Lagos Journal of Contemporary Studies in Education
ISSN: 3043-9075 E-ISSN: 3043-6834
Volume 2, Issue 2, July 2024, 414-424
DOI: https://doi.org/10.36349/lajocse.2024.v02i02.32

ASSISTIVE TECHNOLOGY ADOPTION RATES AND BARRIERS AMONG ADULTS WITH HEARING LOSS

AYUBA DANIEL ANYUABAGA
danielayuba2@gmail.com
08164642462
Chimamanda Compound Russau Village behind Village Hostel Permanent Site,
University of Jos, Jos, Plateau State

Abstract

This study explores the underutilization of Assistive Technologies (AT) for hearing loss among adults in Nigeria. Despite the potential benefits of the AT for communication, social participation, and well-being, adoption rates remain low. The methodology used is a systematic literature review. Findings reveal that several factors contribute to low AT adoption, including the social stigma surrounding hearing loss, limited access to affordable AT solutions, and a lack of comprehensive healthcare support for users. The paper concludes that a multi-pronged approach is necessary to bridge the gap between AT potential and real-world use. Recommendations include public awareness campaigns to combat stigma and highlight AT benefits, policy changes to expand insurance coverage and offer financial assistance programs, training for healthcare professionals on effective patient counselling and device use, and continued research and development of user-friendly and affordable AT solutions.

Keywords: *Assistive technology, Adoption rates, barriers, Hearing loss*

INTRODUCTION

Hearing loss is a significant global health concern, impacting an estimated 466 million individuals worldwide (World Health Organization, 2021). In Nigeria, the situation is particularly alarming, with studies suggesting a prevalence ranging from 6.1% to 13.9%, affecting a substantial portion of the population (Ademokoya, Afolabi & Babatunde, 2013; Nwokocha, Ohaegbulam & Ogonna, 2003). This sensory impairment disrupts daily communication, hinders social participation, and can lead to feelings of isolation, depression, and a diminished quality of life (Lin, Mettias & Hickson, 2011). Assistive Technologies (AT) offer a beacon of hope, potentially mitigating these

challenges by amplifying sounds, facilitating communication, and enhancing access to information. Hearing aids, amplified phones, captioning devices, and alert systems are just a few examples of the AT that can empower individuals with hearing loss to engage more fully in their daily lives. However, despite the evident benefits, the adoption rate of AT among adults with hearing loss in Nigeria remains disappointingly low. Studies like one conducted at the National Ear Care Centre in Kaduna revealed that only 26.2% of patients with hearing loss received a diagnosis, highlighting a critical gap in awareness and access to healthcare services (Olusanya, Borg & Isichei, 2012). This limited access likely translates to a low utilisation rate of the AT, creating a situation where a significant portion of the Nigerian population with hearing loss struggles unnecessarily.

Understanding the factors hindering the wider adoption of AT in Nigeria is crucial to bridge the gap between the potential benefits of these technologies and their actual use. Research suggests that cost is a major barrier, with advanced hearing aids often exceeding affordability for many Nigerians (Olusanya et al., 2012). Additionally, limited insurance coverage for the AT further exacerbates the financial burden, particularly for low-income individuals. Beyond cost, the social stigma associated with hearing loss can also deter adoption. A study published in the International Journal of Otolaryngology found a correlation between negative societal perceptions of hearing loss and the reluctance to use visible AT-like hearing aids (Ugwu, Nwokocha & Ugwu, 2012). This highlights the need for public awareness campaigns that normalise hearing loss and promote the positive impact of AT in enhancing communication and social inclusion. Furthermore, research by the Speech Pathologists and Audiologists Association of Nigeria (SPAAN) indicates a shortage of qualified professionals to provide essential services like counselling, training, and ongoing support for users of AT (SPAAN, 2020). This lack of readily available expertise can further discourage individuals from adopting and effectively utilising these technologies.

Hearing loss presents a significant challenge for a substantial portion of the Nigerian population. While the AT offers promising solutions to improve communication and quality of life, its current adoption rate remains low. Addressing the challenges of affordability, social stigma, and limited access to support services is crucial to unlock the full potential of the AT, empowering Nigerians with hearing loss to live more fulfilling lives. Further research within Nigeria, specifically focusing on the socio-economic factors and cultural perceptions surrounding

hearing loss and AT adoption, is essential to develop effective interventions tailored to the Nigerian context.

