that the majority of participants considered an audiologist as important (n= 30), citing support, customisation, and information counselling as critical elements in their hearing aid journey. A minority viewed audiologists as less important (n= 8), due to negative experiences such as impersonal care or preferring self-reliance. In terms of OTC hearing aids, opinions were divided, with some participants open to self-fitting, appreciating the cost-effectiveness (n= 15), while others expressed concerns about their inadequacy (n= 25), especially in cases of severe hearing loss and a lack of confidence in self-fitting.

Conclusion: The study underscores the significant role audiologists play in the hearing aid journey and while OTC hearing aids offer a feasible alternative for some users, concerns regarding their effectiveness and the lack of professional guidance were highlighted. Integrating OTC devices with the expertise and support of audiologists, may offer a feasible solution which could lead to improved outcomes.

Keywords: Hearing aids, Audiologists, Patient perceptions, Over-the-Counter (OTC) hearing aids, Self-fitting

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I declare that this research report is my own original work. Where secondary material is used, this has been carefully acknowledged and referenced in accordance with university requirements.

I understand what plagiarism is and am aware of the University of Pretoria's policy in this regard.

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SIGNATURES DATE

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Abbreviations

COM-B	Capability, Opportunity, Motivation - Behaviour
DTC	Direct-to-consumer
FDA	Food and Drug Administration
OTC	Over-the-counter
WHO	World Health Organisation

1. Introduction

Hearing loss is a pervasive global health concern, affecting nearly 20% of the global population, of which approximately 432 million are adults with disabling hearing loss (Dillard et al., 2022; Lisan et al., 2022; World Health Organization (WHO), 2023). Disabling hearing loss is defined as a loss greater than 40 dB in the better-hearing ear, and can have detrimental effects which include impaired communication subsequently resulting in social withdrawal, depression, cognitive decline and an overall impact on the individual's personal life and occupation (Almeyda & Nash, 2018; Croll et al., 2021; Shukla et al., 2020; WHO, 2023).

A variety of rehabilitation options are available and are dependent on the type and degree of hearing loss. The most common rehabilitation option is amplification in the form of hearing aids (Backous et al., 2022; Golovanova et al., 2019). The primary objective of hearing aids is to decrease the impact of hearing loss by amplifying incoming sounds, thereby increasing their auditory experience and communication abilities (Ferguson et al., 2017; Hornsby et al., 2011). Hearing aid use is pivotal in improving numerous and diverse aspects of an individual's life including; listening capacity, social engagement, and general quality of life (Mahmoudi et al., 2019). Furthermore, hearing aids are also said to improve levels of depression, physical stability, anxiety, independence and cognitive decline, conditions often exacerbated by hearing loss (Glick & Sharma, 2020; Mahmoudi et al., 2019; Picou, 2020).

Despite the high incidence of hearing loss amongst the worldwide adult population, their adoption rate remains disappointingly low (Gallagher & Woodside, 2018). Studies in the United States conducted by Simpson et al. (2019), revealed that the mean delay between hearing loss identification and hearing aid adoption is 8.9 years. Furthermore, adoption rates indicated that only 2.8% of adult men and 1.9% of adult women use hearing aids. A review found that external prompts like family support, rather than self-motivation, drove individuals to seek help, with attitude, acceptance, and hearing sensitivity also affecting hearing aid adoption (Knoetze et al., 2023).

Traditionally, hearing devices have been provided by a licensed dispenser, usually an audiologist, who will conduct a diagnostic hearing assessment(s), hearing aid fitting, multiple follow-ups, counselling, and fine-tuning of hearing aid devices tailored to each client's needs and lifestyle (Dashti et al., 2015; Heselton et al., 2022). Audiologists are largely involved in collaborating with the patient, creating an appropriate rehabilitative program, decreasing barriers related to hearing aids and aiming to increase patient satisfaction and comfort (Heselton et al., 2022). Thereby, the success of this model heavily relies on the quality of the interaction between the audiologist and the patient (Michels et al., 2019).

However, studies have reported that a barrier to hearing aid adoption and use is often linked to the experiences a user has in terms of the audiological service, such as the lack of scheduled follow-up sessions and information counselling before the fitting process (Gallagher & Woodside, 2018; Heselton et al., 2022; Warren & Grassley, 2017). Information counselling from the audiologist is a crucial step in the hearing aid journey as it makes the patient comfortable with their diagnosis, provides training and helps them manage expectations (Grenness et al., 2014; Oosthuizen et al., 2022b). Audiologists not only provide technical support but also offer emotional and psychological reassurance, which is vital for patients adapting to hearing aids. However, when this support is lacking, it can lead to negative experiences that deter individuals from continuing to use their hearing aids or from recommending them to others (Gallagher & Woodside, 2018; Parmar et al., 2021).

The emergence of direct-to-consumer (DTC) hearing devices has revolutionized the provision of hearing aids. These devices which include personal sound amplification products (PSAPs) and hearables, are an option that can be purchased without consulting an audiologist, through DTC channels, and can be self-fitted at home (Almufarrij et al., 2019; Manchaiah, Portnuff, et al., 2023; Swanepoel et al., 2023). DTC hearing devices are believed to improve hearing aid uptake as they provide increased accessibility and affordability, especially to individuals previously deterred by the cost or perceived inconvenience. However, these devices are not regulated by the US Food and Drug Administration (FDA), leading to a large variability in quality

and functionality and are typically not suitable for more severe hearing loss (Almufarrij et al., 2019; Manchaiah, Swanepoel, et al., 2023; Sheffield et al., 2023).

The introduction of over-the-counter (OTC) hearing aids in October 2022, following FDA regulations, represents a significant shift in the hearing aid market. OTC hearing aids are designed for adults with mild-to-moderate hearing loss and are intended to be purchased and fitted without the need for an audiological assessment or prescription (Coco, 2022; Swanepoel et al., 2023). This new category of hearing aids is seen as a more affordable and accessible option, particularly for younger users who may be more comfortable self-managing their hearing loss (Oosthuizen et al., 2022a). However, the rise of OTC hearing aids has raised concerns among hearing health professionals about the potential risks associated with their use. One major concern is the possibility of over-amplification, especially if users misunderstand the severity of their hearing loss or fail to receive proper guidance on device fitting (Coco, 2022; Sabin et al., 2020). Additionally, audiologists have expressed concern that the absence of a trained professional limits the guidance one can receive in adopting a new device and may lead to suboptimal outcomes (Sabin et al., 2020).

Given that the FDA's approval of OTC hearing aids is relatively recent, much of the existing research on DTC devices predates this regulatory change. Previous studies have primarily focused on aspects such as acoustic quality, consumer satisfaction, and clinical trials, often highlighting the mixed outcomes associated with these devices (Almufarrij et al., 2019; Manchaiah, Swanepoel, et al., 2023). While these studies provide valuable insights, they do not fully address the implications of the new OTC hearing aid category, particularly concerning the evolving role of audiologists in the hearing aid fitting process (Manchaiah, Swanepoel, et al., 2023). Additionally, few of these research studies mentioned above have been taken from the adult hearing aid users' perspectives. A recent literature review on the implementation of DTC hearing aids for adults with hearing loss, highlighted the need to explore user experiences and perceptions (Manchaiah et al., 2017).

Additional research is warranted in this area to confirm and enlighten the existing research regarding the potential impact of OTC hearing aids and to gain deeper insights into the adult hearing aid users' perspective. This study aimed to understand hearing aid user perspectives on the importance of the audiologist in the hearing aid journey and their perceived ability to fit and adjust to OTC hearing aids.

2. Method

This study aimed to understand hearing aid user perspectives on 1) the importance of the audiologist in the hearing aid journey and 2) their perceived ability to fit and adjust to OTC hearing aids.

2.1 Study design

This study followed a qualitative interview design. Semi-structured interviews were conducted with adult hearing aid users to gain insight into their lived experiences, in line with a phenomenological approach (Sholokhova et al., 2022).

Ethical approval for the study was obtained through review from the Institutional Review Board (IRB) at Lamar University's Human Subjects Review Board (Appendix A). Additionally, ethical clearance for data analysis was obtained from the Research Committee of the Department of Speech-Language Pathology and Audiology, Faculty of Humanities, University of Pretoria (Appendix B). Once approval was obtained, anonymous responses from the semi-structured interviews were provided and analysed.

2.2 Study setting, population and sampling

This study formed part of a larger project conducted in the United States. The project included two phases. For phase 1 participants were contacted via the Hearing Tracker website and Lexie Hearing database to participate in an online survey. Phase two included semi-structured virtual interviews that were conducted with a subset of participants that were included in phase 1, however, for the purpose of this project data responses from phase 2, the virtual interviews were analysed.

Participants were recruited using convenience sampling. Convenience sampling is a non-probability sampling method where participants are included in the sample based on their willingness to participate voluntarily in the study (Golzar et al., 2022).

