

## Prevalence of Hearing Aid Usage in Selected Teaching Hospitals in South-Western Part of Nigeria

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### ABSTRACT

Hearing loss stands as a prevalent global health concern, impacting a significant number of individuals across the world. While the potential of hearing aids to ameliorate auditory deficits and enhance daily functioning is well-recognized, their adoption remains disproportionately low in numerous developing nations, Nigeria included. This study thus examined the prevalence of hearing aid usage and the associated factors among patients with hearing loss in selected teaching hospitals in Southwestern Nigeria.

Cross sectional research design was adopted for this study. The study's population comprised persons with hearing loss in five (5) teaching hospitals in the South-western part of Nigeria. Using purposive sampling technique, a sample size of two-hundred and fifty (250) patients with hearing loss who have visited or are currently receiving treatment at the selected teaching hospitals served as the sample for this study.

The findings revealed a high prevalence of hearing loss in South-western part of Nigeria ( $\bar{x}=3.23$ ). There is also a high prevalence of hearing aid usage in the region, with 99.5% of the respondents agreeing to using hearing aids. Most of the respondents 184 (85.6%) use hearing aid every day or most days (at least 5 days a week), while only 5.6% of the respondents rarely use hearing aid. The prominent factors that influence hearing aid usage are: significant improvement in ability to communicate ( $\bar{x} = 3.32$ ), improved self-esteem ( $\bar{x} = 3.22$ ), enhancement of overall enjoyment of social interactions ( $\bar{x} = 3.30$ ) and improved confidence ( $\bar{x} = 3.19$ ). The finding also revealed that the use of hearing aid is very effective in improving the quality of life of people with hearing loss.

The study concluded that hearing aid serves as a valuable intervention for people with hearing loss, as it can enhance their communication, social participation and emotional well-being. There is therefore a need for more awareness and screening programs to identify and treat people with hearing impairment as early as possible.

**Key words:** *Hearing loss, hearing aids, hearing aid usage, prevalence of hearing aid usage*

## INTRODUCTION

The human ear is a vital component of the auditory system as it serves as the primary sensory organ responsible for hearing. It plays a crucial role in the initial processing of sound and contains all the necessary sensory receptors for auditory perception (Boundless, 2016). Hearing is a complex process wherein the ear converts sound vibrations from the external environment into nerve impulses that are transmitted to the brain for interpretation as sounds (Britannica, 2021). The mechanism of hearing involves several interconnected components. The ear, comprising the outer, middle, and inner ear, plays a crucial role in this process. The outer ear collects and directs sound waves towards the eardrum, causing it to vibrate. The middle ear amplifies and transmits these vibrations to the inner ear, specifically the cochlea. Within the cochlea, fluid waves are generated, stimulating hair cells that generate nerve impulses. These impulses are then carried by the auditory nerve to the brain (Dana Foundation, 2019). Unlike listening, which is an active and voluntary cognitive process requiring focused attention and comprehension of sounds, hearing is a passive and involuntary sensory process.

The human ear is an intricately designed and fragile structure, making it highly susceptible to damage that can result in hearing loss either gradually over time or immediately, depending on the nature of the injury. Hearing loss occurs when the proper transmission of sound is disrupted, starting from the external ear through the middle ear and inner ear, and finally to the auditory region of the brain for interpretation. Various factors contribute to hearing loss in humans,

including age-related hearing loss known as presbycusis, exposure to loud noise, the use of ototoxic drugs, and other causes. When any of these factors come into play, there is a risk of experiencing hearing loss in the affected ear. Consequently, the ability to hear sounds clearly becomes compromised (Hearing Loss Association of America, 2021).

According to the World Health Organization (WHO), an alarming number of teenagers, young adults, and students, approximately one billion individuals, are at risk of noise-induced hearing loss (NIHL) due to unsafe recreational listening behaviors (WHO, 2015, 2019). Globally, hearing impairment is the most prevalent sensory deficit, affecting an estimated 1.5 billion people (WHO, 2021). Continuous exposure to excessive noise without protection accumulates over time and poses an increased risk of NIHL.

