

KNOWLEDGE, PERCEPTION AND PRACTICES OF HEALTHCARE STUDENTS AND PROFESSIONALS ON AUDIOLOGY SERVICES AT BUGANDO MEDICAL CENTRE, NORTHWEST TANZANIA.

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Abstract

This study aimed to assess level of knowledge, perception and practices of audiology services Bugando Medical Centre

Methods: A structured self-assessment questionnaire was administered to 322 participants, including 160 healthcare students and 162 healthcare professionals. Descriptive statistics was used to analyse the data recorded.

Results: The majority of participants, both healthcare students (91.25%) and professionals (95.06%), believed that healthcare students should receive more training in audiology services. A significant portion of participants (53.8% of students and 53.7% of professionals) were not up-to-date with the latest audiology developments. Additionally, participants had varying referral patterns: 28.5% referred patients for audiology services "always," 24.1% "sometimes," and 24.5% "often." Most participants supported the idea of allocating more resources to audiology services at Bugando Medical Centre, with 88.75% of healthcare students and 91.97% of healthcare professionals in agreement.

Discussion: The results underscore a consensus among healthcare students and professionals regarding the importance of audiology services, the need for enhanced training, and the significance of service improvement. It emphasized the importance of inter professional collaboration to optimize audiological care.

Conclusion: This research highlights the critical role of audiology services at Bugando Medical Centre and the unanimous belief among healthcare students and professionals in the necessity for more training and service enhancement. Addressing disparities in referral practices and strengthening collaboration among

healthcare disciplines are essential for enhancing audiology services at Bugando Medical Centre, ensuring accessibility and high-quality care.

Keywords: audiology services, healthcare students, healthcare professionals, knowledge, perception, practices, Bugando Medical Centre

Keywords: audiology, healthcare professionals, knowledge

1.1 Introduction

Audiologists are professionals in the healthcare industry who evaluate, diagnose, and provide treatment for issues related to hearing and balance (Martin & Clark, 2015). Along with clinical audiology, the field also emphasizes the importance of preventing hearing loss and promoting overall hearing health (Shames & Anderson, 2011). The audiology profession has existed since the 1940s, but hearing health concerns remain a big problem. Hearing loss is a significant public health issue that affects over 466 million people globally (World Health Organization, 2023). Hearing loss can have a profound impact on an individual's quality of life, affecting communication, social interaction, and cognitive function (Lin et al. 2011). Audiologists and other hearing care professionals play a critical role in the diagnosis, management, and treatment of hearing loss. However, access to audiology services is limited in many parts of the world, particularly in low- and middle-income countries (LMICs) (Chadha et al. 2021).

This section aims to provide background on audiology services and the current state of access to hearing care services in LMICs. It also outlines the problem statement and rationale for a study on audiology services among healthcare students and professionals at Bugando Medical Centre (BMC) in Tanzania.

1.2 Background

Audiologists and other hearing care professionals play a vital role in managing hearing loss and related issues. Unfortunately, their distribution across the globe is highly unequal, with the majority concentrated in high-income countries (Chadha et al., 2021). For instance, in Africa, the audiologist-to-population ratio ranges from 1:1,000,000 in some countries to 1:100,000 in others (Mulwafu et al., 2017). The unequal availability of audiology services in Low- and Middle-Income Countries (LMICs) is a significant global public health concern. This challenge stems from several interrelated factors, including limited financial resources, inadequate infrastructure, a shortage of necessary equipment, and, most crucially, a scarcity of trained hearing care professionals (Chadha et al., 2021). In some regions, there's also a pervasive lack of awareness regarding the importance of hearing care, which leads to a low demand for audiology services. This can be attributed to various factors, including cultural beliefs and social stigma associated with hearing loss. Consequently, many individuals in LMICs do not seek early diagnosis and intervention for their hearing issues, which can exacerbate the problem over time.

