ATTITUDES TOWARDS THE USE OF HEARING AIDS AMONG HEARING IMPAIRED POPULATION IN ACCRA, GHANA

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DECLARATION

DECLARATION

I Rev. Christian Kwetey Kweitsu do hereby declare that this dissertation which is being submitted in fulfillment of the requirements for the Master of Science degree in Audiology is the result of my own research performed under supervision, and that except where otherwise other sources are acknowledged and duly referenced , this work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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INTEGRI PROCEDAMUS

DEDICATION

This work to my sweet mother Hajia Adisa Issah, my dear wife Mrs. Rejoice Yaa Atsu Kweitsu, and my lovely children: Angel Afi Kweinorki Kweitsu, Samuel Djonorbour Kweitsu, Solomon King Kweitsu and Honey Kwetey Kweitsu (Jnr).

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

BHI	Better Hearing Institute
EPRC	Ethical and Protocol Review Committee
HASS	Hearing Aid Supply and Services West Africa Clinic
HL	Hearing Loss
LMIC	Low and Middle-Income Countries
NHANES	National Health and Nutritional Examination Surveys
NHS	National Health Services
NAL	National Acoustic Laboratories
SPSS	Statistical Package for Social Sciences
SBAHS	School of Biomedical and Allied Health Sciences
SHC	Speech and Hearing Centre
UK	United Kingdom
WHO	World Health Organization

ABSTRACT

Background: Hearing loss affects millions of people around the world and is estimated to be the fourth leading cause of disability globally. Besides, over the past several years, research investigations have focused on the low uptake and usage of hearing aids among populations with hearing- impaired. The attitude toward the use of hearing aid is a major problem among the hearing-impaired population in the world with more people showing more negativeattitudes towards the use of hearing aids in developing countries where hearing impairment is high.

Aim: The study determined the attitudes of hearing-impaired persons towards the use of hearing aids in Accra, Ghana.

Methods: The study deployed a cross-sectional study with a sample size of 50 mostly with people with hearing impairment. Structured Questionnaires were designed and administered with the help of the respondents within the study population area. The questionnaire was analyzed using statistical software (SPSS)

Results: The study indicated that fifty-eight percent (58%) of the hearing-impaired population showed disinterest in wearing hearing aids for many reasons. Though the respondents have appreciable knowledge about hearing aids, their attitudes towards acquiring and use of hearing aids were generally negative. Chief among the reasons they assigned to their negative attitude is the assertion that larger society disdains and stigmatizes them as second class humans. This implies that most of the people with hearing impairment, although could benefit from the use of a hearing device, are not interested in wearing them because of the perceived public perception and stigmatization. Forty-two (42%) percent of the respondents had a positive attitude towards hearing aids as a result of their adequate knowledge of hearing aids and the benefits of usage.

Conclusion: Most people with hearing impairment do not acquire and own hearing aids as an immediate interventional measure for aural rehabilitation. However, the motivation for hearing impaired persons to acquire and use hearing aids depends on several factors that should not be grossed over.

Keyword: Hearing loss, hearing aid, hearing-impaired, population, attitude

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Hearing impairment is a term used to describe a total or significant loss of hearing. It is considered as one of the most disabling conditions of major global health burden that contributes adversely to the social and economic development of a country, if not managed properly (Adadey, Awandare, Amedofu, & Wonkam, 2017). Various studies opined that proper assessment of and etiology of such a wide world menace as hearing impairment is instrumental for the purposes of developing effective strategies for prevention, treatments, and management of the hearing loss condition. Any effective strategy adopted to address treatment and management of hearing impairment depends on the severity of the condition. Most often, the use of hearing aids of different types and of different power outputs are prescribed and recommended by clinicians for their hearing impaired clients. Other known interventional strategies, particularly in the developed countries, may include the provision of cochlea implants, vibrotactile or electrotactile aids are good alternative for those whose hearing levels are very low to benefit from use auditory stimulation that can be derived from the use of hearing aids (Dillon, 2012).Regrettably, many patients with hearing impairment generally show negative attitudes towards the use of such gadgets, especially, hearing aids.

In recent times hearing impairment has been identified as one of the most prevalent chronic health conditions among aging adults, mostly in advanced countries (Cobelli et al., 2014). A study by Garstecki and Erler (1999) estimated over 25% of the prevalence of hearing loss among adults aged 65 to 74 years, and 40% among those older than 75 years. Also, the Better Hearing Institute (BHI), in its MarkeTrak IX survey, projected that 10.6% of the American population reported some degree of hearing loss (Abrams and Kihm, 2015). It has been

estimated by other studies that over 300 million people worldwide suffer from varying degrees of hearing loss as well (Cobelli et al., 2014; Tucci, Merson, & Wilson, 2009).

According to the World Health Organization (WHO), the majority of individuals with disabling hearing loss live in low- and middle-income countries (LMICs) and for many of them, hearing aids are the key to rehabilitation (WHO, 2017). Currently, however, hearing-aid production meets only 10% of global need and most amplification devices are designed, manufactured, and dispensed in industrialized economies. This could be attributed to the low general attitudes towards the use of hearing aids among the hearing impaired population worldwide.

Furthermore, the literature indicates that of all the congenital diseases that occur worldwide, hearing impairment remains the most disabling condition with the highest rate for age-standardized disability (Murray et al., 2015; Adadey et al., 2017). According to Dillon (2012), hearing loss is very common. He added that 10% to 16% of an adult population will report hearing loss, but do not acquire and use hearing aids.

Currently, there have been initiatives of improving access to hearing aids in many LMICs. But the initiatives have often been hindered by inadequate access to information, and lack of knowledge among those responsible for their provision in respect of the most appropriate types of amplification devices. Currently, initiatives to improve access have been reported (Adadeyet al., 2017; WHO, 2017). Studies have shown that only one-third of hearing aids users own them (Abrams and Kihm, 2015; Kirkwood, 2015; Lupsakko, Kautiainen, & Sulkava, 2005).The reasons for the lack of hearing aid uptake range from concerns of the high cost to the stigmatization of utilizing amplification devices.

Cox, Alexander & Gray (2005), Kirkwood (2015), and Garstecki & Erler (1998) believed that the cost of hearing aids is one of the factors for lack of hearing aid adoption. It was also found that the cost was highly related to user satisfaction (Saunders *et al.*, 2003). According to Gopinath *et al.* (2012), the key reason for non-ownership was the high cost of aids in conjunction with the feeling their hearing loss was not severe enough for a use of a hearing aid. Other predictors for hearing aid uptake include attitudes toward hearing loss and hearing aids, old age, the severity of hearing loss with the belief that hearing loss is a part of the normal aging process (Poost-Foroosh *et al.* 2011; Garstecki & Erler, 1998).