Hearing aids are devices that help people with hearing difficulties to hear better. They work by amplifying sound through a microphone, an amplifier, and a speaker. There are different types of hearing aids that fit in or behind the ear. The most common type is the behind-the-ear (BTE) hearing aid, which has a tube that connects the earpiece to the device behind the ear. A smaller version of this is the mini-BTE hearing aid, which is also worn behind the ear. Another type is the in-the-ear (ITE) hearing aid, which is placed in the ear canal. The smallest type is the completely-in-canal (CIC) hearing aid, which is hidden deep in the ear canal (American Speech-Language-Hearing Association, 2020). Hearing aids can be customized to suit the individual user's needs and preferences. They are mainly used for sensorineural hearing loss, which is a permanent form of hearing loss that cannot

be cured, but can be managed with hearing aids or cochlear implants (National Institute on Deafness and Other Communication Disorders, 2017).

Hearing aid usage is increasingly common among individuals with hearing loss, with a growing number of people adopting these devices to improve their communication and quality of life. According to the National Institute on Deafness and Other Communication Disorders, approximately 37.5 million adults in the United States report having some degree of hearing loss, and nearly 70% of adults aged 70 and older have hearing loss. Despite this, many individuals do not seek treatment or use hearing aids, with only about 20% of adults with hearing loss in the United States using hearing aids.

There are several reasons why individuals with hearing loss may not use hearing aids, including a lack of awareness of their hearing loss, a lack of perceived need for treatment, concerns about cost, and perceived stigma associated with wearing hearing aids. Education and awareness campaigns can help to increase awareness of the benefits of hearing aids and encourage more individuals to seek treatment.

### Statement of the Problem

Hearing loss stands as a prevalent global health concern, impacting a significant number of individuals across the world. Its far-reaching effects extend into domains such as effective communication, education, active social involvement, and overall quality of life. While the potential of hearing aids to ameliorate auditory deficits and enhance daily functioning is well-recognized, their adoption remains

disproportionately low in numerous developing nations, Nigeria included. There is a lack of adequate data on the factors that influence hearing aid usage and the barriers that prevent people from accessing and using hearing aids in Nigeria. This study therefore seeks to investigate the prevalence of hearing aid usage and the associated factors among patients with hearing loss in selected teaching hospitals in Southwestern Nigeria. Top of Form

### Objectives of the study

The main objective of this study is to examine the prevalence of hearing aid usage in selected teaching hospitals in South-western part of Nigeria. However, the specific objectives are to:

- i. ascertain the prevalence of hearing loss in South-western part of Nigeria;
- ii. examine the prevalence of hearing aid usage in South-western part of Nigeria;
- iii. identify factors that influence hearing aid usage;
- iv. determine the effectiveness of hearing aids in improving the quality of life of people with hearing loss.

### Research questions

Based on the objectives of the study, the following will serve as research questions for the study:

1. What is the prevalence of hearing loss in South-western part of Nigeria?
2. What is the prevalence of hearing aid usage in South-western part of Nigeria?
3. What are the factors that influence hearing aid usage?
4. What is the effectiveness of hearing aids in improving the quality of life of people with hearing loss?

## LITERATURE REVIEW

### Prevalence of hearing loss

Hearing loss is a common condition that affects millions of people worldwide. It can have significant impacts on the quality of life, communication, and social participation of individuals with hearing loss and their families. The World Health Organization (2019) estimated that 466 million people worldwide suffer from hearing loss, which is about 5.3% of the global population. However, this estimate may not reflect the true burden of hearing loss, as it does not include people with mild or unilateral hearing loss, or people who have not been diagnosed or treated for their hearing loss. Moreover, the prevalence of hearing loss varies across different regions and populations, depending on the socioeconomic status, environmental factors, and health care access of the population (Stevens et al., 2013).

One of the main factors that influences the prevalence of hearing loss is age. As people age, they are more likely to experience age-related hearing loss, also known as presbycusis, which is characterized by a gradual decline in hearing sensitivity, especially in high-frequency sounds. A study by Hoffman et al. (2017) in the United States on hearing loss, found that the overall prevalence of hearing loss among adults was 14%, but it increased to 35% among adults aged 65 years and older. A similar trend was observed Zhang et al. (2019) in a study conducted in China, where the prevalence of hearing loss among adults was 12.1%, but it increased to 43.6% among adults aged 60 years and older.