Hearing loss is a prevalent health condition that can affect people of all ages, profoundly impacting

their physical, emotional, and social well-being. According to the World Health Organization (2020), an estimated 34 million children worldwide suffer from disabling hearing loss, with over 90% of them residing in LMICs. Moreover, the prevalence of hearing loss significantly increases with age, affecting approximately one-third of individuals over the age of 65 (Lin et al., 2011). The consequences of untreated hearing loss are far-reaching. In children, it can impede speech and language development, hinder educational progress, and limit future employment opportunities. In adults and the elderly, it can lead to social isolation, depression, and cognitive decline. Furthermore, hearing loss often goes hand-in-hand with balance issues, which can increase the risk of falls and injuries, particularly among the elderly. To address the pressing need for hearing care services in LMICs like Tanzania, it's essential to implement a multi-faceted approach. This approach should encompass strategies for workforce development, infrastructure enhancement, community awareness campaigns, and the establishment of sustainable audiology programs. Efforts should focus on training more audiologists and hearing care professionals, as well as equipping them with the necessary skills and knowledge to provide comprehensive care. Additionally, collaborations with international organizations and institutions can facilitate knowledge transfer and capacity building in LMICs. Furthermore, raising public awareness about the importance of hearing health is paramount. Educational campaigns can dispel myths and misconceptions surrounding hearing loss and promote early intervention. Community-based screening programs can also help identify individuals with hearing issues, enabling timely referrals for diagnosis and treatment.

The unequal distribution of audiology services, particularly in LMICs like Tanzania, underscores the urgent need for action. Hearing loss is a prevalent and often overlooked health concern that affects individuals of all ages and can have profound consequences. By addressing the shortage of hearing care professionals, improving infrastructure, and raising awareness, we can take significant strides toward ensuring equitable access to audiology services and enhancing the quality of life for individuals with hearing and balance disorders in LMICs.

METHODOLOGY

2.1 Study design and setting

A study's design involved a cross sectional study. It involved health care students, and professionals from Bugando Medical Centre and its sister institution, the Catholic University of Health and Allied Sciences. Participants were involved in the study for six months, from 1st February to 31st July 2023.

The study was conducted at Bugando Medical Centre and the Catholic University of Health and Allied Sciences. It is a teaching hospital that collaborates with the Catholic University of Health and Allied Sciences.

2.3 Participants

Participants included healthcare medical and nursing students; and healthcare professionals at CUHAS and BMC, respectively. The expected participants were 361 from this study but due to unforeseen

constraints the study managed to include 322 participants who consented. Inclusion and exclusion criteria were All healthcare medical and nursing students, and healthcare professionals who consented to participate in the study at BMC or CUHAS. Exclusion criteria were students who had recently joined the university of CUHAS for less than two years, recently employed healthcare professionals at Bugando Medical Centre, participants who had mental health challenges, and participants who had chronic medical conditions that will inhibit participation in the study.

2.4 Procedures

A stratified sampling approach was used to include participants who meet the inclusion criteria. Independent variables were Clinical role, educational level and exposure of healthcare students and professionals to healthcare settings with audiology services. Dependent variables were knowledge, perception and practices related to audiology or hearing services among healthcare students and professionals at Bugando Medical Centre. Self-administered questionnaire was given to participants who consented to participate in the study. This questionnaire was initially pretested to see if it fits the study.

2.5 Data analysis:

Descriptive statistics was used to describe the knowledge, perception, and practices of audiology services among healthcare students and professionals at Bugando Medical Centre.

2.6 Ethical Consideration

Ethical approval and clearance to conduct the study was sought from the CUHAS/BMC research ethics and review committee. Permission to conduct the study was sought from BMC administration. All participants included in the study had to sign a consent form. Every participant had the right to refuse to participate in the study.

3. RESULTS

The study's primary objectives were to assess the level of knowledge, explore perceptions, and examine practices related to audiology services among healthcare students and professionals. We collected data

through a cross-sectional design and a stratified sampling approach, initially aiming to include 361 participants. However, due to constraints, the findings are based on 322 participants.