AIM AND OBJECTIVES

This study seeks to explore the adoption rates of AT among adults with hearing loss and identifies the key barriers hindering wider usage. By understanding these factors, strategies can be developed to bridge the gap between the potential benefits of AT and its actual use in the adult population. The specific objectives of this study are to:

1. analyse existing data on the prevalence of different AT use (for example., hearing aids, amplified phones, captioning devices) by adults with hearing loss.
2. investigate the factors influencing adoption decisions, including perceived benefits, ease of use, and cost.
3. identify the major barriers that prevent adults with hearing loss from utilising the AT effectively.

METHODOLOGY

This study employs a systematic literature review to analyse existing research on AT adoption rates and barriers among adults with hearing loss. Scholarly databases such as PubMed, Web of Science, and Scopus are searched using relevant keywords like "hearing loss," "assistive technology," "adoption rates," and "barriers." Inclusion criteria focus on studies published within the last fifteen years and conducted in Nigeria with representative adult populations. Additionally, government reports from national health agencies and research conducted by hearing loss organisations is incorporated.

RESULTS

Adoption Rates

Despite the potential of Assistive Technologies (AT) to revolutionise the lives of individuals with hearing loss, adoption rates in Nigeria paint a picture of uneven utilisation. While hearing aids remain the most used technology, a significant disparity exists when compared to the adoption of other solutions. Exploring this uneven landscape reveals that factors such as cost, limited awareness, cultural perceptions, and the scarcity of trained professionals contribute to the

dominance of hearing aids over other AT options. Addressing these issues is crucial for fostering a more balanced adoption of AT in Nigeria, ensuring broader access to diverse and effective solutions for those with hearing loss.

Ademokoya et al. (2013) found that hearing aid use hovered between 10% and 20% among patients attending the National Ear Care Centre in Kaduna. This aligns with findings from Olusanya et al. (2012) whose research in an Ear Nose and Throat clinic suggests similar adoption rates for hearing aids. However, the same studies highlight a stark contrast in the use of amplified phones, captioning devices, and assistive listening systems. The limited data available indicates significantly lower adoption rates for these alternative AT solutions, suggesting a gap in their accessibility and integration into the lives of Nigerians with hearing loss (Olusanya et al., 2012). Several factors contribute to the dominance of hearing aids in the AT landscape. Firstly, hearing aids address the core challenge of hearing loss by amplifying sound directly within the ear canal. This provides a relatively straightforward solution for individuals experiencing decreased auditory perception (Punch & Stelmachowicz, 2010). Conversely, amplified phones, captioning devices, and assistive listening systems require modifications to the environment or communication style, potentially creating a sense of inconvenience or disruption to daily routines. A study by Okeke, Ofoegbu & Oranye (2018) exploring communication strategies among people with hearing loss in Nigeria found a preference for direct communication methods, potentially contributing to a lower uptake of technology requiring adaptation (Okeke et al., 2018).

Secondly, the cost of hearing aids, while a barrier, tends to be more manageable compared to some alternative AT options. While advanced hearing aids can be expensive, basic models exist that cater to a wider range of budgets. In contrast, amplified phones may require specific adaptations or specialised equipment, increasing the overall cost. Similarly, captioning devices and assistive listening systems often involve ongoing subscription fees or require installation within specific environments, creating additional financial hurdles (Moyo, Winkler & Dreschler, 2018). Thirdly, the social stigma associated with hearing loss can disproportionately impact the adoption of certain AT solutions. Hearing aids, while noticeable, can be relatively discrete, particularly with newer in-the-ear models. This allows individuals to manage their hearing loss with a degree of privacy. Conversely, amplified phones with oversized handsets or the use of captioning devices in public settings might attract unwanted attention, deterring some individuals due to the lingering stigma

surrounding hearing loss in Nigeria, as identified by Ugwu et al. (2012). Cultural beliefs around disability can also play a role, as Adegbite (2013) highlights in his work on social perceptions of deafness in Nigeria (Adegbite, 2013). The underutilization of alternative AT options represents a missed opportunity to improve the communication experience for many Nigerians with hearing loss. Amplified phones can significantly enhance telephone conversations, a crucial aspect of social interaction and access to essential services. Captioning devices provide real-time text transcription of spoken language, promoting inclusion in educational settings or professional environments. Assistive listening systems amplify sound within specific areas, facilitating participation in lectures, meetings, or places of worship (Moyo et al., 2018).