Another factor that influences the prevalence of hearing loss is genetics. Some people may inherit genes that make them more susceptible to hearing loss, either at birth or later in life. For example, some genetic mutations can cause congenital hearing loss, which is present at birth or develops shortly after birth. Other genetic mutations can cause progressive hearing loss, which worsens over time due to environmental or aging factors (Schrijver, 2004). A study conducted in India found that the prevalence of sensorineural hearing loss, which is the most common type of permanent hearing loss caused by damage to the inner ear or auditory nerve, was 7.3% among adults, and that 40% of the cases were attributed to genetic factors (Singh et al., 2016).

Exposure to loud noise is another factor that influences the prevalence of hearing loss. Noise-induced hearing loss can occur when a person is exposed to sounds that are too loud or too long, such as from occupational noise, recreational noise, or environmental noise. Noise-induced hearing loss can be temporary or permanent, depending on the intensity and duration of the exposure, and the individual's susceptibility to noise (Le Prell et al., 2013). A study conducted in Africa found that the prevalence of conductive hearing loss, which is caused by problems with the middle ear such as ear infections or wax buildup, was 4.6% among children, and that 60% of the cases were attributed to chronic otitis media, which is a type of ear infection that can result from exposure to loud noise (Mulwafu et al., 2016).

Another factor that influences the prevalence of hearing loss is infections. Some infections can affect the ear or the auditory system, causing inflammation, damage, or

complications that can lead to hearing loss. For example, some viral infections such as measles, mumps, rubella, and cytomegalovirus can cause congenital or acquired hearing loss in children or adults. Some bacterial infections such as meningitis, syphilis, and tuberculosis can also cause hearing loss if they spread to the ear or the brain (Lalwani, 2008). In addition, some parasitic infections such as malaria and schistosomiasis can cause anemia or malnutrition that can affect the development and function of the ear and the auditory system (Smith et al., 2006).

Prevalence of hearing loss is equally influenced by certain medical conditions. Some medical conditions can affect the ear or the auditory system directly or indirectly, causing hearing loss as a symptom or a complication. For example, some autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus can cause inflammation or damage to the inner ear or the auditory nerve. Some metabolic diseases such as diabetes and thyroid disorders can affect the blood supply or the nerve function of the ear or the auditory system. Some neurological diseases such as stroke and multiple sclerosis can affect the brain regions or pathways involved in hearing processing (Lalwani, 2008).

In addition, lifestyle is another factor that influences the prevalence of hearing loss. Some lifestyle factors such as smoking, physical inactivity, and poor diet have been linked to an increased risk of hearing loss by affecting the vascular health or the oxidative stress of the ear or the auditory system (Curhan et al. 2010). For example, smoking can reduce the blood flow to the inner ear or increase the production of free radicals that can damage the hair cells or the auditory

nerve. Physical inactivity can increase the risk of cardiovascular diseases that can impair the blood supply to the ear or the auditory system. Poor diet can lead to deficiencies in vitamins or minerals that are essential for the development and function of the ear or the auditory system.

### Prevalence of hearing aids usage

Hearing aids are often the most common treatment option for hearing loss, as they can amplify sounds and improve speech understanding (Chien and Lin, 2012). However, many people who could benefit from hearing aids do not use them, and the prevalence of hearing aid usage varies widely across different populations and countries. According to the World Health Organization (2023), about 466 million people have disabling hearing loss, which is defined as a hearing loss greater than 40 dB in the better ear for adults and greater than 30 dB in the better ear for children. However, only about 17% of people who need hearing aids use them, and this figure drops to 3% in low- and middle-income countries.

Studies conducted in developed countries have also reported low prevalence rates of hearing aid usage, ranging from 15% to 30%. For instance, a study based on the National Health and Nutrition Examination Survey (NHANES) in the United States found that only 22% of adults aged 70 and older with hearing loss reported using hearing aids (Chien and Lin, 2012). Similarly, a study using data from the English Longitudinal Study of Ageing (ELSA) in the United Kingdom found that only 30% of adults with hearing loss reported using hearing aids (Dawes et al., 2014).

Aguwa et al. (2021) conducted a study to examine the relative occurrence of visual and

hearing impairments and the corresponding use of corrective devices such as glasses and hearing aids. They randomly distributed 500 questionnaires to students of Nnamdi Azikiwe University, Nnewi campus. They collected 478 questionnaires, but 11 of them were invalid due to errors, leaving 467 valid questionnaires (93.4% of the total number). They calculated the results using simple percentages. They found that only 1.5% of the participants had hearing impairments, and only one of them used a hearing aid (0.21% of the total number). In contrast, 117 participants (25.05% of the total number) had visual impairments, and 41.81% of them used glasses (15.85% of the total number).

