

Table 1: Summary of participant demographics (n = 653)

Variable	Characteristics	n (%)
Age group (years)	18-30	18 (2.8%)
	30-40	25 (3.8%)
	40-50	41 (6.3%)
	50-60	76 (11.6%)
	60-70	198 (30.3%)
	71-80	231 (35.4%)
	80+	64 (9.8%)
Gender	Male	401 (61.4%)
	Female	249 (38.1%)
	Other (non-binary; prefer not to say)	3 (0.5%)
Hearing aid fitting	Bilateral	601 (92.0%)
	Unilateral	52 (8.0%)
Type of hearing aid(s)	Behind the Ear Hearing Aid(s)	604 (92.5%)
	In The Ear Hearing Aid(s)	49 (7.5%)
Where hearing aid(s) were purchased	Internet/online	278 (42.6%)
	Hearing clinic or private university	233 (35.7%)
	Discount Warehouse	75 (11.5%)
	Other	60 (9.2%)
	Pharmacy hearing centre	4 (0.6%)
	Hearing professional came to house	3 (0.5%)
Duration of daily use	None	13 (2.0%)
	Less than 1 hour a day	13 (2.0%)
	1-4 hours a day	46 (7.0%)
	8 hours a day	94 (14.4%)
	More than 8 hours a day	483 (74.0%)