Addressing this uneven adoption landscape requires a multi-pronged approach. Public awareness campaigns that normalise hearing loss and showcase the benefits of various AT solutions can play a vital role in reducing the stigma and encouraging the exploration of alternative options. Additionally, government initiatives aimed at subsidising the cost of AT, particularly for low-income individuals, would increase affordability and accessibility (World Health Organization, 2021). Furthermore, healthcare professionals play a crucial role in educating patients about the full spectrum of the AT available. Comprehensive assessments that consider individual needs, preferences, and lifestyles can guide informed decisions about the most suitable AT solutions. Equipping healthcare facilities with a wider range of AT options for demonstration and trial use would also empower individuals to make informed choices based on their specific circumstances (Punch & Stelmachowicz, 2010). The current state of AT adoption for hearing loss in Nigeria reveals a dominance of hearing aids, while alternative solutions remain significantly underutilised. Understanding the factors contributing to this disparity, such as the nature of technology, cost considerations, social stigma, and cultural beliefs, is essential for developing effective interventions.

Factors Influencing Adoption

Although Assistive Technologies (AT) have the potential to revolutionise the lives of individuals with hearing loss, the decision to adopt these solutions involves a complex interplay of factors. While the perceived benefits of improved communication and social participation act as a powerful motivator, concerns about cost, stigma, and usability can pose significant barriers, particularly

within the Nigerian context. Shall we look at these influences, exploring how they shape the landscape of AT adoption for adults with hearing loss in Nigeria?

Perceived benefits undeniably play a crucial role in driving AT adoption. Studies highlight a positive correlation between the perceived potential of the AT to improve communication and social engagement, and the willingness to utilise these technologies. Ademokoya et al. (2018) conducted a study in Nigeria investigating the experiences of individuals with hearing loss. Their findings revealed a strong desire among participants to regain the ability to communicate effectively, particularly within social settings. This aligns with research by Okeke et al. (2018) whose work explores communication strategies employed by people with hearing loss in Nigeria. Their study identified a clear preference for methods that enhance communication clarity and participation, suggesting a potential openness towards AT solutions that offer such benefits.

Conversely, concerns about the stigma associated with hearing loss can act as a significant deterrent to AT adoption. Ugwu et al. (2012) found that negative societal perceptions surrounding hearing loss, particularly the association with aging or infirmity, discouraged some individuals from using AT, especially visible solutions like hearing aids. This highlights the need for targeted interventions that address these misconceptions and promote a more positive understanding of hearing loss and AT. Cost undoubtedly presents another critical barrier to AT adoption in Nigeria. Hearing aids, particularly advanced models with desirable features like noise cancellation and directional listening, can be extremely expensive. This financial burden is further compounded by the limited insurance coverage for AT in Nigeria, as identified by Olusanya et al. (2012). This creates a situation where low-income individuals with hearing loss are often forced to choose between acquiring essential AT and meeting basic needs, limiting their access to technologies that could significantly improve their quality of life. Beyond cost, concerns about the perceived difficulty of using AT can also deter adoption. Individuals may worry about the complexity of operating these technologies or the challenges of adapting to new communication styles. Adegbite (2013) explores the social perceptions of deafness in Nigeria, highlighting a potential cultural preference for familiar communication methods. This, coupled with a lack of training and support for AT users, as identified by Nwokocha, Ugwu, and Ugwu (2013) in their study on the challenges of hearing loss rehabilitation in Nigeria, can create a sense of apprehension and discourage individuals from exploring the available options.

Moving forward, addressing these challenges requires a multifaceted approach. Public awareness campaigns that normalise hearing loss and showcase the benefits of AT can play a vital role in combating stigma and encouraging individuals to consider these solutions. Additionally, government initiatives aimed at subsidising the cost of the AT, particularly for the most essential features, can significantly increase affordability. Afolabi et al. (2019) emphasise the importance of government intervention and policy changes to promote wider access to AT in developing countries. Healthcare professionals can also play a crucial role by providing comprehensive information and training on the diverse AT options available. This empowers individuals to make informed decisions based on their specific needs and preferences. Equipping healthcare facilities with a wider range of AT for demonstration and trial use can further contribute to overcoming perceived difficulties associated with using these technologies. Furthermore, fostering a culture of support within communities is crucial. Establishing support groups and networks specifically for individuals with hearing loss can provide valuable peer-to-peer learning opportunities and promote a sense of belonging. By sharing experiences and knowledge about using AT effectively, individuals can overcome challenges and maximise the benefits these technologies offer.

Barriers to Effective Use

While the adoption of Assistive Technologies (AT) represents a crucial step in enhancing the lives of individuals with hearing loss, it marks only the beginning of the journey. Studies reveal that even among adopters, challenges persist regarding the effective utilisation of these technologies, hindering them from reaping the full potential benefits. Exploring the factors that limit the optimal use of AT for hearing loss within the Nigerian context, highlighting the need for comprehensive support systems and community awareness initiatives will help us understand this better.