3.1 Demographic data of all study participants

Each group of the participants were represented accordingly, nursing students had 25.2% (n= 81) participants, medical students had 24.5 % (n =79) participants, general practitioners and residents had 19.3% (n=62) participants. Specialists were also represented with 15.5% (n =50) participants and nurses were represented with 15.5% (n=50) participants. This brings about (n=160) healthcare students and (n= 162) healthcare professionals this is shown in a pie chart (figure 1) and table (table 1)

Figure 1: Pie chart showing percentage of all participants based on clinical role in the study conducted at Bugando Medical Centre.

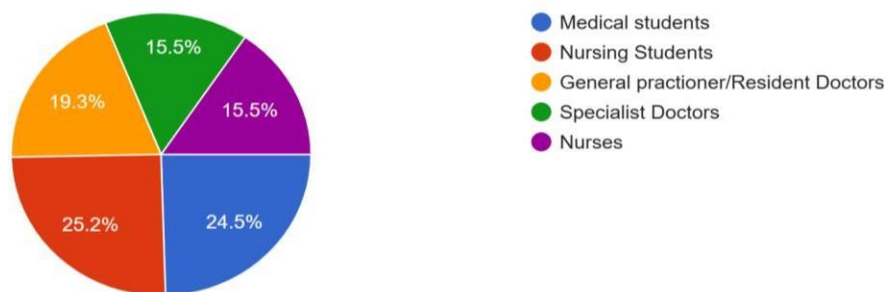


Table 1. Other demographic data of study participants

Demographic Data	Number of Participants in each demographic category (n= 322)	Percentage (100%) of each demographic category
Level of Education		
Undergraduate	151	46.73

Diploma	75	22.01
Postgraduate	71	22.01
Advanced Diploma	25	7.74
Year of Exposure		
2 years or less	148	45.77
2 to 5 years	110	34.07
More than 5 years	64	19.79
Sex		
Male	176	54.57
Female	146	45.23

3.2. Level of Knowledge of Participants on audiology services at Bugando Medical Centre

In the knowledge section of the survey, participants were probed with three pivotal questions aimed at gauging their awareness and comprehension of audiology services. The responses unveiled intriguing insights into the participants' knowledge landscape. Among healthcare students, 49.82% (n=79.71) indicated familiarity with the concept of audiologists, signifying a moderate level of awareness within this group. In contrast, among healthcare professionals, 56.07% (n=91.41) affirmed their awareness of audiologists, suggesting a slightly higher level of recognition among this cohort. Furthermore, both healthcare students and professionals exhibited commendably high levels of awareness regarding the existence of audiology services at Bugando Medical Centre. A striking 89.41% (n=143) of healthcare students demonstrated familiarity with these services, while an equally notable 84.6% (n=137) of healthcare professionals acknowledged their awareness of the same. However, an intriguing revelation surfaced in the data - a substantial segment of participants in both groups confessed to a dearth of up-to-date knowledge in the field of audiology. A considerable 53.8% (n=86) of healthcare students and an almost identical 53.7% (n=87) of healthcare professionals admitted to this gap in their understanding. These multifaceted findings are vividly depicted in Table 2 below, providing a comprehensive overview of the participants' varying degrees of awareness and knowledge within the realm of audiology services. These insights underscore the importance of continuous education and updates in the field, ensuring that healthcare professionals and students are equipped with the latest knowledge to deliver optimal care to patients with hearing and balance disorders.

Table 2: Table showing the level of knowledge of health care students and professionals

Question of Level of Knowledge	Response	Healthcare students out of 160 and there percentage	Healthcare professions out of 162 and there percentage
1. Have you ever heard of an Audiologist or hearing care specialist?	yes	79.71 (49.82%)	91.41(56.07%)
2. Have you ever heard of audiology Services (ear and hearing care services)?	yes	143 (89.41%)	137 (84.6%)
5. Are you currently up-to-date on the latest developments and advancements in audiology services/hearing services?	No	86 (53.8%)	87(53.7%)

3.3 Perception of Participants on Audiology services

In the conducted study, a resounding consensus emerged among participants regarding the necessity for increased resources within audiology services at Bugando Medical Centre. A striking 88.75% (n=142) of healthcare students and a remarkable 91.97% (n=149) of healthcare professionals passionately advocated for the augmentation of resources in this critical healthcare domain. Moreover, a substantial majority of respondents, comprising 65.5% (n=105) of healthcare students and an even more pronounced 72.84% (n=118) of healthcare professionals, underscored the immense importance of fostering collaboration between audiologists and their fellow healthcare practitioners. This collaboration was deemed essential for delivering comprehensive care for ear-related issues and the complex realm of hearing and balance disorders. The significance of these perspectives is comprehensively illustrated in Table 3, which provides a detailed breakdown of the survey results. The overwhelmingly shared viewpoint among participants points towards a clear mandate for the enhancement of audiology services and the establishment of robust interdisciplinary cooperation within the healthcare community at Bugando Medical Centre. Such actions are imperative to ensure the highest standards of care and support for patients with hearing and balance disorders.

Table 3: Table demonstrating response on perception of healthcare students and professionals of audiology services

Question of Level Perception	Response	Healthcare students out of 160 and there	Healthcare professions out of 162 and there percentage
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		percentage	
3. Do you think Bugando Medical Centre should have more resources dedicated to audiology services/ear and hearing care services?	Yes	142 (88.75%)	149(91.97%)
6. How important do you think it is for healthcare professionals to collaborate with audiologists in the care of patients with hearing or balance disorders?	Very important	105 (65.6%)	118 (72.8%)

3.4 Practices of Participants of Audiology services

In the conducted study, a significant majority of participants expressed their support for increased training opportunities for healthcare students, with 91.25% (n=146) of healthcare students and 95.06% (n=154) of healthcare professionals advocating for this. Interestingly, a substantial proportion of both healthcare students (56.3%, n=90) and professionals (68.5%, n=111) reported encounters with patients suffering from hearing and balance disorders but were unable to provide a diagnosis. This underscores the need for enhanced education and training in this area. Furthermore, a noteworthy 28.5% (n=92) of participants referred patients with hearing and balance issues to audiologists, indicating room for improvement in healthcare management for such conditions, as illustrated in Table 4 and Figure 2. The study also identified three primary barriers to effective management of hearing and balance disorders, as depicted in Figure 3. A majority of respondents (53.9%, n=174) believed that a lack of awareness among medical staff was a significant obstacle. Additionally, 36.5% (n=118) of participants perceived the high cost of services as a hindrance, while 34.4% (n=111) felt that hearing loss was not widely recognized as a substantial health issue. These findings highlight the need for targeted interventions to address these barriers and enhance the overall quality of care for patients with hearing and balance disorders.

Table 4: Table showing level of practices of audiology services to participants of the study

Question of Level Practice	Response	Healthcare students out of 160 and there percentage	Healthcare professions out of 162 and there percentage
4. Do you believe that healthcare students should receive more training in audiology services/ ear and hearing care services?	Yes	146 (91.25%)	154(95.06%)
12. Have you ever encountered a patient with a hearing or balance disorder that you were not able to properly diagnose or manage?	Very important	105 (65.6%)	118 (72.8%)

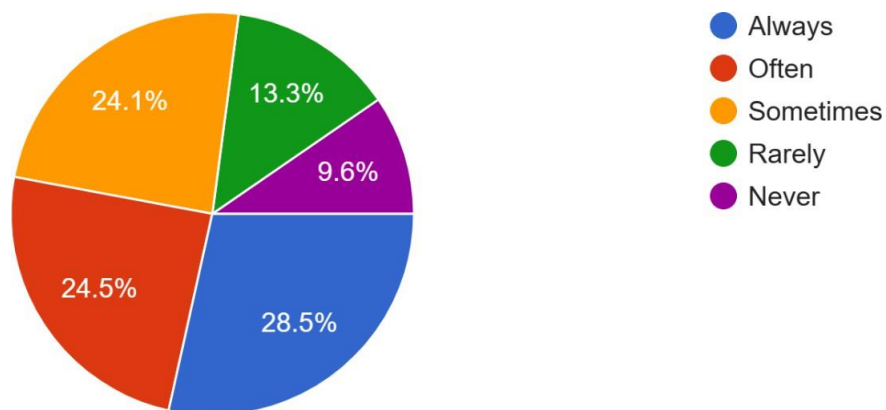


Figure 2: Pie chart showing the percentage of participants who referred patients with hearing and balance

disorders to audiologists at Bugando Medical Centre

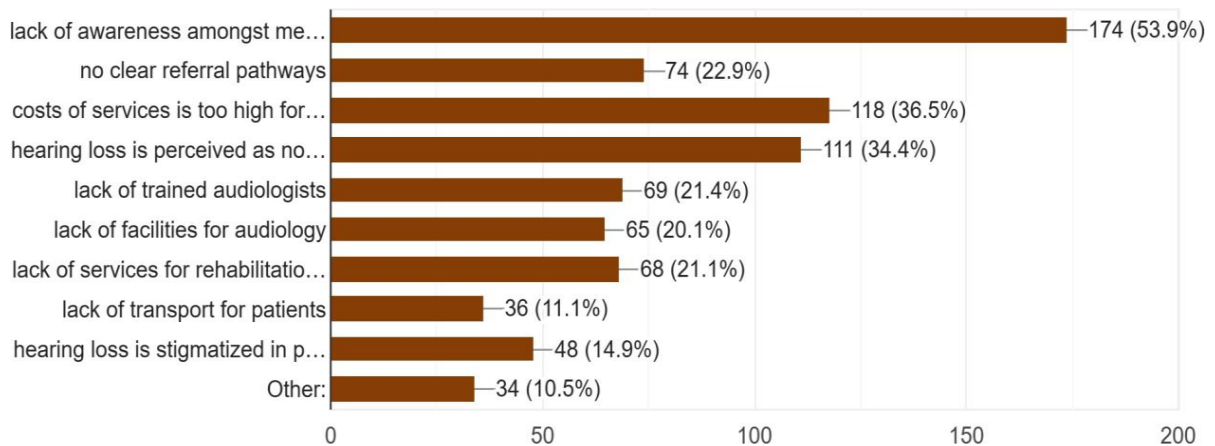


Figure 3: Bar chart showing the three main barriers believed to hinder audiology services as perceived by participants at Bugando Medical Centre. It also shows other barriers associated to it.

4. DISCUSSION

The study results illuminate the current landscape of audiology services at Bugando Medical Centre, shedding light on several crucial aspects that warrant in-depth discussion and reflection.

Awareness and Perception: The data reveals a remarkably high level of awareness regarding audiology services among both healthcare students and professionals at Bugando Medical Centre. Nearly all participants, comprising a diverse group of medical practitioners, had heard of audiologists or hearing care specialists. Furthermore, a similar percentage of respondents were aware of the audiology services offered at the medical centre itself. This high level of awareness is an encouraging sign, suggesting that the concept of audiology is well-entrenched within the healthcare community at Bugando. Perhaps even more notable is the consensus among participants that Bugando Medical Centre should allocate more resources to enhance audiology services. A significant proportion of both healthcare students and professionals expressed their

strong belief in the need for more extensive training in audiology for healthcare students. This collective viewpoint underscores the overarching recognition of the pivotal role that audiology services play within the broader healthcare system.

Collaboration: In addition to awareness and perception, the data highlights the pivotal importance of collaboration between healthcare professionals and audiologists in providing comprehensive care to patients with hearing or balance disorders. The majority of respondents emphasized the significance of this collaboration, with a substantial percentage considering it to be either "very important" or "important." Encouraging and facilitating such collaboration can lead to notable improvements in patient care and overall outcomes for individuals grappling with hearing or balance issues.