Several factors have, however, been identified as contributing to the low prevalence of hearing aid usage. These include:

**Cost:** the cost of hearing aids is a significant barrier to their adoption. Hearing aids are often expensive, and many people cannot afford them or do not have insurance coverage for them.

**Stigma:** many people view hearing aids as a sign of old age or disability, and are reluctant to use them due to social stigma or negative self-image.

**Lack of awareness:** many people are unaware of the benefits of hearing aids or do not know where to obtain them or how to use them properly.

**Limited accessibility:** in some countries, hearing aids are not widely available or accessible, particularly in rural areas or for marginalized groups.

**Limited perceived need:** some people may not perceive their hearing loss as severe enough to require hearing aids or may not be

motivated to seek help for their hearing problems.

These factors may interact with each other and with individual characteristics, such as age, gender, education, income, culture, and health status, to influence the decision to use hearing aids. Therefore, it is important to understand the barriers and facilitators of hearing aid usage from a holistic perspective and to develop interventions that address the specific needs and preferences of different groups of people with hearing loss.

### Theoretical review

There are several theories that attempt to explain the perceptual processing of sound sensation. However, the most referred to hearing theories are the Place Theory and the Frequency Theory.

#### Place theory

According to the Place Theory or Resonance Theory, sound is perceived based on where the vibrations are on the basilar membrane in the ear. Helmholtz proposed this theory in 1857 and said that the inner ear filters the sounds by their frequencies and sends them to the brain via the auditory nerve. The cochlea has different parts for different frequency ranges, with low frequencies at the base and high frequencies at the apex. The theory also suggests that the auditory cortex has specialized areas for different frequencies. This theory is well supported by experiments, such as functional MRI studies, and is widely accepted for explaining how the ear and the brain process and interpret sound frequencies.

### Frequency theory

The frequency theory of hearing suggests that one's perception of sound is directly linked to the frequency of sound waves. This theory posits that the ears can detect a wide range of frequencies, from low to high pitches. It works by sensing changes in air pressure caused by sound waves, translating them into neural signals sent to the brain. Different hair cells in the inner ear respond to various frequency ranges, with some being more sensitive to high frequencies and others to low frequencies. The brain processes information from these cells to create one's perception of sound. Early versions of this theory suggested that the auditory nerve could fire at a wide range of rates, but later research revealed that it has a more limited range. Nowadays, it is generally agreed that the frequency theory explains the perception of low-frequency sounds, while the place principle is more applicable to high-frequency sounds, and mid-frequency sounds may involve both theories.

### METHODOLOGY

Cross sectional research design was adopted for this study. The study's population comprised persons with hearing loss in five (5) teaching hospitals in the South-western part of Nigeria.

Using purposive sampling technique, a sample size of Two-hundred and fifty (250) patients with hearing loss, who have visited or are currently receiving treatment at the selected teaching hospitals served as the sample for this study.

### RESULTS

#### Answers to research questions

There were 4 research questions formulated for this study in order to achieve the set objectives. Answers to these research questions are provided as follows:

Research question 1: What is the prevalence of hearing loss in South-western part of Nigeria?

The prevalence of hearing loss in South-western part of Nigeria, was examined under 7 items, with the response scale of: Strongly Agree, Agree, Disagree and Strongly Disagree. The result is presented in Table 1 below.

Table 1 shows the prevalence of hearing loss in South-western part of Nigeria. The result revealed a weighted mean score of 3.23, which is higher than the criterion mean score of 2.50. This implies a high prevalence of hearing loss in South-western part of Nigeria. The result further showed that all items examined under this construct had mean scores higher than the criterion mean. This further proves the high prevalence of hearing loss in South-western part of Nigeria.