One significant challenge lies around device maintenance. Assistive technologies, particularly hearing aids, require regular cleaning, battery replacements, and minor adjustments to ensure optimal performance. However, limited access to qualified technicians and a lack of readily available spare parts, as identified by Nwachukwu et al. (2019) in their study on hearing aid services in Nigeria, can pose significant barriers to proper device maintenance. This can lead to malfunctions, decreased sound quality, and ultimately, a decline in user satisfaction and motivation to utilise the AT consistently. Technical support also plays a critical role in maximising user experience. Individuals may require ongoing assistance with troubleshooting device problems,

learning advanced functionalities, or adapting settings to different listening environments. Unfortunately, access to such support services often remains limited in Nigeria, especially outside major urban centres. This lack of readily available technical support, as highlighted by Ojo et al. (2020) in their research on hearing rehabilitation services in Nigeria, can leave users feeling overwhelmed and discouraged from fully utilising the capabilities of their AT. Beyond technical considerations, inadequate training on maximising AT functionalities is another barrier. While basic instructions may be provided at the point of purchase, users often lack comprehensive training on advanced features or strategies to optimise their AT for specific listening situations. This can lead to underutilization of functionalities that could significantly enhance communication experiences. Afolabi et al. (2019) emphasise the need for tailored training programs that address individual needs and preferences to empower users to leverage the full potential of their chosen AT.

The social stigma surrounding hearing loss further exacerbates the challenges associated with AT adoption and utilisation in Nigeria. As discussed by Adegbite (2013), negative societal perceptions can lead individuals to shy away from using AT, particularly visible solutions like hearing aids, for fear of appearing old or infirm. This can discourage open and consistent use of the AT, hindering its ability to fully integrate into daily life. Furthermore, a lack of awareness about available AT options within communities can create a significant barrier. Individuals with hearing loss, particularly those residing in rural areas, may be unaware of the diverse range of AT solutions available, hindering their ability to make informed choices about the most suitable technology for their needs. Public awareness campaigns that normalise hearing loss and showcase the benefits of AT, as suggested by Ademokoya et al. (2018), can play a vital role in addressing this knowledge gap and promoting wider utilisation of AT within communities.

Moving forward, addressing these challenges requires a multi-pronged approach. Strengthening healthcare infrastructure by increasing the number of trained technicians and establishing accessible service centers for device maintenance and repair is essential. Collaboration between the healthcare sector and AT manufacturers can facilitate the creation of localised support networks that provide readily accessible technical assistance for AT users. Developing and implementing comprehensive training programs tailored to individual needs and incorporating advanced user guides in local languages are crucial steps toward empowering users to maximise

the functionalities of their AT. Additionally, fostering a culture of inclusion and acceptance within communities requires targeted interventions. Educational initiatives aimed at dispelling misconceptions around hearing loss and promoting the benefits of AT can play a significant role in reducing the stigma and encouraging greater social acceptance of these technologies.

DISCUSSION

The gap between the potential of Assistive Technologies (AT) and their real-world utilisation by adults with hearing loss is a significant concern. The low adoption rates translate into harsh reality: limited communication, social isolation, reduced employment opportunities, and a decline in overall well-being for individuals with hearing loss. Fortunately, by addressing several key areas, we can bridge this gap and empower individuals to fully experience the benefits of the AT. Combating the stigma and raising awareness about AT should be a cornerstone of any effort to improve adoption rates. Public awareness campaigns can play a crucial role in dispelling negative societal perceptions associated with hearing loss and AT use. Studies in Nigeria, for example, highlight the fear of appearing old or infirm as a deterrent to using hearing aids. Educational campaigns that normalise hearing loss and showcase the positive impact of AT can significantly shift these attitudes and encourage individuals to embrace these technologies.

Furthermore, financial barriers pose a major obstacle to AT adoption. Costly hearing aids and limited insurance coverage, as identified in studies conducted in Nigeria, can leave essential technologies out of reach for many individuals. Policy interventions that expand insurance coverage for the AT or establish financial assistance programs are essential steps towards improving affordability and ensuring equitable access to these life-changing tools. Healthcare professionals also occupy a critical space in promoting AT adoption and utilisation. By providing comprehensive counselling about the diverse AT options available, healthcare professionals can empower individuals to make informed choices based on their specific needs and preferences. Research by Afolabi et al (2019) emphasises the importance of tailoring training programs to individual user needs. Equipping patients with the knowledge and skills for effective device use is crucial for maximising the benefits of AT and ensuring long-term user satisfaction. Additionally, ongoing support from healthcare professionals can provide invaluable guidance and address any challenges that may arise after adoption.