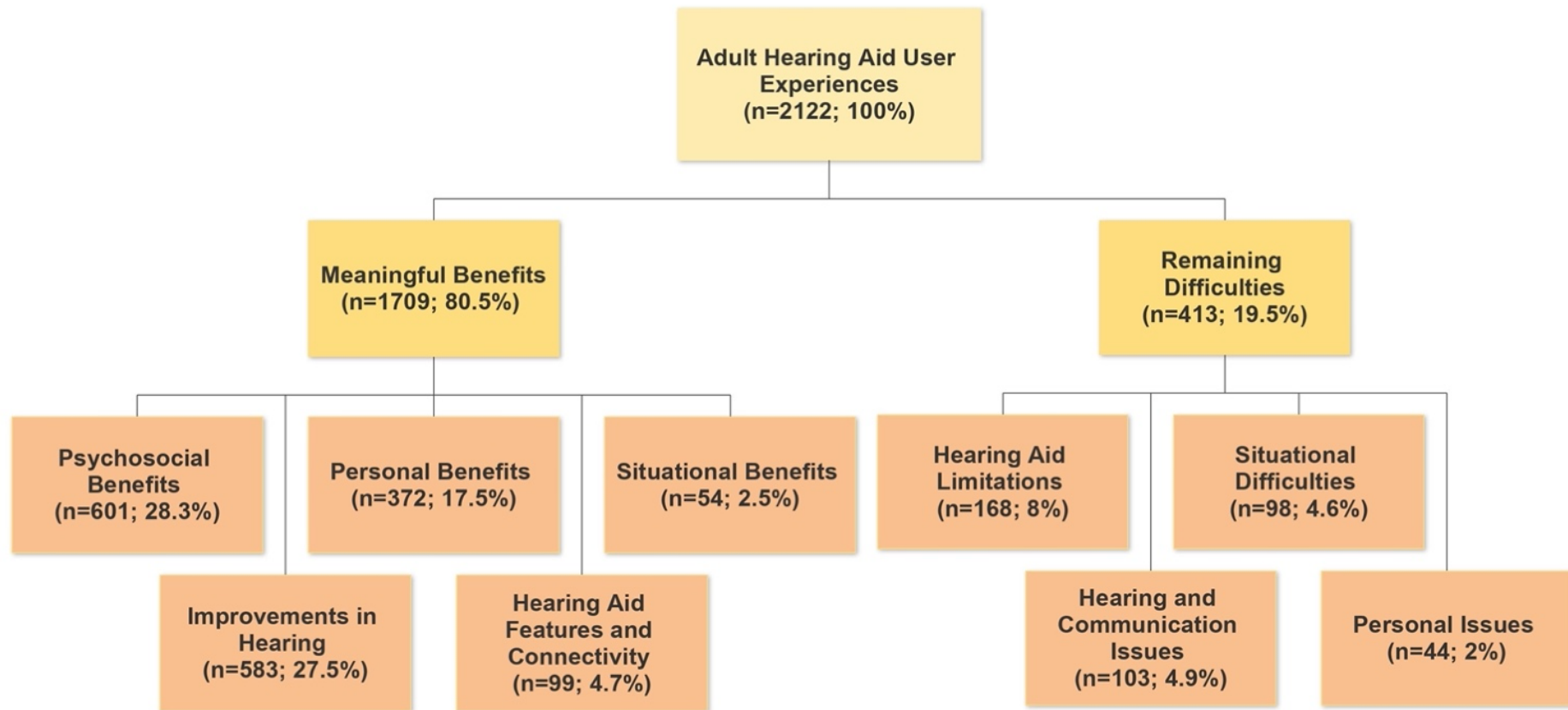


Figure 1: Domains and categories of adult hearing aid user experiences

Table 2. Meaningful benefits due to hearing aid use reported by 653 participants (n = 1709 meaning units).

Category	Sub-category	Meaning unit examples (participant ID, age in years, gender)
Psychosocial benefits(n=601)	Improved participation in conversations (171)	<i>"Socially with friends and family members I can get together without fear of missing their conversations" (P252, 84 years, male)</i>
	Improved relationships (145)	<i>"I would have no friends without them." (P277, 70 years, female)</i>
	Enabled inclusion into society (131)	<i>"Hearing aids allow me to function in society as a hearing person" (P53, 56 years, male)</i>
	Improved functioning in occupation and/or education (77)	<i>"Hearing aids allowed me to do my job, be a productive member of society, and kept me from becoming antisocial and depressed." (P87, 67 years, male)</i>
	Improved positive attitudes (77)	<i>"Changed desire to get up in the morning" (P254, 82 years, male)</i>
Improvements in hearing (n=583)	Improved hearing ability (291)	<i>"Immediately after getting them, could tell a major difference" (P170, 70 years, male)</i>
	Watching TV (70)	<i>"hear TV at levels the rest of my family can enjoy" (P513, 58 years, female)</i>
	Improved speech understanding (65)	<i>"It's nice to be able to hear and understand most people" (P332, 71 years, male)</i>
	Improvement in phone usage (55)	<i>"I can clearly hear my phone calls now" (P36, 83 years, female)</i>
	Ability to hear environmental sounds (50)	<i>"I heard birds singing. I cried. I didn't realize all that I was missing" (P35, 64 years, male)</i>
	Improved enjoyment of music/podcasts/audiobooks/radio (42)	<i>"I can enjoy music again and I've started playing my instruments enjoyably!" (P623, 68 years, male)</i>
	Helped reduce tinnitus (6)	<i>"It really helps stop my ears ringing" (P537, 64 years, female)</i>
Personal benefits (n=372)	Reduced auditory fatigue (4)	<i>"I enjoy company more knowing that I can hear without straining to hear" (P166, 70 years, female)</i>
	Improved quality of life (185)	<i>"They have absolutely helped enhance my life. Without them, I can't hear music, watch tv, participate in conversation. I'd feel lost without them" (P73, 54 years, male).</i>
	Essential to daily functioning (92)	<i>"I really could not function without my hearing aids" (P117, 78 years, male)</i>
	Enable independent living (51)	<i>"Hearing aids are a necessity and helped me keep my independence!" (P387, 73 years, female)</i>
	Improvement in health as a result of being able to hear (18)	<i>"I want to hear the world. As a psychologist I am acutely aware that not hearing affects me cognitively. I do not want that." (P320, 93 years, male)</i>
	Reduced stress associated with communication breakdown (15)	<i>"It was such a relief not to have to ask repeatedly what was said" (P218, 71 years, female)</i>
	Improved safety due to sound awareness (11)	<i>"I feel safer knowing I can hear what is going on around me" (P45, 77 years, male)</i>

Hearing aid features and connectivity (n=99)	Bluetooth connectivity (47)	<i>"It's easier for me to work now, especially remote with the new Bluetooth capabilities of hearing aids." (P3, 46 years, male)</i>
	Improved design (37)	<i>"My first set of aids required batteries, these do not. Work great." (P55, 78 years, male)</i>
	Assistive devices (15)	<i>"I have a TV connector so the TV comes through my two hearing aids. So nice not to have to turn the volume up." (P332, 71 years, male)</i>
Situational benefits (n=54)	Improved participation in group and social interaction (29)	<i>"wearing HAs enables me to hear and understand others, particularly in work of social settings with groups of people." (P340, 73 years, male)</i>
	Improved performance/understanding in noisy environments (18)	<i>"Crowded spaces like restaurants are not as frustrating" (P77, 67 years, male)</i>
	Improvement in religious gatherings/interactions (7)	<i>"I am now a leader in my church and several smaller groups. I would not be able to to this without the hearing aids." (P667, 83 years, male)</i>

Note: Numbers in brackets are the frequency of the meaning units reported in each category or sub-category

HA=Hearing Aid, TV=Television.