Table 1. Prevalence of hearing loss in South-western part of Nigeria

S/N	Hearing difficulty	SA	A	D	SD	Mean	Std. Dev.
1	I have been diagnosed with hearing loss by a medical professional.	122 56.7%	90 41.9%	3 1.4%	0	3.55	.526
2	I have difficulty hearing people speak in a quiet environment.	67 31.2%	108 50.2%	35 16.3%	5 2.3%	3.10	.748
3	I have difficulty hearing people speak in a noisy environment.	97 45.1%	105 48.8%	10 4.7%	3 1.4%	3.38	.643
4	I have difficulty hearing high-pitched sounds, such as birds or children	74 34.4%	91 42.3%	43 20.0%	7 3.3%	3.08	.819
5	I have difficulty hearing low-pitched sounds, such as engines or drums	70 32.6%	84 39.1%	53 24.7%	8 3.7%	3.00	.851
6	I have difficulty hearing the television or radio at normal volume.	77 36.0	113 52.8%	20 9.3%	4 1.9%	3.23	.691
7	I have difficulty hearing over the telephone	91 42.3%	99 46.0%	22 10.2%	3 1.4%	3.29	.706
Weighted mean: 3.23 Criterion mean: 2.50							

Research question 2: What is the prevalence of hearing aid usage in South-western part of Nigeria

The prevalence of hearing aid usage was examined under 4 items and they are as follows: The results are presented below.

1. Hearing aid usage?

Table 2. Usage of hearing aid

	Frequency	Percentage (%)
No	1	.5
Yes	214	99.5
Total	215	100.0

Table 2 revealed that 214 (99.5%) of the respondents agreed that they use hearing aid. This implies a high prevalence of hearing aid usage in South-western part of Nigeria.

2. Frequency of hearing aid usage

Table 3. Frequency of hearing aid usage

	Frequency	Percentage (%)
Rarely	12	5.6
Some days (1-4 days per week)	19	8.8
Most days (at least 5 days)	93	43.3
Every day	91	42.3
Total	215	100.0

Table 3 shows the frequency of hearing aid usage in South-western part of Nigeria. The result revealed that most of the respondents 184 (85.6%) use hearing aid every day or most days (at least 5 days a week), while only 5.6% of the respondents rarely use hearing aid. This implies a high prevalence of hearing aid usage in South-western part of Nigeria.



3. Level of hearing aid usage on a daily basis

Table 4. Level of hearing aid usage

	Frequency	Percentage (%)
No answer	1	.5
Less than 1 hour	2	.9
Between 1 and 4 hours	24	11.2
Between 4 and 8 hours	112	52.1
More than 8 hours	76	35.3
Total	215	100.0

Table 4 shows the level of hearing aid usage in South-western part of Nigeria. The result revealed that 112 (52.1%) of the respondents use hearing aid between 4 and 8 hours daily, 76 (35.3%) of the respondents use it for more than 8 hours daily, 24 (11.2%) use it between 1 and 4 hours daily, only 2 (0.9%) of the respondents use it for less than an hour, and 1 (0.5%) of the respondents had no answer. This finding further proves that there is a high prevalence of hearing aid usage in South-western part of Nigeria.

4. Frequency of battery replacement for hearing aids

Table 5. Frequency of battery replacement for hearing aids

	Frequency	Percent
No answer	11	5.1
Every 4 weeks or more	33	15.3
Every 3 weeks	95	44.2
Every 2 weeks	70	32.6
Weekly or less	6	2.8
Total	215	100.0

Table 5 shows the frequency of battery replacement for hearing aids users in South-western part of Nigeria. The result revealed that 95 (44.2%) of the respondents replace their hearing aids' batteries every 3 weeks, 70 (32.6) of them replace theirs every 2 weeks, 33 (15.3%) replace theirs every 4 weeks or more and 6 (2.8%) replace theirs weekly or less. This is equally a proof of the high prevalence of hearing aid use in South-western part of Nigeria.

Research question 3: What are the factors that influence hearing aid usage?

The factors that influence hearing aid usage in South-western part of Nigeria, was examined under 7 items, with the response scale of: Strongly Agree, Agree, Disagree and Strongly Disagree. The result is presented in Table 6.

Table 6. Factors that influence hearing aid usage

S/N	Factors that influence hearing aid usage	SA	A	D	SD	Mean	Std. Dev.
1	I feel more confident when I use my hearing aids	54 25.1%	147 68.4%	14 6.5%	0	3.19	.532
2	Having supportive friends and family who encourage me to use my hearing aid positively impacts my usage	42 19.5%	131 60.9%	42 19.5%	0	3.00	.627
3	The ease of handling and maintaining my hearing aid affects my regular usage	45 20.9%	124 57.7%	40 18.6%	6 2.8%	2.97	.713

4	The battery life and reliability of the hearing aid impact my decision to use it daily	49 22.8%	132 61.4%	30 14.0%	4 1.9%	3.05	.664
5	When I use my hearing aid, I notice a significant improvement in my ability to communicate	75 34.9%	133 61.9%	7 3.3%	0	3.32	.532
6	Wearing a hearing aid enhances my overall enjoyment of social interactions.	60 27.9%	139 64.7%	16 7.4%	0	3.20	.560
7	My self-esteem is positively impacted when I use my hearing aid effectively.	58 27.1%	144 67.3%	12 5.6%	0	3.22	.531
<b>Weighted mean: 3.14</b>							
<b>Criterion mean: 2.50</b>							

Table 6 shows the factors that influence hearing aid usage in South-western part of Nigeria. The result revealed a weighted mean score of 3.14, which is higher than the criterion mean score of 2.50. This implies that the factors considered under this construct greatly influence hearing aid usage. The result further revealed the prominent factors that influence hearing aid usage to include: significant improvement in ability to communicate ( $\bar{x} = 3.32$ ; Std. dev.= 0.523), improved self-esteem ( $\bar{x} = 3.22$ ; Std. dev.= 0.531), enhancement of overall enjoyment of social interactions ( $\bar{x} = 3.30$ ; Std. dev.= 0.560), improved confidence ( $\bar{x} = 3.19$ ; Std. dev.= 0.532), among others.

**Research question 4:** What is the effectiveness of hearing aids in improving the quality of life of people with hearing loss?

The effectiveness of hearing aids in improving the quality of life of people with hearing loss in South-western part of Nigeria, was examined under 7 items, with the response scale of: Very effective, Moderately effective, Slightly effective and Not effective. The result is presented in Table 7.

Table 7. Effectiveness of hearing aids in improving the quality of life of people with hearing loss

S/N	Effectiveness of hearing aids	Very Effective	Moderately Effective	Slightly Effective	Not Effective	Mean	Std. Dev.
1	Hearing aids have improved my ability to understand conversations in noisy environments	67 31.2%	113 52.6%	29 13.5%	6 2.8%	3.12	.739
2	I find it easier to engage in social activities and gatherings with the help of hearing aids.	65 30.2%	117 54.4%	29 13.5%	4 1.9%	3.13	.705
3	Hearing aids have positively impacted my relationships with friends and family.	75 35.0%	110 51.4%	27 12.6%	2 0.9%	3.21	.688
4	Wearing hearing aids has reduced my feelings of isolation and loneliness.	63 29.3%	111 51.6%	37 17.2%	4 1.9%	3.08	.731

5	Hearing aids have enhanced my ability to perform daily tasks that require hearing, such as answering the phone or watching TV.	69 32.1%	120 55.8%	22 10.2%	4 1.9%	3.18	.683
6	Hearing aids have contributed to an improved sense of safety and awareness of my environment.	69 32.1%	124 57.7%	18 8.4%	4 1.9%	3.20	.664
7	Hearing aids have positively affected my career and opportunities and advancement.	75 34.9%	112 52.1%	21 9.8%	7 3.3%	3.18	.738
<b>Weighted mean: 3.16</b> <b>Criterion mean: 2.50</b>							

Table 7 shows the effectiveness of hearing aids in improving the quality of life of people with hearing loss in South-western part of Nigeria. The result revealed a weighted mean score of 3.16, which is higher than the criterion mean score of 2.50, implying that the use of hearing aid is very effective in improving the quality of life of people with hearing loss in South-western Nigeria. The prominent effects of the use of hearing aids as revealed by the result include: use of hearing aids positively impact relationships with friends and family ( $\bar{x} = 3.21$ ; Std. dev.= 0.688), use of hearing aids have contributed to an improved sense of safety and awareness of one’s environment. ( $\bar{x} = 3.20$ ; Std. dev.= 0.664), use of hearing aids have enhance one’s ability to perform daily tasks that require hearing, such as answering the phone or watching TV ( $\bar{x} = 3.18$ ; Std. dev.= 0.683), use of hearing aids positively affect career opportunities and advancement ( $\bar{x} = 3.18$ ; Std. dev.= 0.738), among others.

### Discussion

This section discusses the findings as revealed in the previous section. The

discussion of findings is presented according to the objectives of the study.