In convenience sampling not every participant has an equal chance of being selected, however, only the participants that provided consent for this study were included. This type of sampling method is commonly used with qualitative research as it allows us to get further insight into the attitudes and beliefs of our participants (Golzar et al., 2022).

Eligibility criteria included adults aged 18 years and older with hearing loss, identified as current or past users of hearing aids, whether unilateral or bilateral. 243 respondents participated in phase 1 and a total of 107 participants were subsequently contacted, with only 41 participants being able to participate in the interview process. In order to participate in phase 2, participants had to have completed the first phase of the project, as reported in the studies by Knoetze et al., (2023) and Desai et al., (2024) and had to have provided consent to be contacted for a virtual interview. 37 from Hearing Tracker and 4 from Lexie Hearing.

2.3 Data collection

Interviews were conducted by research assistants from Lamar University via the Microsoft Teams platform between October 2021 and February 2022. The interview guide was created by a team of researchers at Lamar University using the Capability, Opportunity, Motivation - Behaviour (COM-B) model (Appendix C). The COM-B model suggests that for a target behaviour to occur, an individual needs to possess the Capability (C), Opportunity (O) and Motivation (M). This model is involved in understanding behaviour and identifying facilitators and barriers to an individual implementing the target behaviour(s) (Ekberg et al., 2020). The responses to the following open-ended questions were analysed for this study: *How important was your audiologist in your hearing aid journey? Do you think you could have managed fitting and getting used to hearing aids that were bought directly from the internet or pharmacy?*

Transcripts of the interviews were automatically generated by Microsoft Teams and saved on a Microsoft Word document. Each participant’s transcript was numerically

coded and saved in an online secure folder and transferred to an excel spreadsheet for analysis. Demographic information, such as age and gender, was extracted from the initial survey data.

2.4 Data management and analysis

Qualitative content analysis was used to analyse the semi-structured questions from an interview conducted with hearing aid users in the United States. An inductive approach was used for the data analysis and data saturation was achieved. Content analysis considers both the participant and the context to identify, compare and count the concepts systematically identified and categorised to draw valid inferences (Forman, Damschroder, 2007; Manchaiah, 2022).

The process of conducting inductive content analysis entails several key steps. Firstly, reading and becoming familiar with the data assists in gaining holistic insights into the information (Vears & Gillam, 2022). Secondly, first-round codes are generated based on the big picture and are essential to derive meaningful units related to the research questions (Vears & Gillam, 2022). Familiarisation of the data was conducted by the research team (F. Ebrahim, K. Noor, F. Mbatha, Z. Kaka, and A. Hajat). The third step involved second-round coding by focusing on a big-picture code and developing sub-categories using line-by-line coding (Vears & Gillam, 2022). Codes were generated independently by two researchers (A. Hajat and F. Ebrahim) by analysing each line and developing sub-categories.

The fourth step concentrated on refining the sub-categories by comparing them. This comparative process allowed for similar sub-categories to be identified and combined into one and illuminated the need for further specification (Vears & Gillam, 2022). The two researchers (A. Hajat and F. Ebrahim) then compared each of the sub-categories they extracted, and a consensus was reached after careful discussion (A. Hajat and F. Ebrahim). The final step allowed the synthesis and interpretation of the data and assigned each sub-category a numerical value based on the number of responses indicated. The data was cross-checked by the supervisors (F. Mahomed-

Asmail and D.W. Swanepoel), and the necessary adjustments to the categories and sub-categories were discussed and finalised by the research team.

Reliability and validity

Reliability refers to the study's ability to produce consistent results if repeated, while validity measures the degree to how accurately the study reflects the desired results (Leung, 2015). The same interview questions were used for all participants, and validity was enhanced by using an interview guide and inductive content analysis. Throughout the inductive content analysis process, reliability and validity were ensured at each phase. The data was thoroughly reviewed to prevent oversight, and initial coding involved regular peer debriefings to ensure researcher triangulation (Braun & Clarke, 2006). These methods, including cross-checking and peer debriefing, ensured multiple perspectives, helping to identify and validate categories and sub-categories.

3. Results

3.1 Participant characteristics

Forty-one participants, of which 35% were females with more than half (55%) being between the ages of 71 and 90, participated in this study. Most participants (90%) were recruited through Hearing Tracker with 80% using bilateral devices (Table 1).

Table 1: Demographic information of participants (n= 40 participants*)

	% (n)
Sex	
Male	65 (26)
Female	35 (14)
Age	
30-50 years old	10 (4)
51-70 years old	35 (14)
71-90 years old	55 (22)
Unilateral / bilateral hearing aid	
Unilateral	20 (8)
Bilateral	80 (32)
Occupation	
Student/Employed	32.5 (13)
Retired/Unemployed	57.5 (23)

Unanswered	10 (4)
Lexie Hearing / Hearing Tracker	
Lexie Hearing	10 (4)
Hearing Tracker	90 (36)
Self-reported hearing loss	
Almost never hear	27.5 (11)
Regularly don’t hear	45 (18)
Sometimes don’t hear	17.5 (7)
Hear everything	0 (0)
Unanswered	15 (6)
**41 participants were included, missing demographic data for 1 participant*	

3.2 Inductive content analysis results

Qualitative content analysis indicating the categories and sub-categories regarding the role of the audiologist in the hearing aid journey, with two categories, “Important”, with five sub-categories; and the second category, “Unimportant”, with three sub-categories. The second question indicated alternative hearing aid purchases, with two categories, "Not open to self-fitting and acclimatisation," with five subcategories and the second category "Open to self-fitting and acclimatisation", with two sub-categories. (Figure 1).

Figure 1: Categories and sub-categories relating to importance of audiologist in the hearing aid journey and alternative hearing aid purchases.

Qualitative analysis revealed two main categories regarding the role of an audiologist during the adult hearing aid journey: “Important”, with five sub-categories, the highest reported being “Essential”. The second category, “Unimportant’’, consists of three sub-categories, with “Unnecessary’’ being the most commonly reported and “Impersonal care’’ the least commonly reported (Table 2).

Table 2: Categories and sub-categories relating to importance of audiologist in the hearing aid journey (n= 38 participants*)

Category	**Sub-categories (n)**	**Example Quotations (gender, unilateral or bilateral hearing loss, age in years)**
Important (30)	Essential (18)	*"A very, very important if the audiologist I went to was had not been so receptive to working with me. I probably would never have gotten hearing aids.” (Female, Bilateral HA user, 60)* *“important very…but also having a good professional audiologist that can diagnose and those developments and things like that. It is very important.” (Male, Bilateral HA user, 58)*
	Customisation (9)	*"important because of the adjusting.” (Male, Bilateral HA user, 68)* *“Specialists kinda take very broad statements about how I was hearing in and track as like those into adjustments that actually corrected the problem...” (Male, Bilateral HA user, 69)*

	Supportive (4)	*"I you know, I thought they they did a good job. I don't know. I could have asked for anything better." (Male, bilateral HA user, 73)* *"He's there for support. important..." (Female, Bilateral HA user, 73)*
	Insurance benefit (1)	*"I would say that as long as she's in network, I will always go to her but if there comes a time that my insurance no longer covered her Then I I I'm I'm not like. I will see her or or hours so I I would go to another provider if if it came to that." (Male, Bilateral HA user, 36)*
Unimportant (8)	**Sub-categories (n)**	**Example Quotations (gender, unilateral or bilateral hearing loss, age in years)**
	Unnecessary (4)	*"Unfortunately, I think my audiologist hasn't been that important, and I think they ought to be more important" (Male, Bilateral HA user, 69)* *"Very unimportant" (Male, Unilateral HA users, 72)*
	Self-reliant (2)	*"Could do it without them." (Male, Unilateral HA user, 82)* *"I do appreciate their skill and and their tests at all and from not positive if it. The app for the Chaos Nines can do this, or if it's just for the KS 10s, but I I know that now.." (Male, Bilateral HA user, 68)*
	Impersonal care (2)	*"That's why I look at it as a business transaction and it felt like I was dealing with some used car people" (Male, Bilateral HA user, 68)*

		"Well, I can't say that he was. I was happy with my hearing aids in their performance. I frankly never saw the gentleman again." (no demographic data)
**38 participants included, 3 participants did not respond*		

Qualitative analysis revealed two main categories regarding alternative hearing aid purchases: "Not open to self-fitting and acclimatisation," with five sub-categories, the highest reported being “Lack of skill and confidence” and the lowest reported being “Not effective”. The second sub-category "Open to self-fitting and acclimatisation", with two sub-categories, the highest reported being “Willing” and the lowest reported being “Cost-effective” (Table 3).

Table 3: Categories and sub-categories relating to alternative HA purchases (n= 40 participants*)

Category	**Sub-categories (n)**	**Example Quotations (gender, unilateral or bilateral hearing loss, age in years)**
Not open to self-fitting and acclimatisation (25)	Lack of skill and confidence (9)	*“My concern? Would be making a mistake. Unknowingly making a mistake in further damaging… At this point, I would say probably not…” (Male, Bilateral HA user, 64)* *"...I guess I'm not there yet in terms of the confidence in. In the system, it's such a new thing...” (Female, Bilateral HA user, 74)*

	Reluctant (8)	*"I don't think I would have been willing to accept something I just bought over the counter with no adjustments…" (Female, Bilateral HA user, 73)* *"I'm a computer guy, so I figured I think I could have figured it out, but maybe not as well. I would have not felt this confidence. I would have always loved that security of having the expert." (Male, Bilateral HA user, 79)*
	Inadequate for hearing loss severity (6)	*"I don't because I know how bad my hearing loss is. I can't imagine that." (Female, Bilateral HA user, 69,)* *"Pharmacies in OTC hearing AIDS are not powerful enough for profound hearing losses. By federal regulations. Right now, OTC devices are for mild to moderate hearing aids. So I'm not in that framework. So the question is moot." (Male, Unilateral HA users, 72)*
	Programming and customisation (4)	*"No because a person who knew what they're doing to enhance frequencies that I needed it be enhanced the the straightforward program from the manufacturer is good." (Male, Bilateral HA user, 82)* *"And I prefer having some technical advice setting them up because like for example, he set me up on a noise program. Which is very like. I went to the dentist earlier today, so I put that program on and I was able to understand the dentist, which I usually can't" (Male, Bilateral HA user, 68)*
	Not effective (2)	*"... I just don't see how you could. You could really get the same effect over the counter*

		as you can through an audiologist...” (Male, Bilateral HA user, 73) *"...if you could program by yourself if it's effective that remains to be seen. More doesn't work is it as effective as having the audiology programming” (Male, Bilateral HA user, 71)*
Open to self-fitting and acclimatisation (15)	**Sub-categories (n)**	**Example Quotations (gender, unilateral or bilateral hearing loss, age in years)**
	Willing (14)	*"yeah. If they have good apps that you know would do your testing and like give you a baseline to start from and then maybe allow you to do some extra tweaking, yeah?” (Male, Bilateral HA user, 64)* *“Oh, I think I could have fitted it myself. You know, if I had the proper software…” (Male, Bilateral HA user, 46)*
	Cost-effective (2)	*".... Uh, where most insurances, whether it's regular insurance or Medicare type. Are so limited with the extremely high Co pays or deductibles? That are a serious budget problem for many people.” (Male, Unilateral HA users, 83)*
**40 participants included, 1 participant did not respond*		

4. Discussion

This study highlights the important role audiologists play in ensuring a successful hearing aid experience, while also exploring the emerging role of OTC hearing aids. The findings highlight several critical aspects of the importance of the audiologist in the hearing aid process, such as customisation, professional support, and information counselling. Furthermore, mixed reactions to the potential for self-management with OTC hearing devices were found. These findings contribute to the broader discourse on the balance between professional audiological care and the autonomy offered by OTC devices.

The role of the audiologist extends beyond the initial fitting of a hearing aid and underlines the importance of continued support and information counselling, which are integral in the success of hearing aid use. Participants frequently mentioned the reassurance they received from knowing they could rely on a professional to guide them through the challenges of using hearing aids. These align with previous studies conducted which indicate that continued clinical support, information exchange and customisation support hearing aid use and a more confident patient (Grenness et al., 2014; Michels et al., 2019; Oosthuizen et al., 2022a). In addition, the significance of an ongoing relationship with an audiologist was highlighted as a means of support in maintaining hearing aids' performance and for addressing concerns as they arose, underscoring the importance of continuous professional support as explored in previous studies (Gallagher & Woodside, 2018; Heselton et al., 2022; Knudsen et al., 2010). Support is particularly important given that hearing aids are not universal and often require periodic adjustments to accommodate changes in hearing profiles, by user preferences and their lifestyle (Gallagher & Woodside, 2018).

Customisation was emphasised by many participants, expressing their need to have their hearing aids tailored by an audiologist, involving multiple follow-ups and fine-tuning sessions. This is in line with research, which showed that individualised hearing aid fitting is an important factor in user satisfaction and overall hearing aid success (Poost-Foroosh et al., 2011; Laplante-Levesque et al., 2013).

Information counselling, together with personal adjustment counselling was featured frequently as a necessity to help patients understand their hearing loss, devices and manage their expectations. Participants noted that through counselling they gained an understanding of their hearing device and the capabilities thereof, which allowed them to set realistic expectations and prevent disappointment. This is consistent with studies conducted by Grenness et al. (2014) and Knudsen et al. (2010) which emphasises the vital role of patient education in long-term user satisfaction. The support provided by audiologists often extends to helping patients cope with the social and emotional aspects of hearing loss, such as dealing with stigma or the frustration of communication difficulties (Almeyda & Nash, 2018; Timmer et al., 2024).

Furthermore, as indicated in research, when trust in the healthcare professional is lower, the subjective norm had a stronger influence on the decision to use hearing aids (Knoetze et al., 2023). This finding aligns with our study, where participants expressed the importance of ongoing support and reassurance from audiologists throughout their hearing aid journey. This suggests that fostering trust in audiologists may mitigate the reliance on external social pressures, allowing patients to make more informed decisions regarding their hearing health.

Despite positive experiences with audiologists and their crucial role in the hearing aid journey, several participants reported negative experiences as well. Some individuals expressed that the audiologist's involvement was unnecessary, citing impersonal care and inadequate services. They believed they could have successfully adopted hearing aids without professional assistance. Such perceptions align with findings from Gallagher and Woodside (2018) and Parmar et al. (2021), which identified these factors as barriers to hearing aid adoption.

Additionally, some participants felt that audiologists should assume a more significant role in the hearing aid process. Concerns about impersonal care were prevalent, with one participant describing the consultation experience as transactional, likening it to a business deal. Another noted a lack of follow-up, stating they had no further interaction with their audiologist after the initial fitting. Research suggests that

inadequate audiological services, combined with insufficient emotional support from audiologists, constitute significant barriers to hearing aid adoption (Bennett et al., 2020; Gallagher & Woodside, 2018; Heselton et al., 2022; Warren & Grassley, 2017).

The introduction of OTC hearing aids represents a significant shift in the hearing aid market, presenting a newly FDA approved and accessible option for people with mild to moderate hearing loss (Coco, 2022). The study revealed mixed responses among users regarding these devices. Some participants appreciate the cost-effectiveness and convenience of OTC devices, particularly those who are technologically savvy and willing to try OTC hearing aids. These individuals felt confident in their ability to manage their hearing loss independently, without the need for professional guidance. The ability to purchase and fit hearing aids at their convenience, without waiting for appointments, was seen as a significant advantage in previous litearure, particularly among younger adults (Coco, 2022; Oosthuizen et al., 2022a; Swanepoel et al., 2023).

While OTC hearing aids offer greater accessibility and affordability, they pose certain challenges. Participants expressed their concerns about the limitations of OTC devices. A primary concern was the lack of professional customisation, which participants feared could lead to suboptimal fitting and performance. Additionally, without professional guidance, there is a risk of potential incorrect usage due to their lack of knowledge and confidence about self-management. This aligns with literature that highlights the risk that users may not be able to optimise their hearing aids, which may exacerbate the hearing loss, potentially leading to poorer outcomes and decreased satisfaction (Sabin et al., 2020). These concerns reinforce the importance of audiologists as previously discussed and supported by research, where participants emphasised the significance of professional customisation for successful device use (Gallagher & Woodside, 2018; Grenness et al., 2014; Michels et al., 2019; Oosthuizen et al., 2022a).

Furthermore, there is a fear of inadequate support for more severe or complex hearing loss without audiological care. These findings are congruous with research that has shown that OTC hearing aids may not be suitable for individuals with more

severe hearing loss, as they often lack the advanced features and fine-tuning capabilities available through professionally fitted devices (Sabin et al., 2020; (Swanepoel et al., 2023). Additionally, the quality of acoustic output varies among devices, with higher-priced options generally offering superior performance. This may challenge the affordability advantage of OTC devices, as users seeking better sound quality may need to opt for more expensive alternatives (Almufarrij et al., 2019; Manchaiah, Swanepoel, et al., 2023).

Strengths, limitations and future directions

Qualitative research does not require large sample sizes to yield meaningful results. In qualitative research, the focus is on obtaining rich, detailed data that provides deep insights into participants' experiences and perspectives. A sample size of 41 participants is adequate to achieve data saturation and improve reliability (Guest, Bunce, & Johnson, 2006). The study captured a wide range of experiences and opinions, which is crucial for inductive content analysis. Additionally, the sample size is appropriate for focusing on a smaller, manageable number of participants, as data analyses could be done thoroughly for more accurate and insightful findings (Vasileiou et al., 2018). The limitations in this study includes the focus on a particular population of hearing aid users from Hearing Tracker and Lexie Hearing, which may limit generalisability to a broader population, particularly those from diverse demographic backgrounds or with varying levels of technological proficiency (Andrade, 2020).

Given the emergence of OTC hearing aids, further research is warranted to gain a deeper understanding of their capabilities and limitations as experienced by the hearing aid user. Specific areas to focus on include the long-term impacts of OTC devices compared to professionally fitted hearing devices. This could delve further into device effectiveness, user satisfaction, and overall hearing outcomes. Insights on the experiences and perspectives of hearing aid users of varying ages, hearing loss and technological proficiency, can provide information to develop successful hearing devices and allow audiologists to alter their services to provide the best standard of care. Additionally, hybrid models that maintain the cost and convenience benefits of

OTC devices while still providing avenues for professional support, particularly for users with more complex needs should be explored.

Conclusion

Audiologists have a multifaceted role in ensuring a successful and comfortable hearing aid experience. With the emergence of OTC hearing aids that are suitable for some, the individualised care and competence of the audiologist are still preferred for many hearing aid users. However, rather than viewing OTC hearing aids and professional audiological care as mutually exclusive, the findings suggest they can complement each other. In this regard, the accessibility and affordability of OTC hearing aids, combined with the audiologist's professional and personal expertise, can help users achieve the best possible outcomes.

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6. Appendices

Appendix A: Ethical Clearance Lamar University

[EXTERNAL] IRB-FY21-248 - Initial: Initial - Exempt - Approved

do-not-reply@cayuse.com <do-not-reply@cayuse.com>
Fri 7/23/2021 3:40 PM
To: Vinaya Manchaiah <vmanchaiah@lamar.edu>

RESEARCH & SPONSORED PROGRAMS ADMINISTRATION
LAMAR UNIVERSITY

Jul 23, 2021 3:40:40 PM CDT

Vinaya Channapatna Manchaiah

Re: Exempt - Initial - IRB-FY21-248 Hearing aid experiances

Dear Dr. Vinaya Channapatna Manchaiah

Lamar University's Institutional Review Board (IRB) for Human Research Participants Protection has completed its review of your submission and has deemed your study to be exempt from further IRB review.

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

As a research investigator, please be aware of the following:

- You will immediately report to the IRB via LU Cayuse any injuries or other unanticipated problems involving risks.
- You acknowledge and accept your responsibility for protecting the rights and welfare of human research participants and for complying with all parts of 45 CFR Part 46, the LU IRB Policy and Procedures.
- You will ensure that legally effective informed consent is obtained and documented if necessary. If written consent is required, the consent form must be signed by the participant or the participant's legally authorized representative. A copy is to be given to the person signing the form and a copy is to be kept for your file.
- Any proposed changes, including changes to your survey, hard copy or in Qualtrics, from previously approved IRB applications must be submitted to the Office of Research and Sponsored Programs via LU Cayuse. The proposed changes cannot be initiated without IRB review and approval.

Once your study is complete, please login to Cayuse and close your study.

Appendix B: Ethical Clearance University of Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Humanities 100. Since 1919

Department of Speech- Language Pathology and Audiology

7 March 2024

Dear Researchers,

Project:	The importance of the audiologist during the hearing aid journey
Researchers:	Farzeen Ebrahim (u21428612), Kulsoom Noor(u21528773), Zainub Kaka (u21510068), Aaliah Hajat (u21653012), Faith Mbatha (u20644818)
Supervisors:	Prof. De Wet Swanepoel, Prof. Faheema Mahomed-Asmail
Department:	Department of Speech-Language Pathology and Audiology
Reference Number:	SLPA2024/07

Thank you for the application submitted to the Research Committee of the Department of Speech-Language Pathology and Audiology, Faculty of Humanities. We have the pleasure of informing you that the above application was approved on 7 March 2024.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal.

We wish you success with the project.

Sincerely

Prof Lidia Pottas
Chair: Departmental Research Committee

Prof J van der Linde
HEAD: DEPARTMENT OF SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY
UNIVERSITY OF PRETORIA

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Appendix C: Semi structured interview guide

Semi-structured Interview Guide

INITIAL QUESTION

Could you start by telling me how you first obtained your hearing aids.

PRECONCEPTIONS/ MOTIVATION

- **How did you feel when you first started to realize that your hearing may have deteriorated? (C)**
- **What motivated or encouraged you to seek help for your hearing? (M)** What discouraged you to seek help for your hearing? Who did you first consult about your hearing problems?
- **What did you think about hearing aids before you got them? (C)** How did you think they would change your life or your ability to hear?