A study by Perez and Edmonds, (2012) showed that nearly 23 million adults in the United States have hearing loss (Pure Tone Average of 25 dB hearing level or greater in both ears) but do not use hearing aids. They examined hearing aid usage, including the last study which

systematically reviewed measuring and reporting hearing aid usage in older adults since 1999. These studies found that there was a lack of consistency and robustness in the way that usage of hearing aids was assessed and categorized. Fifteen different assessment methods for assessing the usage of hearing aids were identified, which suggested a standard tool for evaluating hearing aid usage. Furthermore, studies have shown that hearing aid ownership and regular use of hearing aids is low (Popelka et al, 1998; Upfold & Wilson, 1980; Weiss, 1973) the numbers of people given a hearing aid who do not wear it ranges from 4.7% (Hougaard & Ruf, 2011) to 24% (Hartley *et al*, 2010).

A recent study by Wilson *et al.*, (2017) reported a 6.8% prevalence of hearing loss globally. Hearing loss or impairment is more prevalent in South Asia, Asia Pacific, and sub-Saharan Africa than the other parts of the world. For instance, in Africa, WHO (2014) and Amedofu *et al.* (2006) estimated that 6.8 million (1.9%) people live with hearing loss defects, and cited environmental factors reported as the predominant cause of the disorder. In particular, a study in Cameroon particularly identified meningitis as the major cause of hearing impairment among others such as measles, mumps, and ototoxicity (Wonkam *et al*., 2013).

Identification of factors that affect hearing aid usage is necessary for devising appropriate rehabilitation strategies to ensure greater use of hearing aids. The majority of literature on the reasons for the non-use of hearing aids was published in the NHS in the UK that was before the introduction of digital hearing aids. Digital hearing aids offer practical and clinical advantages over analog hearing aids and hence an increase in the numbers of users is expected. However, many reasons have been stated to explain why owners of hearing aids do not use them. Some of the stated reasons include; trouble handling the aid, little opportunity to converse with others, difficulty in inserting the ear mould, difficulty coping with signals in noise, lack of recognition of hearing loss, and finally advanced age and poor health.

Consequently, there is a need to look at the general attitudes towards the use of hearing aids among the hearing-impaired population in Accra.

1.2 PROBLEM STATEMENT

Many reasons have been postulated to explain why persons with hearing loss are reluctant to engage in the hearing rehabilitation process. An individual's attitudes toward hearing loss and hearing aids have been shown to adversely affect the adoption of amplification and eventual outcomes of hearing aid use. In many countries of the world, and in Ghana particularly, several attempts have been made to develop test instruments fortesting attitudes toward hearing loss, but not much has been done specifically to test attitudes toward hearing aids use or hearing aid technology among hearing-impaired persons in particular. Age-related hearing loss is an increasingly important public health problem affecting approximately 40% of 55 – 74-year-olds. The primary clinical management intervention for people with hearing loss is the use of hearing aids (Hougaard & Ruf, 2011). However, the majority (80%) of adults aged 55 – 74 years, who will benefit from hearing aids, do not use them. Furthermore, many people given hearing aid devices do not use them (Dillon, 2012).

The primary clinical management intervention for people with hearing loss is hearing aids. However, not all people with some measurable level of hearing loss are candidates for hearing aids (Kochkin, 2009). Several aural rehabilitation interventions, such as auditory rehabilitation, counseling, education, and assistive listening devices for people with hearing loss are available. For instance,the average age of a first time hearing aid user is 74 years old (Davis et al, 2007). A study by McCormack & Fortnum, (2013) indicated that, despite the negative consequences associated with hearing loss, only one out of five people who could benefit from a hearing aid, wears one (World Health Organization, 2006).

Based on data derived from the 1999– 2006 cycles of the National Health and Nutritional

Examination Surveys (NHANES) in the United States, Chien & Lin, (2012) reported that one

aged 80 years and older. The study further posited that nearly 23million adults in the United States who present with have hearing loss (PTA 25 dB hearing level or greater in both ears) do not use hearing aids. Other studies have examined hearing aid usage in older adults since 1999 (Perez & Edmonds, 2012) and found out that one out of seven individuals aged 50 years or older with a hearing loss uses a hearing aid. Overall, the prevalence of hearing aid use increases with every age decade from 4.3% for adults aged 50 –59 years, to 22.1% for adults

In the 1980s, which was the pre-digital hearing aid era, a follow-up study of 150 people fitted with hearing aids in Finland, reported that 23% never wore their hearing aid for two years (Sorri et al, 1984).A study by Amedofu *et al* (2014) showed a general lack of knowledge on hearing aids among patients with hearing aids who use them in the northern region of Ghana. Some Patients with hearing aids devices, the study showed, have a negative attitude about wearing them, But he did not go further to investigate whether this is the case with other hearing impaired persons in other regions in Ghana. No research has been done on the attitudes of Hearing impaired towards the acquisition and usage of hearing aids in the southern region of Ghana and for that matter, Accra.

In the light of the above consideration, it is imperative that a study is carried out to investigate the attitudes of the hearing impaired living in Accra towards the acquisition and usage of hearing aids.

1.3 SIGNIFICANCE OF THE STUDY

The findings of this study is expected to help deepen awareness of people on the prevalence and risk factors of hearing impairment in Accra in particular and Ghana as a whole. The study will highlight the importance of using a hearing aid. The study will help stakeholders and decision-makers in healthcare to design strategies and policies that increase the level of awareness on attitude toward hearing aids among hearing-impaired people. The study will help in the establishmentof an impact database required for future needs and developments. A large

number of studies on the epidemiology of deafness and hearing impairment have been performed in many countries. However, many of these have deficiencies in methodology that make the data unsuitable for insertion in databases. It is very important to improve data gathering methods because databases are essential for the assessment of the total burden of hearing impairment

and its contribution to the burden of disease estimates. There is thus a huge need for more acceptable data, especially in Ghana.

The study provides knowledge to the public health approach to the hearing impairment problem in Ghana. This will motivate health planners and health professionals as they plan and execute activities along a public health path to addressing the situation of hearing loss in the area. Finally, the study will serve as an inferential source of information from which the burden of hearing aids in other regions of the country can be realized. Economic analysis studies can then be carried out to determine the costs of the burden of hearing impairment and the cost-effectiveness of different interventions against it.

1.4 AIM

The study aimed at investigating the attitudes towards the use of hearing aids among the hearing-impaired population in Accra.