Referral Practices: One notable observation from the survey data is the variability in referral practices among the participants. This variability underscores the pressing need for a standardized approach to referring patients for audiology services. Establishing clear and consistent guidelines is crucial to ensure that patients with hearing or balance disorders receive prompt and appropriate care. A standardized approach can streamline the referral process, ultimately benefiting patients by expediting assessments and treatment.

Barriers to Access: Another significant finding from the survey pertains to the barriers encountered by patients when seeking access to audiology services at Bugando Medical Centre. Three specific barriers were identified, reflecting potential areas for improvement: **Lack of Awareness Amongst Medical Staff:** A notable barrier emerged in the form of insufficient awareness among medical staff regarding the availability and importance of audiology services. Addressing this knowledge gap among healthcare professionals is critical to ensuring that patients are appropriately referred to audiology services when needed. **High Cost of Services:** The perception of high costs associated with audiology services emerged as a barrier for some patients. Exploring avenues to make these services more affordable or to provide financial assistance can enhance access for individuals facing financial constraints. **Perceived Low Significance of Hearing Loss:** Some patients appeared to downplay the significance of hearing loss as a medical concern. Raising awareness about the implications of hearing and balance disorders and emphasizing their importance in overall health is essential.

This research has provided invaluable insights into the knowledge, perception, and practices related to audiology services among healthcare students and professionals at Bugando Medical Centre. While there is a strong foundation of awareness and recognition of audiology's importance, there are also areas that warrant attention and improvement. Implementing the recommendations outlined in this study can empower Bugando Medical Centre to enhance its audiology services, ultimately contributing to the delivery of high-quality ear and hearing care services in Tanzania. The key to success lies in fostering collaboration, standardizing referral procedures, and addressing the identified barriers to access, ensuring that patients receive the care they need and deserve.

5. RECOMMENDATION AND CONCLUSION

The following are the recommendations following results given by the study.

Resource Allocation: Bugando Medical Centre, being a prominent healthcare institution, must prioritize resource allocation to further strengthen its audiology services. The allocation of additional resources is critical to ensure that the services are equipped with state-of-the-art equipment and well-trained professionals. Adequate funding will not only enhance the quality of care but also contribute to the sustainability of these services over time.

Moreover, Bugando Medical Centre should consider investing in ongoing training and professional development for its audiologists and other healthcare staff involved in audiology services. This investment will enable the facility to keep up with the latest advancements in audiology, ensuring that patients receive the most up-to-date and effective treatments available.

Training Programs: An essential aspect of improving audiology services is the incorporation of comprehensive training programs. These programs should not only be designed for healthcare students but also extended to the existing workforce. By offering training in audiology services, Bugando Medical Centre can bridge the gap in knowledge and skills, ultimately leading to better patient outcomes. The training programs should encompass both theoretical and practical components. This holistic approach will ensure that healthcare professionals are not only well-versed in the theoretical aspects of audiology but also proficient in applying their knowledge in real-world clinical settings. Practical training will enable them to diagnose and manage hearing and balance disorders effectively.

Quality Improvement: Bugando Medical Centre should embark on a quality improvement journey to address any existing barriers that hinder patients from accessing audiological services seamlessly. Conducting a thorough assessment of the current processes and facilities is the first step in identifying areas that require improvement. This assessment can encompass various aspects, such as the physical accessibility of audiology clinics, the waiting times for appointments, and the overall patient experience. By actively seeking feedback from patients and healthcare professionals, Bugando Medical Centre can pinpoint areas for enhancement.

Collaboration: Collaboration is fundamental in the field of audiology. Bugando Medical Centre should prioritize and nurture collaboration between healthcare professionals and audiologists. This inter professional teamwork ensures that patients receive holistic care, where medical and audiological expertise converge to provide comprehensive solutions. Effective collaboration can lead to early detection and intervention in cases of hearing and balance disorders, significantly improving patient outcomes. Bugando Medical Centre can facilitate collaboration through regular interdisciplinary meetings, joint patient consultations, and shared decision-making processes.

Standardized Referral Guidelines: To streamline the patient journey and ensure timely access to audiological services, Bugando Medical Centre should establish standardized referral guidelines. These guidelines will serve as a roadmap for healthcare professionals, outlining the criteria for referring patients for audiological assessment and treatment. Standardization reduces variability in the referral process, ensuring that all patients with potential hearing or balance issues are identified promptly. Bugando Medical Centre can

work closely with referring healthcare providers to educate them about the referral guidelines and the importance of early intervention.

In conclusion, this study underscores the critical role of audiology services at Bugando Medical Centre in Tanzania. The unanimous agreement among healthcare students and professionals regarding the necessity for more training and service enhancement is a clear call to action. By implementing these recommendations, Bugando Medical Centre can take significant strides in improving audiology services and, in turn, contribute to the well-being of its patient population.

REFERENCES

- Mulwafu, W., Ensink, R., Kuper, H., & Fagan, J. (2017). Survey of ENT services in sub-Saharan Africa: little progress between 2009 and 2015. *Global Health Action*, 10(1), 1289736.
- Lin, F. R., Niparko, J. K., & Ferrucci, L. (2011). Hearing loss prevalence in the United States. *Archives of Internal Medicine*, 171(20), 1851–1852.
- Chadha, S., Kamenov, K., & Cieza, A. (2021). The World Report on Hearing, 2021. *Bulletin of the World Health Organization*, 99(4), 242–242A.
- Deafness and hearing loss. (n.d.). Retrieved April 27, 2023, from <https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss>
- Martin, F. N., & Clark, J. G. (2015). *Introduction to Audiology*. Pearson.
- Shames, G. H., & Anderson, N. B. (2011). *Human Communication Disorders: An Introduction*. Pearson.
- Kamenov, K., Martinez, R., Kunjumen, T., & Chadha, S. (2021). Ear and Hearing Care Workforce: Current Status and Implications. *Ear and Hearing*, 42(2), 249–257.
- Nyarubeli, I. P., Tungu, A. M., Moen, B. E., & Bråtveit, M. (2019). Prevalence of Noise-Induced Hearing Loss Among Tanzanian Iron and Steel Workers: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, 16(8). <https://doi.org/10.3390/ijerph16081367>.
- Iselin Ertzgaard, S., Kristin, N., Sofie, T., Giske Sindberg, H., Tobias Bang, H., Cosmas, M., Tron Vedul, T., Aslam, N., & Jon, Ø. (2020). Prevalence of hearing impairment among primary school children in the Kilimanjaro region of Tanzania. *International Journal of Pediatric Otorhinolaryngology*, 130, 109797. <https://doi.org/10.1016/j.ijporl.2019.109797>.

- World Health Organization. (2021). *World Report on Hearing*. World Health Organization
- Scope of Practice in Audiology. (2018). <https://www.asha.org/policy/sp2018-00353/>
- Joubert, K., Sebothoma, B., & Kgare, K. S. (2017). Public awareness of audiology, hearing, and hearing health in the Limpopo Province, South Africa. *The South African journal of communication disorders* = *Die Suid-Afrikaanse tydskrif vir Kommunikasieafwykings*, 64(1), e1–e9. <https://doi.org/10.4102/sajcd.v64i1.557>.
- Audiology Worldnews. (n.d.). Retrieved April 4, 2023, from <https://www.audiology-worldnews.com/awareness/1735-a-look-at-hearing-healthcare-in-kenya>.
- Bhamjee, A., le Roux, T., Swanepoel, D. W., Graham, M. A., Schlemmer, K., & Mahomed -Asmail, F. (2022). Perceptions of Telehealth Services for Hearing Loss in South Africa's Public Healthcare System. *International Journal of Environmental Research and Public Health*, 19(13). <https://doi.org/10.3390/ijerph1913778>