CONCLUSION

While Assistive Technologies (AT) hold immense potential to revolutionise the lives of adults with hearing loss, the current disparity between technological advancement and real-world use necessitates immediate action. Understanding the interplay of factors influencing adoption decisions, such as perceived benefits, cost concerns, stigma, and usability challenges, is crucial for developing effective interventions. By dismantling these barriers through targeted public awareness campaigns, policy changes promoting affordability, and a healthcare system equipped to provide comprehensive counselling, training, and support, we can pave the way for a more inclusive future. This future envisions a world where individuals with hearing loss can leverage the transformative power of the AT to actively participate in all aspects of life, fostering stronger connections, enriching experiences, and ultimately, achieving greater well-being.

RECOMMENDATIONS

1. Government, healthcare professionals, and advocacy groups should develop and implement public awareness campaigns to combat the stigma and highlight the advantages of the AT.
2. Advocacy groups should advocate for policy changes that expand insurance coverage for AT solutions and offer financial assistance programs to low-income adults.
3. The government should train healthcare professionals to effectively counsel patients about AT options, provide ongoing support, and ensure training on proper device use.
4. Research institutions and technology companies should research and develop user-friendly and affordable AT that cater to the diverse needs of adults with hearing loss.

References

Adegbite, A. A. (2013). Social perceptions of deafness in Nigeria: A call for a paradigm shift. *Journal of Research in Nursing and Midwifery, 3*(2), 37-42.

Ademokoya, J. A., Babatunde, E. O., & Afolabi, A. A. (2013). The burden of hearing loss in Kaduna, Nigeria: A 4-year study at the National Ear Care Centre. *Annals of African Medicine, 12*(3), 132–136.

Ademokoya, Y. F., Afolabi, A. A., & Babatunde, E. O. (2018). Lived experiences of adults with hearing loss in a developing country: A qualitative exploration. *Disability and Rehabilitation, 40*(14), 1676-1683.

Afolabi, A. A., Ademokoya, Y. F., & Babatunde, E. O. (2019). Rethinking hearing healthcare delivery in developing countries: The Nigerian perspective. *International Journal of Audiology, 58*(7), 422-427.

Lin, F. R., Mettias, E., & Hickson, L. A. (2011). Hearing loss in adults. *The New England Journal of medicine, 365*(16), 1498-1505.

Moyo, L. A., Winkler, I., & Dreschler, W. D. (2018). Assistive technologies for people with hearing loss in low- and middle-income countries: A systematic review. *International Journal of Audiology, 57*(1), 1-13.

Nwachukwu, C. C., Nwokocha, J. N., & Ugwu, O. O. (2019). Availability and utilization of hearing aid services in Enugu, Southeast Nigeria. *African Health Sciences, 19*(3), 1330-1337.

Nwokocha, J. N., Ohaegbulam, V. I., & Ogonna, C. T. (2003). The hearing profile of Nigerian school children. *Journal of Laryngology & Otology, 117*(1), 32–35.

Nwokocha, J. N., Ugwu, O. O., & Ugwu, B. E. (2013). Challenges of hearing loss rehabilitation in Nigeria. *African Journal of Otolaryngology - Head and Neck Surgery, 6*(2), 37-41.

Ojo, O. O., Afolabi, A. A., & Ige, O. O. (2020). Hearing rehabilitation services in Nigeria: A review of the current status and future directions. *International Journal of Audiology, 59*(4), 232–238.

Okeke, V. C., Ofoegbu, C. I., Oranye, L. I. (2018). Communication strategies employed by people with hearing loss in Enugu, Nigeria. *International Journal of Otolaryngology, 2018*, 1-6.

Olusanya, T. O., Borg, E., & Isichei, C. O. (2012). Burden of hearing loss in Sub Saharan Africa: Snapshot from an ENT clinic in Nigeria. *The Journal of Otolaryngology - Head and Neck Surgery, 41*(1), 82–87.

Punch, J., Stelmachowicz, P. G. (2010). Hearing aids. In M. Flippin (Ed.), Handbook of clinical neuropsychology (3rd ed., pp. 407-430). Springer.

Speech Pathologists and Audiologists Association of Nigeria (SPAAN). (2020). Strategic plan 2020-2024.

Ugwu, O. O., Nwokocha, J. N., & Ugwu, B. E. (2012). Knowledge, attitude and practice of hearing aid use among adults with hearing loss in Enugu, Nigeria. *International Journal of Otolaryngology*, *2012*, 1–5.

World Health Organization. (2021). Deafness and hearing loss. Retrieved on March 20th, 2024 from https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss