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Factors influencing hearing aid selection: A qualitative user perspective

**Dissertation submitted in the fulfilment of
the requirements for KMP 481**

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Table of Contents

Abbreviations	3
Declaration regarding plagiarism	4
Abstract	6
1. Introduction	7
2. Method	8
Study Participants and Selection	8
Data Collection	9
Data analysis	9
3. Results	10
Sundial with an inner layer of the identified categories and an outer layer of identified subcategories.	11
Device characteristics	11
External factors	11
Device form-factor	12
Sound quality	12
4. Discussion	16
Device characteristics	16
External factors	16
Device form-factor	17
Sound quality	17
5. Study limitations	18
6. Conclusion	18
References	19
Appendix A: Ethical approval Lamar University	26
Appendix B: Ethical approval for this study	27
Appendix C: Interview questions	28
Appendix D: Memorandum of understanding	31

ABBREVIATIONS

BTE = Behind-the-ear

ITC = In-the-ear

ITE = In-the-canal

OTC = Over-the-counter

RIC = Receiver-in-canal

WHO = World Health Organization

LMIC = Low and middle income countries

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ABSTRACT

Purpose: This study explored key factors that influence adult hearing aid users' choice of hearing aids.

Method: A cross-sectional, retrospective qualitative research design was employed using content analysis of semi-structured interviews. Participants were recruited from the HearingTracker and Lexie Hearing user database.

Results: A total of 40 participants with an average age of 65 (14.6 SD) years were included. The majority were bilateral, behind-the-ear (82.5%) hearing aid users that obtained their device from a hearing health care professional (90%). Four categories with 13 sub-categories were identified that influenced hearing aid selection which included i) Device Characteristics ii) External Factors, iii) Device form-factor and iv) Sound quality. The most prominent category was device characteristics which included the following sub-categories: cost, bluetooth-connectivity, self-adjustment, general features, and rechargeability. External factors (n=24) included audiologist recommendations, online informational resources, and the lifestyle of the patient with device form-factor was linked to physical attributes of the hearing aid and included cosmetics, comfort and style (n=12) of the device. Sound quality (n=11) included natural sound perception and music appreciation.

Conclusion: Key considerations such as the device characteristics, external factors, device form-factor and sound quality of the device influenced the selection of a hearing device. Our findings emphasize the need for convenient, technologically advanced features and suggest future research should focus on the role of online resources and emerging technologies. Collaboration between hearing healthcare professionals and manufacturers to address individualized needs will improve the selection process and boost future satisfaction.

Keywords:

Hearing Devices, hearing aids, user selection; user perspectives;

1. INTRODUCTION

Hearing loss, whether acquired or congenital, has a detrimental impact on a person's daily life (World Health Organization [WHO], 2019). The WHO (2021) estimated that 20% of the world's population, accounting for approximately 1.5 billion people, have some level of hearing loss. Untreated hearing loss can have long-term negative effects on psychological health, including the emergence of depression, anxiety and social isolation. Hearing loss has also shown to influence the overall quality of life and has been linked as a contributing factor towards cognitive decline and dementia in older adults (Bisogno et al., 2021; Azeem et al., 2023; Nordvik et al., 2018; Cantuaria et al., 2024).

The most common treatment for hearing loss is the provision of hearing aids (Meister et al., 2015; Hoare et al., 2014), which can enhance users' listening experience, while reducing the strain of hearing. Hearing devices can also filter out background noise during conversations for increased listening comfort, improved understanding and clearer communication in various social, personal, and occupational settings (Wong et al., 2018). Additionally, these devices can help minimize tinnitus, offering further relief and comfort for those affected by it (Del Bo & Ambrosetti, 2007; Johnson et al., 2016). Hearing aid use is also recommended as a strategy to mitigate hearing loss as a modifiable risk factor for developing dementia (Brent, 2019; Dawes, 2019; Livingston et al., 2024).

Despite studies conveying the clear benefits of hearing aids, Bisgaard & Ruf (2017) found that 14.7% to 73% of individuals with hearing loss do not acquire them. This study indicated a strong correlation between hearing aid uptake and degree of hearing loss, with more severe losses proving a higher uptake rate. According to Knoetze et al (2023) audiological and non-audiological factors influence hearing aid uptake. The non-audiological factors mentioned included financial support, cognitive anxiety, stigma and social pressure as well as readiness for change. Audiological factors include hearing sensitivity, quality of audiological service, informational counselling, self-reported hearing loss, communication difficulties experienced, expectations regarding the benefit that will be derived from the acquisition of hearing aids (Knoetze et al, 2023; Oosthuizen et al., 2022). It should be considered that several hearing aid owners experience improved social interaction and communication, but also tend to feel discouraged and self-conscious, influencing hearing aid usage rates (Poost-Foroosh et al., 2011). Notably, Dillon et al. (2020) reported that approximately 18% of adult hearing aid owners do not use their devices, citing various reasons, including lack of perceived benefit, difficulties managing hearing aids, discomfort related to wearing hearing aids, and appearance (Bennett et al., 2018; McCormack and Fortnum, 2013). According to Franks & Timmer, (2023) effective hearing aid use depends not only on the device and audiological factors but also on an individual's ability to engage in daily activities and how the hearing loss impacts their engagement. Understanding the reasons for non-use is crucial for clinicians. While predictors help identify successful hearing aid candidates, addressing non-use factors can enhance support and counseling, thereby increasing adoption and usage (Bennett et al., 2018; Bisgaard et al., 2021; Dillon et al., 2020).

Reported overall satisfaction of hearing aids is additionally influenced by technological advances (Hausladen et al., 2021). Technological hearing aid advances include advances such as wireless and Bluetooth technology, frequency-lowering techniques, directional microphones, and noise reduction algorithms (Plyler et al., 2021; Rehman et al., 2016; Desai et al., 2024). Conversely, Cox et al. (2014) has mentioned that the introduction of more technologically advanced devices does not necessarily correlate with enhanced patient satisfaction. Thereby, additional emphasis should be placed on professional services adhering to best-practice principles to achieve optimal patient outcomes (Ismail et al., 2019). Effective collaboration between audiologists and manufacturers ensures the necessary adjustments and adaptations to meet client needs, thereby improving usage statistics (Edwards, 2007; Luengen et al., 2021). Due to advancements in hearing aid technology, Over-the-Counter (OTC) hearing aids now offer greater accessibility for individuals with mild to moderate hearing loss without the need for professional intervention (Blustein et al., 2022; Tucci & Califf, 2022; Warren and Grassley, 2017). Despite emerging as a more cost-effective alternative to professionally fitted hearing aids, the future uptake of OTC devices remains uncertain (Manchaiah et al., 2023; Blustein et al., 2022).

Although various studies have been conducted to investigate isolated factors such as OTC and private hearing aid use, emotional impact and technological advances, gaps in knowledge remain regarding how users navigate the selection process. An in-depth exploratory approach is necessary to better undertake the multidimensional world of hearing aid users' needs. Therefore, this research aims to better understand the factors that influence adult hearing aid user's choice of hearing aids.

2. METHOD

The study formed part of a larger research project conducted by Lamar University, USA. Ethical clearance for the study was obtained by Lamar University (Appendix A), with additional clearance secured from the Research Committee, Department of Speech-Language Pathology and Audiology, University of Pretoria (Appendix B).

The larger project was made up of two phases, with this study focusing on data obtained from the second phase. Phase one aimed to gather information on hearing aid uptake among hearing aid users in the United States via an e-survey. Participants who completed the e-survey were then recruited for phase two, which involved virtual semi-structured interviews with open-ended questions to explore participants' experiences and perspectives regarding hearing aid use.

STUDY PARTICIPANTS AND SELECTION

Participants were hearing aid users recruited from the United States of America. These participants were contacted via the Hearing Tracker Website and Lexie Hearing Databases, to participate. The Hearing Tracker website (www.hearingtracker.com) is a hearing aid review system for persons who have received hearing aids prescribed by a hearing care professional. It is an online resource that allows hearing aid consumers to provide written

feedback and ratings. Lexie Hearing (www.lexiehearing.com) is an online platform that sells direct-to-consumer hearing aids.

Purposive sampling was used to recruit participants for phase 2. A total of 42 participants included in the e-survey were willing to participate in phase 2. The participants had to be adults (>18 years) who were either current or former hearing aid users, whether unilaterally or bilaterally fitted, at the time the data was collected. After a thorough evaluation of the transcripts, the data of 40 of these participants were analysed for this study. The remaining 2 participants were omitted due to inaccurate recording of interview transcripts and incomplete demographic information.

DATA COLLECTION

A semi-structured interview using open-ended questions, regarding hearing aid experiences and outcomes, was designed by researchers from Lamar University (Appendix C). The interview included 32 questions and took place virtually during October and November 2022.

Consent to participate in the interview was obtained verbally prior to the commencement of the interview. The interviews were conducted virtually by two audiology postgraduate students from Lamar University. 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. Demographic information, such as age and gender, were extracted from the initial survey data.

The responses to the following two questions were analysed for this study, "What factors influence your overall choice of hearing aid(s) selected?" and "Was the decision based on price, style, whether it had special features (e.g. streaming on phone or tv, rechargeable batteries, remote microphones, etc)?" The answers to the two questions were overlapping, and as such the responses were merged and analysed accordingly.

DATA ANALYSIS

Content analysis was used to analyse the data. Content analysis derives reliable and valid conclusions from textual material, regarding its contextual utilization. It entails a systematic process of coding and categorization, applied to explore extensive text datasets, aiming to derive specific patterns in word usage, frequency, relationships, and communication structures (Vaismoradi et al., 2013; Krippendorff, 2019).

A systematic approach to content analysis was executed as stipulated by White and Marsh (2006). Initially, the researchers (CB, AC, KJ, TM, AS, SV) immersed themselves in the transcribed data, repeatedly reading the transcripts to gain familiarity. Following this, an inductive approach was used whereby the data was coded according to identified categories and subcategories. Pairs of researchers then discussed and compared their interpretations to maintain intercoder reliability and consistency in category development. In instances where disagreements emerged concerning a specific code, the researchers (CB, AC, KJ, TM, AS, SV) participated in discussions, collaboratively re-examining the data and voting to

reach a consensus. If consensus remained elusive, a third researcher, the study supervisors, were consulted to mediate and assist in finalizing the coding decision. The collaboratively identified categories underwent a review and refinement process, with similar codes being grouped into broader categories.

3. RESULTS

The average age of participants was 65 years (14.6 SD; range 26-84) with the majority being male (73%). A total of 90% of participants' responses were collected on the Hearing Tracker database representing prescription hearing aid users, while 10% represented OTC hearing aid users from the Lexie Hearing database. Eighty-three percent of participants used behind-the-ear (BTE) hearing aids with only 10% using in-the-ear (ITE) devices. Limited differences were found between the responses from private vs the small sample of over-the-counter (n=4) hearing aid users.

Qualitative analysis revealed a total of four main categories and 13 subcategories (Table 1). The categories included Device characteristics, Device form-factor, External factors, and Sound Quality (Figure 1)

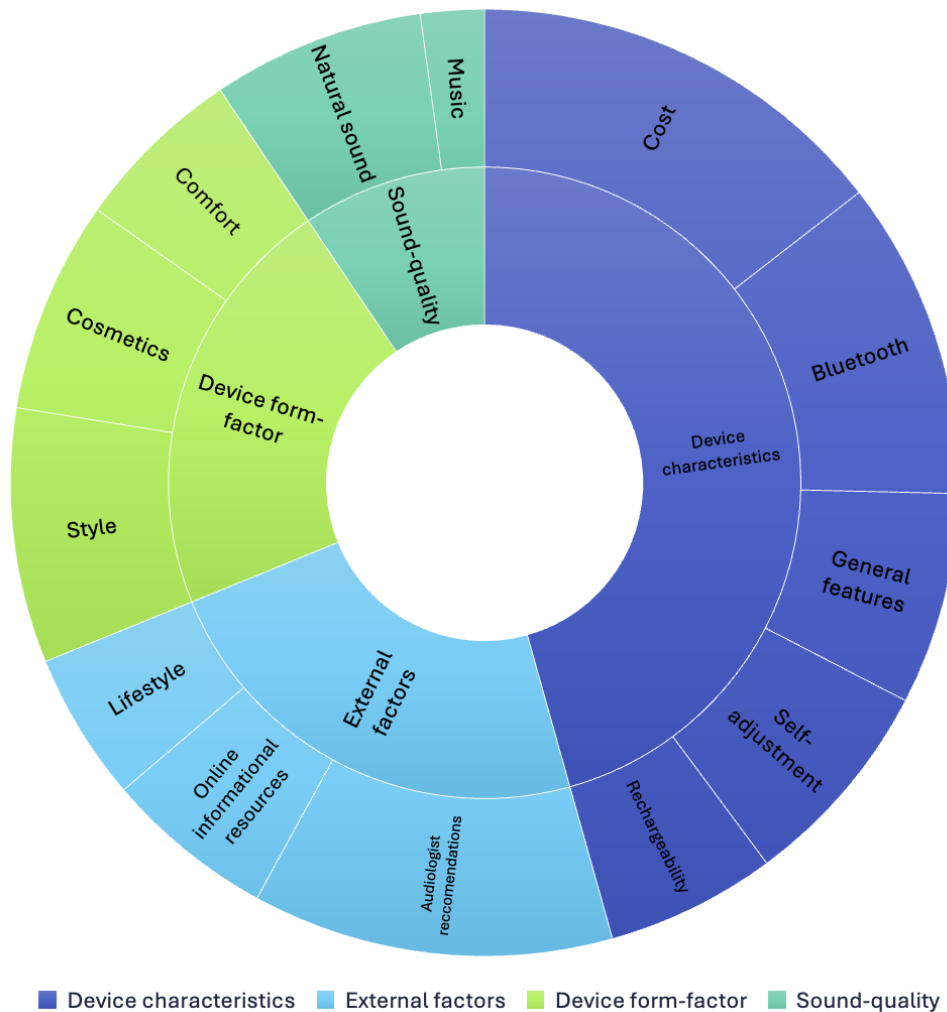


Figure 1: Sundial of identified categories and sub-categories.

DEVICE CHARACTERISTICS

Device characteristics emerged as the most prominent factors influencing participants' hearing aid choice. This category encompasses various sub-categories such as the cost of the hearing aids, the ability to self-adjust or fine-tune the device, rechargeability, Bluetooth-connectivity and general features that the device offers. Nuances, such as the preference for expensive hearing aids over cheaper ones due to the perception that higher cost correlates with better quality, were observed in the responses within the Cost subcategory (Table 1). General features included common attributes of hearing aids when further specification was not reported. This included participants who just referred to “features” in their answers and could have referred to any device characteristics. Self-adjustment allowed participants the ability to fine-tune their hearing aid volume and microphone direction, providing them with control and regulation of the device.

EXTERNAL FACTORS

External factors referred to factors that influenced participants' selection of the hearing aids that were external to and independent of the hearing aid devices and included the audiologist recommendation, online informational resources and lifestyle. Eight participants

indicated that their decision was based on personal online research (through web pages such as blogs, etc).

DEVICE FORM-FACTOR

Device form-factor included comfort, style and cosmetics. Comfort refers to the snug and secure fit of the hearing aid when worn. The style refers to the type of hearing aid. This subcategory relates to both the comfort and cosmetics of the device as some users have style preferences based on their comfort or physical appearance. Cosmetics of the device refers to the physical appearance thereof and includes features such as the size, colour and positional placement of the device. It is clear that these factors are interconnected as observed in the participant's responses.

SOUND QUALITY

Participants emphasized that the quality of sound through a hearing aid is pivotal in their choice. Sound Quality included 2 subcategories 'natural sound' and 'music' factors such as loudness, background noise, and speech clarity. Natural sound refers to a hearing aid's ability to deliver sound that closely mimics what individuals with normal hearing experience. "Music" refers to when the participants are listening to music, how natural or undistorted it sounds.

Table 1: Content analysis of patient perceptions of factors influencing hearing aid selection (n=41). Two example quotes included for each sub-category

Categories	Subcategories	Participant perception
Device characteristics (31)	Cost (20)	<i>"It was essentially the price for what I could get for, I felt like, I was willing to spend about \$2000 for my first set of hearing aids and and for what I could get for \$2000 I thought was more than fair. "</i> (P29, Male, 75)
		<i>"...the ones I have now I got at Costco which were like so much cheaper"</i> (P19, Female, 65)
	Bluetooth (16)	<i>"They had the Bluetooth capability 'cause I have a very active life. There was that I did like the Bluetooth connection, which was, I guess six years ago, one of the newer things."</i> (P5, Male, 71)
		<i>"I had to be able to connect my hearing aids to my work laptop so that I would be able to participate in these conference calls."</i> (P7, Male, 64)
	Self-adjustment (13)	<i>"You could adjust the treble and bass as well as the volume."</i> (P9, Male, 25)
		<i>"And to be able to control it, take some of the background noise out or increase some of the volume, or you know, whatever those are the things that were important."</i> (P11, female, 58)
	General features (11)	<i>"... I think, but it was more when, what features that are offered."</i> (P13, Male, 71)
		<i>"I want my features. I don't overpay for my features, but I want my features."</i> (P4, Male, 71)
	Rechargeability (8)	<i>"I'm looking at the ones I have now, still have batteries and I'm looking forward to rechargeable ones..."</i> (P15, Female, 68)
		<i>"I like the rechargeable hearing aid where I don't have to change the battery once a week or so."</i> (P37, Male)

External factors (24)	Audiologist recommendations (17)	<i>"Yeah, initially I just took the recommendation. (The audiologist) generally make(s) a recommendation based on your hearing loss, your lifestyle, and what they think will yield the most satisfactory result. So initially, I just took the recommendation of the audiologist." (P1, Male, 73)</i>
		<i>"... I was basing it on their recommendation. OK, now their recommendation actually panned out because the more I have stayed with Phonak's from the very beginning and I have been very, very pleased." (P6, Male, 74)</i>
	Online informational resources (8)	<i>"Well, actually the ultimate decision came from the material that (the) hearing blog provided." (P5, Male, 71)</i>
		<i>"Plus in my reading I couldn't see any compelling reason to go any other direction." (P23, Female, 74)</i>
	Lifestyle (7)	<i>"You know, it had a lot more things that made sense to me for my lifestyle " (P11, Female, 58 years)</i>
		<i>"I've done a little teaching... being able to have discussions in a classroom like that with 30-40 people in it. Uh, it was kind of important to me and so that was one of the considerations." (P21, Male, 68)</i>
Device form-factor (20)	Style (12)	<i>"So I've always had the idea here because my I made the assumption that when they have more space to put equipment in there, it will be a better hearing aid. So when you have in the canal hearing it, I mean they have to force everything into a, you know a 1/4 inch circle." (P12, Male, 82)</i>
		<i>"Which style and I was looking behind the ear that seemed to be the only thing that made any sense for me." (P6, Male, 74)</i>
	Cosmetics (10)	<i>"when I first started, I wanted something that was not obvious" (P32, Female, 73)</i>
		<i>"I didn't want to have anything that that really showed. And so like have the behind the ears type that kind of blend in with my gray hair." (P21, Male, 68)</i>
	Comfort (8)	<i>"just for even things like comfort. You know, (if you) wanna wear a pair of sunglasses." (P3. Male, 40)</i>

		<i>"there was always a comfort factor. In particular, CIC had to fit tight. Had to be snug and they work hard shells."</i> (P10, Male, 72)
Sound Quality (11)	Natural Sound (10)	<i>"I always went with the top of the line because I wanted all the bells and whistles I could get to try to get back to as much natural hearing as possible."</i> (P6, Male, 74)
		<i>"More natural sound, I've been able to get these to the point where they're not too loud and the sound seems natural."</i> (P26, Male, 82)
	Music (3)	<i>"... their musicality, everything now I have nothing to compare it too obviously."</i> (P6, Male, 74 years)
		<i>"Music fidelity (was most important)."</i> (P25, Male)

4. DISCUSSION

This study aimed to identify the key factors that influence adults when selecting hearing aids. Four common categories were identified and included device characteristics, the form-factor of the device, external factors and the sound quality.

DEVICE CHARACTERISTICS

Cost emerged as the most reported factor influencing hearing aid choice, with varying responses. For most, the cost was prohibitive, but higher-priced hearing aids were sometimes seen as equating to better quality. This is confirmed in a study by Assi et al. (2021). Affordability was important to most of the participants as well as those using OTC hearing aids. This links with similar findings by Knoetze et al. (2023) that reported that OTC users favor the affordability of these devices. Importantly, cost is not an isolated factor but is intricately linked to features such as Bluetooth connectivity, rechargeability, and self-adjustment. This trade-off between cost and desired features reflects findings by De Silva et al. (2012), who noted that signal processing schemes and additional characteristics like noise cancellation were significant determinants of hearing aid price.

Bluetooth connectivity, as also stated by Maidment & Amlani (2020), emerged as a significant factor for users in this study, particularly for its utility in answering phone calls, streaming music, and connecting to televisions.

Self-adjustment now extends beyond physical buttons by including Bluetooth capability, allowing users to control hearing aid settings from their cell phones, which not only empowers users but also reduces self-stigma (Gomez et al., 2022; Perry & Nelson, 2022). Some participants did however mention the control button sizes on their hearing aid, linking with a study by Singh et al, (2013) that concluded that it affects the ease of use, particularly for those who have dexterity issues. While digital solutions provide increased control, the physical design plays an important role in user satisfaction.

Another aspect of device characteristics was rechargeability of the hearing aids. Rechargeability was generally preferred over disposable batteries, primarily for their convenience and environmental benefits, which align with findings by Sun (2019). This highlights the complexity of user preferences, where convenience and long-term costs must be balanced against immediate affordability. This further illustrates the broader challenges in meeting user expectations, where convenience, usability and affordability may intersect.

EXTERNAL FACTORS

External influences also played a critical role in hearing aid selection, particularly the recommendations from audiologists. Consistent with Jorgensen & Novak's (2020) findings, this study found that audiologist guidance is often the determining factor once patients enter the clinic. However, to avoid over-influence, audiologists must respect patient autonomy, encouraging shared decision-making. Studies by Manchaiah et al. (2019) emphasize the importance of balancing expert advice with patient-centered communication, ensuring that patients and their families retain the final say in their hearing aid selection.

Lifestyle demands were another significant external factor, with participants mentioning the need for hearing aids that could meet the demands of active, professional, or socially engaged lifestyles. Northern (2011) supports this finding, noting the importance of tailoring

hearing aids to the user's specific lifestyle. Given that older adults often have less demanding social lives (Wu & Bentler, 2012), it is crucial for audiologists to conduct thorough lifestyle assessments during the fitting process to ensure the chosen devices align with patients' individual needs.

Online resources, including consumer reviews, emerged as an unexpected yet influential factor. Bennett et al. (2021) confirms the increasing reliance on online reviews by patients during the hearing aid selection process. However, this trend raises concerns about the quality and credibility of online information, which can be highly variable. Audiologists must navigate this shift by integrating online resources into patient discussions, helping users critically evaluate information. Future research should focus on the impact of online reviews on hearing aid choices, particularly how misinformation or marketing bias might skew user decisions.

DEVICE FORM-FACTOR

Device form-factor, encompassing style, cosmetics, and comfort, played a substantial role in participants' choices. Although discrete in-the-canal (ITC) models were preferred for their cosmetic appeal, the majority of participants favored behind-the-ear (BTE) models, citing comfort and reliability. Picou (2020) similarly found that BTE devices are the most commonly used. It should be noted that past negative experiences with ITC devices, particularly regarding the need for frequent reshaping, led several participants to choose BTE models, supporting findings by Singh et al. (2015) and Arun & Yadav (2024), which suggest users often switch to different styles after encountering difficulties.

In our findings it was apparent that the style and cosmetic factors of the device are interrelated. Cosmetic concerns were not limited to ITC models, as participants in this study favored modern, smaller BTE designs with colours that blended naturally with their appearance. While many users seek discrete devices to avoid stigma (McCormack & Fortnum, 2013), aesthetic appeal was still a driving factor, even for BTE models, echoing the findings of Almufarrij et al. (2019).

Comfort was a recurring theme, with most participants finding BTE models more comfortable. This supports earlier research indicating that comfort is a major determinant of hearing aid satisfaction (Gopinath et al., 2011; Winkler et al., 2016). Manufacturers should prioritize ergonomic designs that cater to both comfort and cosmetic preferences to improve user satisfaction.

SOUND QUALITY

Sound quality was considered important by participants, especially in relation to speech clarity and background noise reduction. While sound quality did not emerge as the top factor in this study, it remains crucial for effective communication, particularly in noisy environments. This finding contrasts with earlier research that ranked sound quality higher among user concerns (Vaisberg et al., 2021). The emphasis on Bluetooth and other modern features that offer more convenient and versatile usage of hearing aids, such as wireless connection to various devices, may explain the shift in priorities. However, this study underscores the continued importance of sound clarity in daily communication by exploring and identifying participants' perceptions of sound quality, specifically the preference for "natural sound". Interestingly, no significant differences were observed between OTC and private hearing aid users regarding sound quality preferences, aligning with findings by Swanepoel et al. (2023). Given the rapid advancements in hearing aid

technology, further research should explore whether newer models can address ongoing concerns about speech comprehension in noisy environments, as noted by Rekkedal (2012).

5. STUDY LIMITATIONS

The study has several limitations. The small sample size of 40 participants, all from the United States, limits the representativeness of the findings, particularly in terms of the diversity of hearing aid users' needs and the general applicability of the results to a global population (Bol et al., 2023). Furthermore, the use of automated transcriptions for the recording of the virtual interviews posed challenges, as the transcriptions were frequently unclear, complicating the analysis process. Another limitation of our study is its inherent subjectivity, as analysis involved manually categorizing participants' responses. While this process may be influenced by individual interpretations and researcher bias, cross-checks were implemented, and a specific, structured approach was followed to minimize these effects and enhance the consistency and reliability of the results (Pannucci & Wilkins, 2010).

6. CONCLUSION

This study highlights several key factors influencing hearing aid selection, with device characteristics, external factors, device form-factor and the sound quality of the device being among the most significant. These findings emphasize the evolving needs of modern hearing aid users, particularly the growing demand for convenient, technologically advanced features.

Future research should continue to explore these factors, particularly focusing on the impact of online resources and emerging technologies in hearing aid selection. By addressing these evolving needs, professionals and manufacturers in the audiology field can better meet the individualized expectations of hearing aid users, ultimately improving the fitting process and user satisfaction.

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APPENDIX A: ETHICAL APPROVAL LAMAR UNIVERSITY

Ethical approval from Lamar University for survey and interview.

7/23/2021

Mail - Vinaya Manchaiah - Outlook

[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>



Jul 23, 2021 3:40:40 PM CDT

Vinaya Channapatna Manchaiah

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

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.

<https://outlook.office365.com/mail/inbox/id/AAQ&AGUwNWNkZGI0LTc1N2YiNDY2Ny04ZDcwLWM3ZjBjOTNlNDIiNAQAQAEvVh7mlpdhrinc4z21Fk%3D>

1/2

APPENDIX B: ETHICAL APPROVAL FOR THIS STUDY



Faculty of Humanities

Fakulteit Geesteswetenskappe
Lefapha la Bomotho



Department of Speech- Language Pathology and Audiology

7 March 2024

Dear Researchers,

Project: Factors influencing hearing aid choice – a qualitative user perspective

Researchers: Charlize Bosse (u19021242), Anné Croucamp (u21618004), Kiera Joseph (u21473732), Anke Schnepel (u21523934), Susan-Jane Visser (u21581585), Tintswalo Mathebula (u20669382)

Supervisors: Prof. De Wet Swanepoel, Prof. Faheema Mahomed-Asmail

Department: Department of Speech-Language Pathology and Audiology

Reference Number: SLPA2024/08

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

A handwritten signature in black ink, appearing to read 'L. Pottas'.

Prof Lidia Pottas
Chair: Departmental Research Committee

A handwritten signature in black ink, appearing to read 'J. van der Linde'.

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

Room 7.22, Level 7, Humanities Building
University of Pretoria, Private Bag X20
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APPENDIX C: INTERVIEW QUESTIONS

Study 4: 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?

DURING 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 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?**

APPENDIX D: MEMORANDUM OF UNDERSTANDING



Memorandum of Understanding

This Memorandum of Understanding ("MOU") is made and entered into on August 01, 2021 (the "Effective Date"), between Lamar University, an institution of higher education in the State of Texas and a component of The Texas State University System, ("University"), which is located at 4400 MLK Parkway, Beaumont, Texas 77710, United States of America (USA) and University of Pretoria, Faculty of Humanities, an institution of higher education in the Gauteng Province, which is located at corner Roper Street and Lynwood Road, Hatfield, 0028, Pretoria, Republic of South Africa (SA) ("Partner"). University and Partner shall be known collectively as "the Parties" and singularly as "a Party" or "the Party."

Recitals

Whereas, cordial relations exist between Lamar University and University of Pretoria, Faculty of Humanities,

Whereas, Lamar University and University of Pretoria, Faculty of Humanities have discussed mutual goals regarding academic opportunities for students and faculty; and

Whereas, Lamar University and University of Pretoria, Faculty of Humanities desire to establish a program to be formalized at a later date (the "Program") for the benefit of students and faculty of their respective educational institutions;

Now, therefore, the Parties enter into this MOU, in order to memorialize fundamental concepts regarding the Program, which includes supporting collaborative research projects, international experience for faculty/staff and students and academic teaching.

Understanding of the Parties

In contemplation of the establishment of the Program, the Parties agree as follows:

Article 1 (Objectives)

- A. To contribute further to the original understanding between both countries (the United States of America and the Republic of South Africa), both cities (Beaumont and Pretoria), and both institutions (Lamar University and University of Pretoria, through mutual cooperation programs.
- B. To further collaborations between Lamar University and University of Pretoria through academic programs in instruction, research and faculty/staff development among the faculty/staff and students of both institutions.
- C. To enhance the international experience of faculty/staff and students in the area of:
 1. Research
 2. Joint Programs and Collaboration
 3. Exchange of Faculty/Staff and Students

Article 2 (Responsibilities of Parties)

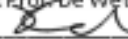
- A. Both institutions commit themselves to identify concrete areas of academic collaboration and to explore the means to achieve a successful collaboration.
- B. The officials who will have the responsibility in coordinating the Program for the Parties are: Dr. Vinaya Manchaiah, Department of Speech and Hearing Sciences, Lamar University, USA; and Prof De Wet Swanepoel, Department of Speech-Language Pathology and Audiology, Faculty of Humanities, University of Pretoria, SA.

Article 3 (Understanding of Parties)

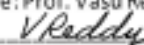
- A. The Parties understand and acknowledge that they are making a significant commitment to this collaborative effort. Accordingly, the Parties agree to expend their best efforts on the design, implementation, and successful continuation of the Program.
- B. This MOU shall remain effective from the effective date listed above until the end of the term of three (3) years.
- C. The Parties understand and acknowledge that this MOU will provide the foundation for a more comprehensive agreement concerning the details of the Program; and that this MOU does not commit the Parties regarding the Program. This MOU is gratuitous for the parties and no payment or remuneration may be required by virtue of its execution as the Parties will absorb inherent costs to comply with this MOU at this time.
- D. The Parties understand that this Program must support through its activities the mission of Lamar University and the University of Pretoria, Faculty of Humanities; that the Programs may not use the name and official seal of the other Party or any of its components without the written consent of the senior management of the other Party or her/his designee; that the Program is subject to all policies and procedures of the Board of Regents and Administration of the Texas State University System and those of the University of Pretoria, and must submit to reporting and auditing requirements as established by both Parties.
- E. Any intellectual property matters that arise from the Program shall be addressed pursuant to applicable policy, law and mutual written agreements among the Parties.
- F. This MOU contains the entire understanding of Parties at this time. If either Party is unwilling or unable to continue with plans for the Program, that Party may do so by sending thirty (30) days written notice to the other Party.
- G. This MOU may not be amended or otherwise modified except by the written agreement of both Parties. Neither Party may assign this MOU without the other Party's prior written consent. The invalidity or unenforceability of any provision(s) of this MOU will not impair the validity and enforceability of the remaining provisions.
- H. In their execution of this agreement, all contractors, subcontractors, their respective employees, and other acting by or through them shall comply with all federal and state policies and laws that prohibit discrimination, harassment, and sexual misconduct. Any breach of this covenant may result in termination of this agreement.

In witness whereof, the Parties have caused their fully authorized representatives to execute this MOU effective as of the date written above.

Printed Name: Prof. William Harn
 Signature: 
 Title: Chair, Speech and Hearing Sciences

Printed Name: Prof. De Wet Swanepoel
 Signature: 
 Title: Professor, Dept of Speech-Language Pathology and Audiology

Printed Name: Prof. Terina Holtzhausen
 Signature: 
 Title: Dean, Fine Arts and Communication

Printed Name: Prof. Vasu Reddy
 Signature: 
 Title: Dean of the Faculty of Humanities, University of Pretoria

Printed Name: Prof. Jerry Lin
 Signature: 
 Title: Associate Provost for Research and Sponsored Program, Lamar University

Note: Modification of this form requires approval of OGC

Standard Form Approved by the Lamar University Office of General Counsel