Table 3. Remaining difficulties with hearing aid use reported by 653 participants (n = 413 meaning units)

Category	Sub-category	Meaning unit examples (participant ID, age in years, gender)
Hearing aid (HA) limitations (n=168)	Poor HA design (54)	<i>"I wish hearing aids were more robust and waterproof" (P127, 72 years, male)</i>
	Can't replace normal hearing (41)	<i>"They help me hear but not like the way my ears used to hear" (P74, 78 years, female)</i>
	Limitations to HA performance (34)	<i>"I just wish hearing aids would get better at removing background noise" (P65, 69 years, female)</i>
	High cost (25)	<i>"For what I consider to be an excessive price the quality falls short of what was promised!" (P191, 71 years, male)</i>
	Maintenance (12)	<i>"The only downside to having hearing aids is the maintenance of them" (P115, 65 years, female)</i>
	Limited Bluetooth connectivity (2)	<i>"some functions are intermittently not working (real intermittent)-the bluetooth on phonecalls" (P284, 70 years, male)</i>
Hearing and communication issues (n=103)	Residual speech understanding difficulties (50)	<i>"I miss most of others' conversations, I even have trouble hearing my husband in a quiet room" (P224, 79 years, female)</i>
	Certain voices/ pitches (18)	<i>"Still difficult to understand soft sounds of my granddaughters" (P156, 70 years, male)</i>
	Listening to music (10)	<i>"I am a classical music lover, and my hearing aids distort the sound of music... listening to what used to be a great pleasure has become painful enough that I don't listen to it anymore. It is a loss." (P212, 75 years, male)</i>
	Telephone conversations (9)	<i>"I often still have problems fully understanding everything over the phone and with electronic media" (P60, 71 years, female)</i>
	Television (7)	<i>"I need to purchase a streamer as TV is difficult" (P299, 69 years, male)</i>
	Poor clarity of sounds (7)	<i>"I am disappointed that the clarity is not better" (P247, 67 years, female)</i>
	Listening fatigue (2)	<i>"I get physically tired in noisy situations" (P234, 76 years, male)</i>
Situational difficulties (n=98)	Noisy situations (55)	<i>"I still have major issues in places that are noisy" (P112, 70 years, female)</i>
	Social isolation (27)	<i>"I avoid social situations because I hate having to ask people to repeat themselves over and over" (P300, 47 years, female)</i>
	Environmental challenges (12)	<i>"Indoors better than outdoors" (P286, 81 years, male)</i>
	Group conversations (4)	<i>"still have difficulty hearing in groups or certain voices" (P283, 50 years, male)</i>
Personal issues (n=44)	Dislike wearing HA (18)	<i>"I hate wearing them but have to so I can survive" (P317, 66 years, male)</i>
	Health problems (12)	<i>"I have had more wax and infection with aids" (P528, 73 years, male)</i>
	Adjustment to HA (5)	<i>"I am still adjusting to the new sounds but so far they have helped tremendously." (P689, 46 years, male)</i>
	Increased stress (4)	<i>"I worry about something happening in the middle of the night and I won't hear it if I take out both aids" (P383, 76 years, male)</i>
	Using HA in occupational settings (3)	<i>"I am a carpenter so, I can't wear them at work all the time because of the dust" (P628, 70 years, male)</i>
	Expectations of communication partners (2)	<i>"People get upset with me when I don't understand them if they see the HA, bc they think it's a 100% fix...it is so VERY far from that!! Crutches don't allow for sports, running, etc!! (P465, 65 years, female)</i>

Note: Numbers in brackets are the frequency of the meaning units reported in each category or sub-category TV=Television

Table 4: Clinical implications of study findings for enhancing hearing aid counselling

Aspect	Key discussion topics for counselling prospective hearing aid owners
Psychosocial	Emphasize the potential for hearing aids to improve engagement in conversations and strengthen relationships. Highlight the possible benefits, such as reduced feelings of isolation and increased ease in participating in social events. Discuss how hearing aids may help alleviate challenges in professional or educational settings and potentially enhance overall confidence in hearing abilities. Consider the potential impact on group conversations and social isolation.
Hearing Improvements	Discuss the potential enhancements in hearing clarity that hearing aids may offer, such as improved TV audio and reduced need for frequent repetition during conversations. Highlight the possible benefits of clearer phone conversations and renewed enjoyment in listening to music, radio, audiobooks, and podcasts. Additionally, consider the ongoing challenges in understanding speech, particularly with certain voices or pitches, and difficulties in noisy environments.
Personal Benefits	Emphasize the potential benefits of improved quality of life through enhanced hearing ability, noting how hearing aids can make daily tasks more manageable and increase independence, such as by ensuring users can hear safety alarms. Discuss the possibility of reduced stress in communication due to improved hearing, while also acknowledging the personal challenges that may arise, such as discomfort with wearing hearing aids, health concerns, and the adjustment period that can elevate stress levels.
Hearing Device Features	Highlight the potential advantages of using Bluetooth technology with hearing aids, such as the convenience of streaming audio directly from TVs, phones, or laptops, which can enhance overall user experience. Emphasize the compatibility of hearing aids with smartphones, which can further improve ease of use and functionality. However, it is important to also acknowledge the limitations of Bluetooth connectivity, including possible intermittent issues, and the necessity for regular maintenance of hearing aids to ensure optimal performance.
Situational Benefits	To convey potential benefits to hearing aid users, emphasize the possible improvements in social and group interactions, noting how hearing aids can make conversations easier to follow. Discuss the enhanced ability to hear in noisy environments and the increased enjoyment of activities, such as religious gatherings, due to improved hearing. Also, address the challenges of using hearing aids in noisy situations and the influence of environmental factors on their effectiveness, while being mindful that outcomes can vary among users.
Challenges and Limitations	Provide a comprehensive overview of the challenges users may encounter, such as high costs, the need for regular maintenance, and limited Bluetooth connectivity. Discuss the potential for poor sound clarity and listening fatigue, especially in music, telephone conversations, and television. Address the stress associated with using hearing aids in occupational settings and managing communication partners' expectations. Highlight the importance of setting realistic expectations to ensure a satisfactory hearing aid experience.

Table 5: Key considerations for hearing aid manufacturers

Aspect	Key considerations
Design and aesthetics	Offer variety of hearing aid colours and styles to create devices that are visible fashion statements, empowering users and enhancing their satisfaction. Offer bright, expressive colours as requested by multiple participants. Aim to make wearers proud and happy with the design of their devices.
Durability and comfort	Based on the study's findings, hearing aid manufacturers should focus on improving the durability and water resistance of their devices, while acknowledging current technological limitations. Enhancements in resilience against moisture and easier maintenance, particularly for users with dexterity issues, could address key user concerns identified in the study, ultimately leading to greater satisfaction and reliability.
Functionality	To enhance user comfort, develop behind-the-ear tubing that prevents condensation buildup and reduces excessive movement within the ear canal, thereby minimizing itchiness. This can be achieved by using materials that offer a more secure fit or by designing tubing with improved flexibility to better adapt to the contours of the ear, such as the helical crus. Additionally, consider designing molds with smoother surfaces or hypoallergenic materials to reduce friction and irritation, further decreasing the discomfort caused by movement.
Usability	Improve the ease of putting on and removing hearing aids, especially for users with dexterity issues.
Safety	Recognizing the physical limitations of current technology, manufacturers should explore the feasibility of designing hearing aids that can be comfortably worn during sleep for users who desire this functionality. While this is a challenging task, addressing the anxiety some users feel about not being able to hear safety alarms at night is a significant concern. By prioritizing comfort and reducing pressure points, it may be possible to create hearing aids that users can safely and comfortably wear overnight, providing peace of mind without compromising on sleep quality. While fully solving this issue may not be immediately achievable, incremental improvements could make a meaningful difference for users.
Connectivity	Enhance Bluetooth connectivity and compatibility with various devices such as iPhones, Android phones, tablets, smart TVs, and laptops for direct streaming. Enable hearing aids to connect directly to TVs without the need for an adapter, like many earbud products.