1.5 OBJECTIVES

The study will be guided by the following specific objectives:

i. To find out peoples' attitude toward the use of hearing aids
ii. To assess the level of knowledge that people with hearing loss have on hearing aids
iii. To find out the attitudes towards the usage of hearing aids amongst Hearing impaired persons in Accra.

1.6 RESEARCH QUESTIONS

i. What attitudes do people with hearing impairment have toward hearing aids?
ii. What is the level of knowledge people with hearing impaired have on hearing aids?
iii. What is the level of awareness of people with hearing loss and the usage of hearing aids?

1.7 LIMITATION AND SCOPE OF THE STUDY

The study is limited to the Greater Accra region. The study population consisted of persons who are hearing impaired and were fitted with hearing aids of different types from the specified hearing assessment centres in Accra. Due to limited time and resource constraints, the study will not include the other regions in Ghana. The study findings therefore cannot be representative of the whole Country.

1.8 ORGANIZATION OF THE STUDY

Chapter One introduces the topic to the reader. The need for the study is introduced to get a clear idea of the study and what it is focused on. The study identifies the research problem and thereby setting the research questions and purpose as the road map of the study. The research questions raised are; what type of hearing loss, level of awareness and attitude toward hearing aids, and effects of hearing impairment.

Chapter Two which dwells on the literature review presents all the concepts that are important to the study. Concepts such as types of hearing loss, characteristics of hearing impairment, the gender distribution of hearing loss, distribution of hearing loss among various ages. Chapter Three highlights more on the methods for the study. The Chapter consisted of mainly discussing how the study was conducted with an emphasis on how the measurement of the constructs, the way the study data will be coded. Chapter Four which is comprised of empirical results and analysis discusses the data collected from the field that enabled the researcher to answer the research questions. The data collected mainly base on respondents' and perceptions of the various knowledge under hearing loss. Chapter Five includes a summary of the findings, conclusions, recommendations based on outlined and therefore provided answers and direction to the researcher's research questions. The study also discussed some theoretical, managerial implications, possible recommendations from the findings, proffered further research in the future.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This Chapter reviewed literature relevant to the study. The issues discussed included: the context of the study, the importance of the study, theoretical and empirical literature review, research gaps, and chapter summary.

2.2 THEORETICAL LITERATURE REVIEW

According to Knudsen, Öberg, Nielsen, Naylor, & Kramer (2010) for so many years now, many investigations have focused on the low uptake and usage of hearing aids among populations who have reliable access to audiological services. The aim of these studies was large to obtain a better understanding of the barriers to hearing aid usage and to find a good approach to facilitate greater uptake of the devices that would improve outcomes than could be developed. Hearing aid uptake is much lower, or significantly delayed, among large populations especially in the developing countries that have no reliable access to audiological services.

Hearing loss, according to Dillon (2012), is a multifaceted loss of hearing ability. He adds that Hearing impaired persons do not hear some sounds at all and that people with a severe or profound hearing loss may not hear any speech sounds, unless they are shouted to at close range. He further explained that people with a mild or moderate loss are more likely to hear some sounds and not others .Other writers have submitted that hearing loss is the most widespread sensory deficit, and it represents a main public health issue with substantial economic and societal costs (Dillon, Day, Bant and Munro, 2020; Archbold etal., 2014). Extant literature stipulates that there are no effective medical or surgical treatments for mild to moderate sensorineural hearing loss. The main clinical intervention is the use of acoustic hearing aids (Dillon, et al., 2020; Kochkin, 2009). Chisolm et al. (2007) indicate thathearing aids are effective in reducing the handicap caused by hearing

loss even for mild and moderate hearing impairment (Mathers, Smith, and Concha, 2000; Ferguson *et al*., 2017).

According to WHO (2020), there are around 466 million people in the world with bilateral, moderate to profound hearing loss, two-thirds live in developing countries. For those found in developing countries who have a permanent bilateral hearing loss of moderate degree or greater, approximately three-quarters have adult-onset hearing loss, the third leading cause of disability in the world (Smith, 2008).

Of all the hearing impairment, over 186 million hearing-impaired people in developing countries can benefit from amplification, however, according to (WHO, 2004) the annual production and distribution of hearing aids is projected to meet less than 3% of the need in this part of the world. Among the several barriers to accessing hearing aids in developing countries is cost. The World Health Organization (WHO) has established global guidelines for hearing aid affordability that vary according to each country's per capita GNI, thus relating hearing aid expenditure to average household income. The WHO guidelines suggest that a single hearing aid should not exceed 3% of per capita GNI. One conceivable solution for hearing-impaired individuals in both the developing and developed worlds is a "do-it-yourself" amplification device that can be fitted and managed entirely by the user, without the assistance of a hearing health care professional, the use of computer hardware, or access to a telephone or the internet. This system can be referred to as a "self-fitting" hearing aid. The idea of a device is in the process of being evaluated at the National Acoustic Laboratories (NAL) in response to a growing global need for hearing health care services, particularly in developing nations and in remotely located, underserviced areas in developed countries.

2.2.1 Potential Advantages and Disadvantages of Using Hearing Aids

There are potential advantages and disadvantages of using hearing aids. An anticipated advantage of a self-fitting hearing aid is that it is less costly. However, the price of major a hearing aid in a developing country is expensive relative to average household income (Brouillette, 2008). In the case of a self-fitting hearing aid, the lack of need for a professional hearing health care provider, as well as the reduced need for travel to and from the clinic, is likely to represent a significant cost saving for the user.

Sometimes there is trainability an incorporated feature fixed in the Hearing aids especially with a self-fitting device, the ability of the user to undertake the fine-tuning process in response to real-world listening situations is an added advantage. Hearing aid fittings and subsequent fine-tuning adjustments are often conducted in a quiet room with a single sound source and little to no background noise, an acoustic environment that differs markedly from the average user's everyday listening situations. Even though it is important to ensure that the hearing aid operates appropriately in this kind of "best case" environment, users may not necessarily find the initial setting preferable as they step out of the clinic and into a busy street. To rectify this problem, some proprietary fitting software packages include a comprehensive library of sounds, accompanied by still pictures or virtual scenes, that replicate everyday listening situations (Howes & Olson, 2006; Meskan & Robinson, 2000).

However, there are limitations to the degree to which an acoustic environment can accurately be reproduced, especially when constrained by the limited number of loudspeakers typically found in an audiology clinic (Guastavino, Katz, Polack, Levitin, & Dubois, 2005). Besides, the unique range of the user's most encountered listening situations is not adequately represented among the sound library. In contrast, some hearing aids allow users to fine-tune and personalize their settings in response to their listening environments.