DECISION PROCESS

- **What motivated or encouraged you to purchase hearing aids? (M)** Was there anything that discouraged you?
- **What was the process of getting hearing aids like for you**? (C) Was it easy to find help? Did you know which professionals or practices to contact? Did you have enough information to make decisions? Did you feel pressurized to make decisions before you were ready? What were the main difficulties in this decision process? What helped you make this decision?
- **Did you discuss this process with anyone? If so, who? If not, why was this? (O)** Any family members or friends, people you know with hearing aids? Did you contact more than one professional (e.g., Primary Care Physician, ENT, audiologists)? Were these discussions helpful?
- **What factors influenced your overall choice of hearing aid/s selected**? (C, O, M) Was the decision based on price, the style, whether it had special features (e.g., streaming with phone or TV, rechargeable batteries, remote microphones, etc)?
- **Did you try Direct-to-Consumer (DTC) or Over-the-Count (OTC) hearing devices (e.g., Personal Sound Amplification Products (or PSAPs), hearables) before or after getting hearing aids? (O)** How much did this help? Did this experience encourage the use of hearing aids?

DURNG HEARING AID FITTING

- **How was your experience making an appointment to see an audiologist?** What kind of support did you receive from those who help book your appointment?
- **What do you recall about the day you were fitted with hearing aids?** What kind of

  procedures were performed? What type of information was provided?

- **What was your immediate reaction to hearing aids** on the day or first few days of wearing the device (O)?

ACCLIMATIZATION

- **Can you describe your experience of using hearing aids during the first few weeks? (O)** How did you find this period? Was there anything that made it hard to use to the hearing aids? Did you expect it to be difficult/easy? Were they complicated to use or get in your ears?
- **How often and when do you use the hearing aids at present? (O, M)** Do you wear hearing aids in certain situations or certain times of the day? Has this changed over time and why? In these situations where you wear your hearing aids, how did your hearing aids help you? How did it make you feel?

SUPPORT (C, O, M)

- **Is there anything about your hearing aid journey that would have made it easier for you to acquire as well as get optimal benefits from these devices**? Did you feel prepared, supported, and have enough information before purchase? Did your hearing health professional (audiologist) provide enough support helping you to learn out to use the hearing aids and handle them? What did you think about your overall care? How supportive were your family and did they make the journey easier or harder?
- **What additional resources, if any, were provided by your audiologist** (e.g., communication tactics, information leaflets, online rehab program)? Did they direct you to any other professionals or organizations or groups for additional support?
- **Have you needed many changes to the original settings of the hearing aids**? Why? Was it easy to get this done? Did you feel the changes made helped you? Did the audiologist help you?
- **How important was your audiologist in your hearing aid journey**? Do you think you could have managed fitting and getting used to hearing aids that were bought directly from the internet or pharmacy?

OUTCOMES

- **We spoke about your views before you got the hearing aids. Did this view change after you got the hearing aids and used then for some time? (C)** Were your initial expectations met, exceeded, or were you disappointed? Please explain your experiences.
- **Have hearing aids changed your life in any meaningful way? (O)** Why or why not? How you think and feel about your hearing aids? We would really like to know your experience with your hearing aids.
- **What do you think about the cost of hearing aids? (M)**
- **Do you feel the money spent on your hearing aids was worth it considering the**

benefits? (M)

- **Are you comfortable telling people you wear hearing aids? (O)** Do you mind other knowing that you have hearing aids?
- **Do you think wearing hearing aids help the people around you (e.g., your family living with you / your colleagues at work in communication)? (O)** Please provide reasons for your answer.
- **We want to know if having hearing aids has opened new possibilities for you that were difficult before (O, M).** For example, do you find that you are **more or less social** since getting a hearing aid? Do you find that you participate/engage in **more or less physical activity** (exercise or recreational) since getting a hearing aid?

- **Has getting a hearing aid changed how you feel about yourself? (M)** Are there any unexpected benefits from using the hearing aids that you have noticed (e.g., less effort during communication, more confident, more efficient at work, less tired at the end of the day)?
- **If you had a friend that was struggling to hear, what would your advice to them be and why? (C, M)**

BARRIERS (O)

- **Are there any unexpected negative side effects of using hearing aids?**
- **Are there any situations that have caused you to avoid wearing your hearing aids?**

  Which situations and Why?

- **Why do you think many people with hearing loss do not purchase and/or use their hearing aids? (M)**

  FUTURE (C, O, M)

- **Would you consider getting self-fitting or over-the-counter (OTC) hearing devices in future?** Why do you want to purchase these devices (or not)?
- **Is there anything you would change about your hearing aids if you could?** In other

  words, tell us how you would think hearing aids should be to be more useful for you and the people around you. What features and functionalities does future generation hearing aids should include?