### Prevalence of hearing loss in South-western part of Nigeria

Findings from this study revealed a weighted mean score of 3.23, which is higher than the criterion mean score of 2.50, implying a high prevalence of hearing loss in South-western part of Nigeria. The findings of this study are supported by that of Hoffman et al. (2017) who carried out a study on hearing loss and found that the overall prevalence of hearing loss among adults was 14%, but it increased to 35% among adults aged 65 years and older. A similar trend was observed Zhang et al. (2019) in a study conducted in China, where the prevalence of hearing loss among adults was 12.1%, but it increased to 43.6% among adults aged 60 years and older.

### Prevalence of hearing aid usage in South-western part of Nigeria

Findings from this study revealed that there is a high prevalence of hearing aid usage in South-western part of Nigeria. The study revealed that most of the respondents with hearing loss use their hearing aids every day

for an average of 8 hours daily. The findings of this study is, however, in contrast with studies conducted in developed countries, which have reported low prevalence rates of hearing aid usage, ranging from 15% to 30%. For instance, a study based on the National Health and Nutrition Examination Survey (NHANES) in the United States found that only 22% of adults aged 70 and older with hearing loss reported using hearing aids (Chien and Lin, 2012). Similarly, a study using data from the English Longitudinal Study of Ageing (ELSA) in the United Kingdom found that only 30% of adults with hearing loss reported using hearing aids (Dawes et al., 2014).

Similarly, Aguwa et al. (2021) conducted a study to examine the relative occurrence of visual and hearing impairments and the corresponding use of corrective devices such as glasses and hearing aids. They randomly distributed 500 questionnaires to students of Nnamdi Azikiwe University, Nnewi campus. They calculated the results using simple percentages. They found that only 1.5% of the participants had hearing impairments, and only one of them used a hearing aid (0.21% of the total number). In contrast, 117 participants (25.05% of the total number) had visual impairments, and 41.81% of them used glasses (15.85% of the total number).

#### Factors that influence hearing aid usage

Findings from this study revealed that the prominent factors that influence hearing aid usage include: significant improvement in ability to communicate, improved self-esteem, enhancement of overall enjoyment of social interactions, improved confidence, supportive friends and family who encourage use of hearing aid positively impacts usage,

the battery life and reliability of the hearing aid, among others.

#### Effectiveness of hearing aids in improving the quality of life of people with hearing loss

Findings from this study revealed that the use of hearing aid is very effective in improving the quality of life of people with hearing loss in South-western Nigeria. The prominent effects of the use of hearing aids as revealed by this study include: use of hearing aids positively impact relationships with friends and family, use of hearing aids have contributed to an improved sense of safety and awareness of one's environment, use of hearing aids have enhanced one's ability to perform daily tasks that require hearing such as answering the phone or watching TV, use of hearing aids positively affect career opportunities and advancement, among others.

#### Recommendations

Based on the findings of this study, the following recommendations are made:

1. The high prevalence of hearing loss in South-western Nigeria calls for more awareness and screening programs to identify and treat people with hearing impairment as early as possible.
2. The high prevalence of hearing aid usage in South-western Nigeria is commendable and should be sustained and encouraged. People with hearing loss who use hearing aids should be provided with adequate follow-up services and counseling to ensure optimal benefit and satisfaction.
3. The factors that influence hearing aid usage should be taken into account when designing and delivering hearing

rehabilitation programs. The positive outcomes of hearing aid usage, such as improved communication, self-esteem, social interactions, and confidence, should be emphasized and reinforced. The technical aspects of hearing aid, such as battery life and reliability, should be improved and monitored. The social support from friends and family should be facilitated and acknowledged.

4. The effectiveness of hearing aid usage in improving the quality of life of people with hearing loss in South-western Nigeria should be further investigated and documented. The impact of hearing aid usage on various domains of quality of life, such as physical, psychological, social, and environmental, should be assessed and compared with other interventions.

### Conclusion

The study has shown that hearing loss is a common problem in South-western Nigeria, and that hearing aid usage is a prevalent and effective solution. The study has also identified the main factors that motivate and facilitate hearing aid usage among people with hearing loss, such as improved communication, self-esteem, social interaction, confidence, and support from others. The study has also highlighted the importance of ensuring that the hearing aids are reliable, durable, and have long battery life. The study suggests that hearing aid usage can significantly enhance the quality of life of people with hearing loss and that more efforts should be made to promote awareness, accessibility and affordability of hearing aids.

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