A further anticipated advantage of a trainable hearing aid is the increased feeling of psychological ownership that such a device is expected to confer on the users (Convery *et al.*, 2011). This psychological concept refers to the internalized feelings of possession we have toward other entities or "targets," which may include objects, ideas, or even other people. Individuals incorporate ownership targets into their self-identity, using them to help define who they are (Pierce, Kostova, & Dirks, 2003). Hearing impairment continues to be one of the major issues which affect people all over the world (Amedofu, 2004) for example the impact of

hearing impairment is great in children as it prevents the acquisition of language, in adults it prevents economic potentials being reached while in the elderly, it can lead to loneliness and neglect.

According to Paludetti et al, (2012) hearing loss is the most frequent disorder in both adult and pediatric human populations, affecting more than 250 million people in the world. There are several effects of hearing loss and according to Marthers et al, (2000), this includes the inability to interpret speech sound often resulting in a reduced ability to communicate, delay in language acquisition, economic educational disadvantage, social isolation, and stigmatization. These effects can be life-threatening and life-long in children with permanent hearing loss and negative impact on families. However, studies have shown that these effects with appropriate audiological and speech therapy interventions, language and cognitive development, hearing loss in children, can be reduced when there is early detection (Paludetti et al, 2012). According to the World Health Organization (WHO), there is an increasing trend in the number of persons with hearing loss in the last 15 years globally. It was estimated in 1985 the figure or number was forty-two million (42), this was increased to one hundred and twenty million in 1995 and this was at the time of the last World Health Assembly Resolution on Prevention of Hearing impairment (WHO, 1995). Over the last few years, the figure has increased to 466 million in the year 2020.

Further studies have shown that hearing loss is often associated with depression, social isolation, poor self-esteem, and functional disability particularly for those suffering from hearing impairment, who have not been evaluated or treated for hearing loss (Mulrow *et al.*, 1990). According to Mehra, Eavey, and Keamy (2009) hearing loss is widespread. In the United States of America as it is the fourth most common developmental disorder and deafnessis the most common sensory disorder. Mehra *et al.*, (2009) posit that the incidence of congenital

hearing loss based on universal neonatal screening programs is estimated to be 1.1 per 1,000 with a range of 0.22–3.61 per 1,000 between individual states in America.

Literature indicates that hearing impairment among young adults is on the increase largely because of greater exposure to recreational noise. One of the effects of sensorineural hearing impairment is tinnitus. According to WHO (2012), one in every three individuals above 65 years of age has a hearing impairment, yet fewer than 3% of people receive the hearing devices they require. Ignorance is one key contributor to the situation. The High prevalence of hearing impairment is compounded by poor availability of services coupled with a lack of financial resources. Amedofu (2004) identified other challenges to ear and hearing healthcare and these are lack of awareness of the availability of hearing aids, the general inadequate provision of batteries for hearing aids, poor repair services, and inadequate follow-up by professionals. These issues, in no doubt, affect the acquisition and maximum benefit derived from the hearing aids. Amedofu, (2004) conducted his study on the utilization of hearing aids by the hearing-impaired in Ghana concentrated in the northern sector of the country. However, a cursory study shows that there is limited study on the attitudes towards the use of hearing aids among the hearing impaired population in the southern sector of Ghana.

Despite efforts to raise awareness of hearing impairment and the benefits of the use of hearing aids, many hearing-impaired persons in the world live with disabling hearing impairment without access to the use of hearing aids. There remains surprisingly, a lack of awareness in society about hearing impairment, and thus have a negative attitude toward using hearing aids.

2.2.2 Age at Amplification

The difficulties of patients with Unilateral Mild Hearing Loss are often attributed to age at detection and intervention; historically, these patients are diagnosed late and thus miss many years of support (Moeller 2007). Although the implementation of universal newborn hearing

screening has provided the ability to identify unilateral mild hearing loss earlier than before, other studies found that patients with unilateral mild hearing loss are diagnosed later and receive amplification later than the others with moderate to severe hearing loss, although all were born in hospitals with a universal newborn hearing screening. The later amplification could reflect hesitation and lack of knowledge among professionals concerning the need for amplification and early intervention, as described in other studies (McKay et al. 2008, Fitzpatrick et al. 2016). Likewise, a Canadian population study revealed that patients with unilateral mild hearing loss often experienced a considerable delay between diagnosis and amplification (Fitzpatrick *et al*. 2013).

The association between late age at amplification and lower social skills scores align well with previous research indicating several developmental advantages associated with early intervention (Yoshinaga-Itano 2003). Early amplification has been considered most effective for children with severe and profound hearing loss (Ching et al. 2013),

2.3 ATTITUDES TO WEARING HEARING AIDS

According to Kendra (2020), an attitude is "a set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event". Attitudes are often the result of experience or upbringing, and they can have a powerful influence over behavior, he adds. While attitudes are enduring, they can also change. Attitudes are an essential subject of study within the field of social psychology. In light of the above definition, a clear understanding is realized why people have attitudes towards hearing loss and hearing aids. Negative attitudes towards the use of hearing aids especially among the hearing impaired themselves can be related to occasional use or non-use of hearing aids. Those with positive attitudes use hearing aids more consistently and derive maximum benefits from their use. In addition to greater use, higher satisfaction levels about hearing aids have also been noted in people who had positive attitudes toward hearing aids.

However, some studies have failed to find any significant correlation between attitudes towards hearing aids, amount of use, and level of satisfaction.

Therefore, there is no clear evidence to suggest the impact of attitude on hearing aid use (McCaughey & Strohmer 2005). Moreover, some relationships exist between the pre-fitting expectations of people with hearing loss and their willingness to use hearing aids (Foss, 2014; Ajzen &, Fishbein, 2005). Also, a study by Solheim, (2011) suggested that less-positive expectations and more problem-oriented preconceptions among subjects with mild hearing loss might explain why hearing aids are scarcely used. Such attitudes and expectations of people with hearing loss may have been formed by various societal factors, such as exposure to media and information found on the internet (Meiste et al 2008).

Few studies have looked into people's attitudes and perceptions about hearing loss and hearing aids. Doggett et al (2015) gathered judgments from female peers' interactions with and without hearing aids after face-to-face meetings. Those who provided judgments had never worn or used hearing aids, but they rated peers wearing aids more negatively on measures of confidence, intelligence, and friendliness. Erler and Garstecki (2002) studied the perception of women with normal hearing about the use of hearing aids and reported age-rated negative perceptions associated with hearing aids. In particular, younger women perceived a greater stigma. The study also found less stigma associated with hearing aids usage compared with hearing loss which suggested a positive effect of hearing aid management. Although these studies highlighted important aspects of attitudes toward hearing aids, they failed to consider wider social and environmental aspects. This may be a product of using focused study designs, looking at a specific aspect and/or specific population.

TYPES OF HEARING LOSS

There are several types and categories of hearing impairment and some of these include sensorineural or conductive hearing loss. A hearing loss can be sensorineural or it can be conductive or mixed. According to Dillon et al (2020) ‘‘If it is sensorineural, the hearing loss could be induced by damage to the tiny hair cells in the inner ear’’. The causes of sensorineural hearing loss can be noise, age, medication, lifestyle as well as genetic causes. They posits ‘‘A conductive hearing loss is caused by the loss or reduction in the ability to conduct sound from the outer ear and the middle ear into the inner ear’’. Sensorineural and conductive hearing losses can also occur at the same time and this can be termed as mixed hearing loss. Special types of sensorineural hearing loss are known as ski-slope hearing loss and cookie bite hearing loss. Hearing loss or impairment can be permanent or temporary loss. When it is a temporary hearing loss, it is also called a temporary threshold shift, while when it is a permanent hearing loss, it is called a permanent threshold shift. A sudden hearing impairment or loss occurs suddenly and can be termed as a sudden hearing impairment or loss.

2.4.1. Causes of Hearing Impairment

2.4.1.1 Congenital Causes

Different causes of hearing loss can occur at different levels at different ages. Congenital causes may lead to hearing loss present at or acquired soon after birth. Hearing loss can be caused by hereditary and non-hereditary genetic factors or by certain complications during pregnancy and childbirth, including maternal rubella, syphilis, or certain other infections during pregnancy low birth weight, and birth asphyxia (a lack of oxygen at the time of birth).

i. inappropriate use of particular drugs during pregnancy, such as aminoglycosides, cytotoxic drugs, antimalarial drugs, and diuretics

ii. Severe jaundice in the neonatal period, which can damage the hearing nerve in a newborn infant.

2.4.1.2 Acquired Causes

Acquired causes may lead to hearing loss at any age, such as infectious diseases including meningitis, measles and mumps, chronic ear infections, collection of fluid in the ear (otitis media), and use of certain medicines, such as those used in the treatment of neonatal infections, malaria, drug-resistant tuberculosis, and cancers. Others include

i. injury to the head or ear
ii. excessive noise, including occupational noise such as that from machinery and explosions
iii. recreational exposure to loud sounds such as that from use of personal audio devices at high volumes and for prolonged periods and regular attendance at concerts, nightclubs, bars, and sporting events
iv. aging, in particular, due to the degeneration of sensory cells
v. Wax or foreign bodies blocking the ear canal.

2.4.1.3 Use of Ototoxic drugs

Certain drugs have potentially harmful effects on the ear and hearing. This is known as ototoxicity and is an important cause of hearing loss and balance problems. The most commonly used ototoxic drugs are aminoglycoside antibiotics (e.g. gentamicin), which are frequently given to young children to treat fever in low and middle-income countries (LMIC), where their use is often unregulated. Other ototoxic drugs include some of the medications used for the treatment of malaria, tuberculosis, leprosy, and cancer. Some industrial chemicals(e.g. solvents) are also ototoxic. Exposure to excessive noise can damage the inner ear and is amajor cause of hearing loss in adults of working age. The degree of hearing loss depends on the length and intensity of noise exposure and individual susceptibility.

Most noise damage occurs in people working in heavy industry, construction, and the military. The damage caused by noise can be prevented by good hearing protection strategies, including the use of ear defenders. There is also concern over recreational noise exposure in young people, especially the use of personal stereos with headphones at high volume, and over environmental noise exposure in residential areas, such as that caused by heavy traffic, airports, industry, music establishments, etc.

2.4.1.4 Presbycusis

The degeneration of the inner ear with advancing age (presbyacusis) is also a major cause of hearing loss. The WHO estimates that nearly one-third of people aged over 65 live with disabling hearing loss. These people are frequently socially isolated and adequate rehabilitation with hearing aids, if available, can be extremely effective to mitigate the challenge.

2.4.1.5 Poverty and Malnutrition

Poverty and malnutrition increase the likelihood of ear disease and hearing loss. Malnutrition impairs people's immunity, which makes them prone to infections, especially of the ear, nose, and throat. The availability of clean water supplies and good sanitation is also important in reducing the occurrence of discharging ears.

2.4.2 Impact of Hearing Impairment

Functional Impact: One of the main impacts of hearing impairment is on the individual's ability to communicate with others. Spoken language development is often delayed in children with unaddressed hearing impairment or loss. Unaddressed hearing loss and ear diseases such as otitis media can have a significantly adverse effect on the academic performance of children. They often have increased rates of grade failure and a greater need for education assistance. Access to suitable accommodations is important for optimal learning experiences but are not always available.

Social Impact: Exclusion from communication: the ability to hear and understand with clarity can have a significant impact on everyday life, causing feelings of loneliness, isolation, reduced energy, and interest in joining others conversations and events, particularly among older people with hearing loss.

Economic Impact: According to WHO there are unaddressed hearing loss challenges that pose an annual global cost of US$ 750 billion. This includes health sector costs (excluding the cost of hearing devices), costs of educational support, loss of productivity, and societal costs.

In developing countries, for example, children with hearing loss and deafness rarely receive any schooling. Adults with hearing loss also have a much higher unemployment rate. Among those who are employed, a higher percentage of people with hearing loss are in the lower grades of employment compared with the general workforce.

Improving access to education and vocational rehabilitation services and raising awareness especially among employers about the needs of people with hearing loss, will decrease unemployment rates for people with hearing loss.

2.4 EMPIRICAL LITERATURE REVIEW

Hearing loss affects millions of people around the world and is estimated to be the fourth leading cause of disability globally (WHO, 2015; Cunningham and Tucci, 2017). Also, hearing impairment tends to accompany the aging process but is less well accepted than other aspects, such as diminishing physical strength and mobility. Hearing aids, the most effective form of mitigating for hearing loss, are also poorly regarded. In a study in which self-assessed satisfaction levels were obtained from users of dentures, spectacles, and hearing aids, the latter was rated as the least satisfactory. For instance, only l4% rated their hearing aids as 'highly

satisfactory' compared with 60% of denture users and 37% of spectacle users (Smedlev. 1990). In the same study, the users were invited to add comments on the prostheses.

Of the comments from denture users only, l2% were negative, whereas 66% of the comments from hearing aid users were negative. Danhaucr et al., (l985) coined the phrase "the hearing aid effect' to describe the negative attitudes displayed by many people- when they have observed that an individual was wearing a hearing aid. Kochkin (1991) surveyed 250 hearing aid dispensers and dispensing audiologists in the USA and indicated that the major reason proffered for non-purchase of a hearing aid by potential candidates for personal amplification was variously described as cosmetic, vanity, or the stigma associated with hearing aids.

The study furthered posited that nearly 23 million adults in the USA have a hearing loss (PTA 25 dB hearing level or greater in both ears) but do not use hearing aids. Other studies have examined hearing aid usage, including the last study which systematically reviewed measuring and reporting hearing aid usage in older adults since 1999 (Perez & Edmonds, 2012). These studies found that there was a lack of consistency and robustness in the way that usage of hearing aids was assessed and categorized. Fifteen different methods were identified for assessing the usage of hearing aids. Hence, there is no standard tool for evaluating hearing aid usage.

Furthermore, studies have shown that hearing aid ownership and regular use of hearing aids have been low (Popelka et al, 1998; Upfold & Wilson, 1980; Weiss, 1973), and the numbersof people who own hearing aids but do not use the range from 4.7% to 4.9% (Hougaard & Ruf, 2011) to 24% (Hartley et al, 2010). In the 1980s, (pre-digital hearing aid era) in a follow-up study of 150 people fitted with a hearing aid in Finland, 23% reported never wearing their hearing aid two years after they had been fitted (Sorri et al, 1984). Some of the reasons offered were trouble handling the aid and little opportunity to converse with others. Again, Brooks

(1985) revealed that motives for non-use of hearing aids included difficulty of inserting the ear mould, difficulty coping with signals in noise, lack of recognition of hearing loss, and finally advanced age and poor health.

In recent times there have been numerous improvements in hearing aids for patients with hearing impairment. For example, digital hearing aids now offer several advantages over analog hearing aids, among these advantages include increased comfort digital feedback reduction, digital noise reduction, digital speech enhancement, automatically switching listening programs, directional microphones, and remote controls, as well as smaller size and open fit design. There are also advantages of using digital hearing aids. These include improvement in sound quality, multiple listening programs for different listening environments, compatibility with remote control options, and flexibility in the manipulation of the frequency, compression, and gain (Davis, 2001). This provides audiologists and other professionals greater flexibility in choosing the appropriate technology for the needs ofpatients.

According to the Literature, despite the improvements in hearing aids, usage is still low and its underuse among patients is still of significant concern. According to Kochkin, (2012) hearing aid usage has been found to improve quality of life issues, specifically improving communication in relationships, intimacy, and warmth in family relationships, emotional stability, sense of control over life events, perception of mental functioning and physical health. Gopinath et al, (2009) opine that if a patient does not wear their hearing aids then it could impact their quality of life as well as others around them and may also increase their risk of depression and anxiety. Goulios & Patuzzi, (2008) also affirmed that it is imperative to resolve why people fail to use their hearing aids in countries where access to quality audiological services were available.

Identifying factors that affect hearing aid usage is necessary for devising appropriate rehabilitation strategies to ensure greater use of hearing aids. The literature reports reasons for non-use of hearing aids published by the NHS in the UK before the introduction of digital hearing aids. Given that digital hearing aids were designed to offer practical and clinical advantages over analog hearing aids, one would expect an increase in the number of people wearing their hearing aids over this period. Yet this has not happened. The reasons are not clear as to why some people who need hearing aids and possess them do not use them.

It is important therefore that, there is a need to look at the literature over the past decade examining the reasons for non-use of hearing aids. Differences in reasons for non-use between gender and age, considering that women report a higher prevalence of daily, and regular use of hearing aids are expected Staehelin *et al.* (2011), and Kochkin (1993) found that adults aged 35 to 44 were twice as likely to cite stigma as a reason to reject a hearing aid, compared to adults aged 75 to 84 years old. Furthermore, a study in Australia estimated that 1 in 6 persons is hearing impaired. The prevalence rates for hearing loss are associated with increasing age, rising from less than 1% for people aged 15 years old to below 75% for people aged over 70 years. With an aging population, hearing loss is projected to increase to 1 in every 4 Australians by 2050. About 50% of the people with hearing loss are between the age brackets of 15-64 years and there were an estimated 158,876 unemployed people in 2005 due to hearing loss (Access Economics Report, 2006).

Numerous prevalence studies have been carried out in some developing countries where there is still inadequate health care and facilities to detect early cases of hearing loss. For example, Saunders et al (2007) analyzed clinical screening data in rural schools as well as data on pediatric hearing loss patients data seen at a clinic from a study conducted on the prevalence

and etiology of hearing loss in rural Nicaraguan children and established a high prevalence of significant hearing loss (>30 dB) of 18% among the school children.

The clinic-based evaluation study revealed a population with a predominantly severe-profound hearing loss. Also, a study by Seely et al (1995) on the prevalence and risk factors of hearing loss among Sierra Leonean children revealed that among the 2,015 children evaluated on hearing loss, a total of 184 (9.1%) presented with a mild or greater degree of hearing disorder confirming a high prevalence. Furthermore, McPherson & Holborow (1985) conducted a study in the Gambia by screening children to determine the incidence and causes of severe to profound hearing loss showed that, a primarily preventive approach may prove to be the most rational way of reducing the incidence. Interventions such as hearing aids and cochlear implants enhance a person's ability to communicate. The WHO estimates that fewer than 1 in 40 people will need a hearing aid.

In Ghana, hearing loss makes a large contribution to the total number of patients in various hospitals seeking medical attention. Immediate help is the use of hearing aids. However, attitudes toward the use of hearing aids is a major challenge to defeating hearing loss incidence in Ghana and other developing countries. The study seeks to find out the attitudes of hearing impaired persons in Accra towards the use of hearing aids.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

The methodology of the study is presented in this chapter. In particular descriptions of the study area, research design, study population, and sampling techniques, data collection instruments, are presented the method of data analysis.

3.2 RESEARCH DESIGN

The research design refers to the framework or the blueprint used for collecting, measuring, and final analysis of the data (Copper & Schinder, 2001). The research design is the basic framework outlining the interrelationships between the various activities required to effectively address the central stages of a project to ensure that the study effectively addresses the research questions.

A cross-sectional non-experimental survey design that utilizes both probability and non-probability and convenient sampling was used in this study. A structured self-administered questionnaire for the collection of quantitative data involving multi variables to examine and detect patterns of relationship and association was used. Due to the multi-dimensional approach adopted in tackling the research problem, this dual strategy was deemed appropriate as it drew on the strength of the two strategies (i.e. probability and non-probability research designs and strategies). As espoused above, quantitative research method was employed to find out peoples' attitude toward the use of hearing aids; and further assessed the level of knowledge that people with hearing loss have on hearing aids; finally also sought to find out the level of awareness regarding hearing impairment and the usage of hearing aids in Accra. A cross sectional data was collected from 50 respondents in Accra.

The quantitative method was used because this method is easy for conversion of information obtained into statistical models for general analyses to be made and the research questions to be answered base on the statistical models. The study population consisted of persons who are hearing impaired and were fitted with hearing aids of different types from the specified hearing assessment centres in Accra.

Probability Sampling

In probability sampling, each sample has an equal probability of being chosen. We can say, a probability sample is one in which each element of the population has a known non-zero probability of selection. This method of sampling gives the probability that our sample is representative of a population. Some probability sampling methods are as follows; Simple Random Sampling, Stratified Random Sampling, Systematic Random Sampling, Cluster Sampling and Multi-stage Systematic Sampling.

Stratified Sampling

Stratified Random Sampling is a perfection over systematic sampling. For this method the population elements are divided into strata on the basis of some characteristics and from each of these smaller homogeneous groups draws at random a predetermined number of units. The stratified sampling was used because it helps the researcher to select some units of all groups and include them in the sample which can ensure that the sample is representative of the target population.

Non-probability Sampling

The non-probability sampling technique uses non-randomized methods to draw the sample. According to (Showkat, 2017) ‘‘Non-probability sampling method mostly involves judgment, instead of randomization, participants are selected because they are easy to access’’. For instance, a classmates and friends have a better chance to be part of a sample. Even though in certain cases, non-probability sampling is a useful and convenient method of selecting a sample, the method is appropriate and the

only method available in certain cases. Through the non-probability method, we can study particular phenomena with a potential to generate valuable insights. The non-probability sample is used to study existing theoretical insights or developing new ones. This method of sampling is considered less expensive, less complicated and easy to apply as compared to its counterpart. Some of the non-probability sampling techniques are; Convenience Sampling, Purposive Sampling, Quota Sampling, and Snowball sampling. Convenience Sampling: in this type of sampling, researchers prefer participants as per their own convenience. The researcher selects the closest live persons as respondents. The reason why convenience sampling was deployed because according to Showkat, (2017) in convenience sampling, subjects who are readily accessible or available to the researcher are selected.

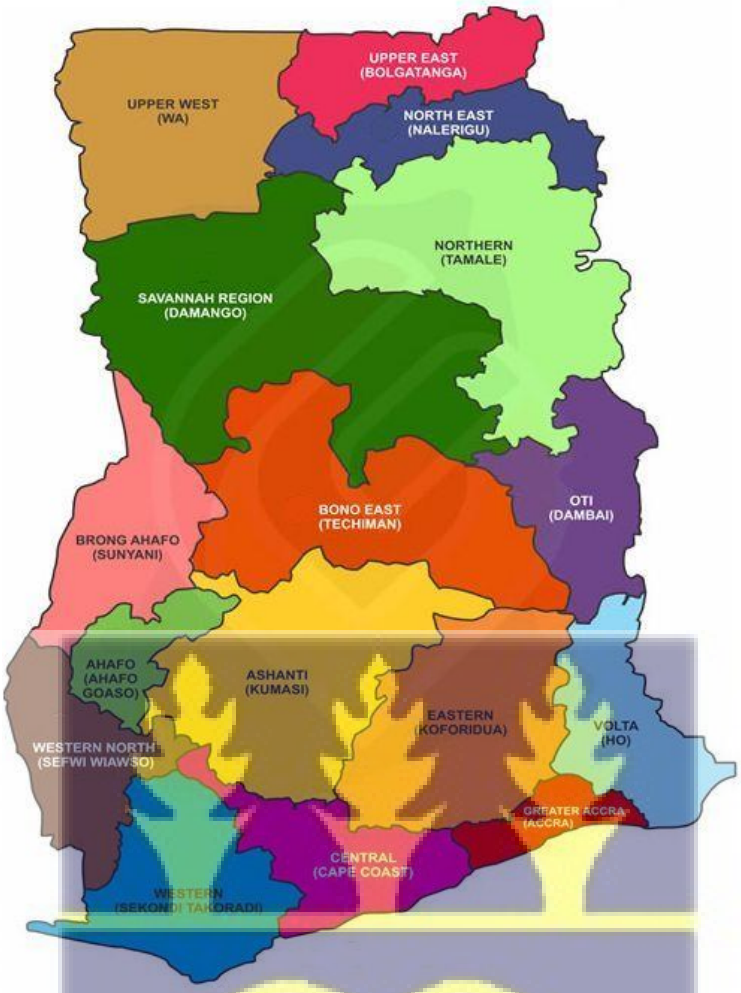
3.3 STUDY SITE

The study population consisted of patients with hearing loss in Accra. The population of the people in Accra is estimated to be between 3 and 4 million. Amongst this huge population is Hearing-impaired individuals who use hearing aids. The study would help to determine attitudes towards the use of hearing aids among the hearing-impaired population.

3.4 STUDY POPULATION

The population of this study consisted of persons who are hearing impaired and were fitted with hearing aids of different types from the specified hearing assessment centres in Accra. The hearing-impaired person's ages range from 20 to 59 years. This range of ages was preferred because of consent issues; only adults were selected. Ideally, adults of 60 years and above would have been a plus for this study because they are more prone to having hearing loss because of aging (Nyarko, 2013). But the researcher did not meet any at the time to participate in the study.

With Greater Accra population of over 3.6 million people, the study enabled the researcher to determine to find out peoples' attitude toward the use of hearing aids. The study sampled five (5) notable health institutions in Accra that receives hearings impaired referrals namely; Hearing Assessment Centre, Korle-Bu Teaching Hospital, Hearing Aid Supply and Services West Africa Clinic (HASS), National Assessment Centre, and The Speech and Hearing Centre (SHC) and Krispat Hearing Centre Ghana Limited, all in Accra. This is because according to Patton (2015) purposeful sampling involves selecting information rich cases and the purpose of the inquiry, Patton acknowledged the role of resource limitations in determining a qualitative sample size. Furthermore, Merriam (2009) argued the process for selecting a sample and determining sample size. She noted that it depends on the research questions, the data collected, the data analysis, and the availability of resources. Questionnaires were designed to assess the level of knowledge that people with hearing loss have on hearing aids; and also sought to find out the level of awareness regarding hearing impairment and the usage of hearing aids in Accra.



Map of Ghana

3.5 INCLUSION AND EXCLUSION CRITERIA

3.5.1 Inclusion Criteria

Hearing-impaired adults who had acquired their hearing aids from the hearing assessment centres in Accra were recruited to participate voluntarily and of these, fifty (50) completed the questionnaires.

3.5.2 Exclusion Criteria

No participants were excluded from the study because of the level of hearing loss or type of hearing aids in use. No educational qualification was considered. A majority of them were women (58%) and the ages ranged from 20 to 59 years.

3.6 SAMPLE SIZE AND SAMPLING TECHNIQUE

The study sampled 50 people consist of patients with hearing loss in the Greater Accra Region of Ghana. Therefore, questionnaires were designed to ascertain the attitude toward the use of hearing aids among the hearing-impaired patients. According to Kothari (2004) "sample is a collection of some parts of the population based on which decision is made". It is small to make data collection convenient and large enough to be a true representative of the population from which it had been selected. The sample size on the other hand refers to several items to be selected from the population of the study to constitute a sample. The sample needs to be optimized to fulfill the requirements of efficiency, reliability, and flexibility.

The sample size is defined as the size of the population included in a research study (Economides and Jeziorski, 2014). The technique of apportioning the population into an overlapping group produces small errors and cost per observation. In this study, the sample involves a total of 50 respondents who were selected through a stratified random sampling technique among the targeted population. The sample size is deemed appropriate because it conforms to Edwards (1985) and Stevens (1996) recommendation that the study should consider a minimum of 15 participants for each predictor variable used in multivariate analysis. In respect of the sampling techniques and using the study objectives, the study used both probability and non-probability sampling techniques. A probability sampling is a procedure in which each element of the population has a fixed probabilistic chance of being selected for the sample (Malhotra, 2007). In this technique, sampling units were selected by chance and the researcher can pre-specify every potential sample of a given size that could be drawn from the population. A non-probability sampling technique tries to obtain a sample of the convenient element. Unlike probability sampling, the non-probability sampling technique leaves the

selection of sampling units primarily to the interviewer.

3.7 DATA COLLECTION PROCEDURE

Primary data was used in this study and was obtained through a questionnaire survey. In the context of this study, the survey approach using the questionnaire is thought to be the most appropriate technique in collecting the primary data. It also allowed quantitative analysis to be conducted in the testing of inferences and to generalize the findings. Structured questionnaires were designed, and Likert scale type questions were used to find out attitudes towards the use of hearing aids among the hearing-impaired population in Accra, Ghana. Closed-ended questionnaire outcome measures were utilized to give the respondents an idea of the subject matter.

According to Kumekpor (2002), a self-administered questionnaire is less expensive than sending interviewers to the field, especially when respondents are scattered over a wide area. Besides, no interviewer controls the sequence of questions, which allows respondents to skip some questions and return to them later. This provided the respondent with ample time to reflect on questions before completing the answers. The advantages of the self-administered questionnaire stated are the reasons for the selection of that approach for the collection of the quantitative data.

3.8 DATA MANAGEMENT

Ethical issues are of paramount importance to this study. Some of these relate to researcher-respondent relationships such as asking sensitive questions, openness with the respondents, long questionnaires, combining than one question in the same questionnaire, deliberately biasing the questionnaire, appropriate use of words, handling of confidential information from respondents, among others.

The study ensured that information provided by the respondents was kept confidential and that no participant was victimized in any way. Since the respondents volunteered their time and information it was ensured that respondents were not overburdened by soliciting too much information. The study also made sure that prior approval was sought from the respondents and institutions concerned. It was made clear to respondents that the study was for academic and research purposes only and not for any other inordinate purposes that would be injurious to their persons.

3.9 DATA ANALYSIS

In carrying out a quantitative research analysis, there are several software packages for the analysis some of which are broader in scope and user friendly such as the Stata, R. Studio, and SPSS. Descriptive statistics carried out to determine the level of relationship between the two variables. The results were presented in tables, charts, and graphs to make it appealing to a wider range of audience with different backgrounds.

3.10 ETHICAL CONSIDERATIONS

Ethical approval was sought from the Ethical and Protocol Review Committee (EPRC) of the School of Biomedical and Allied Health Sciences (SBAHS), University of Ghana (SBAHS/AA/AUD/10701676/2019-2020). Permission to carry out the study was requested from the Hearing Assessment Center, Korle-Bu Teaching Hospital, Hearing Aid Supply and Services West Africa Clinic (HASS), National Assessment Centre, Krispat Hearing Centre, Ghana Limited and The Speech and Hearing Centre (SHC). The consent of respondents was sought after explaining the objectivesof the study to them. Respondents who consented to partake in the study were made to sign the consent form before responding to the questionnaire. Information collected from participants was kept confidential. The study did not pose any threat to the participants and their families.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

This Chapter presents the results of the study. It includes the demographics of the respondents, the awareness duration of their hearing status, and their attitude towards the use of hearing aids as an interventional device to improve their hearing acuity. Statistical analysis of the results is also presented.

4.2 DEMOGRAPHICS

The demographic variables considered by this study are gender, age groups, marital status, and occupation as shown in Table 4.1. A total of 50 respondents participated in the study. The population consisted more females (*N*=29, 58.0%) than males (*N*=21, 42.0%). In terms of age, there were 16 (32.0%) hearing-impaired persons in the 20-29 years bracket and 12 (24.0%) hearing-impaired persons in 30-39 years brackets. Most of the respondents (*N*=22, 44.0%) were over 40 years old. In terms of marital status, 25 (50.0%) were married, while 19 (38.0%) were unmarried, and 6 (12.0%) were separated.

The occupations of the respondents were classified as students, self-employed (including traders, mechanics, graphic designers), civil and public servants, and unspecified jobs. There were more self-employed respondents (*N*=30, 60.0%) compared to civil and public servants (*N*=14, 28.0%) and students (4, 8.0%). Only 2 (4.0%) affirmed that they had unspecified jobs.

Table 4.1: Demographics showing the variables.

Variable		Frequency (*N*=50)	Percentage (%)
Gender	Male	21	42
	Female	29	58
Age (in years)	20-29	16	32
	30-39	12	24
	40-59	22	44
Marital Status	Single	25	50
	Married	19	38
	Separated	6	12
Occupation	Student	4	8
	Self-employed	30	60
	Civil and public servants	14	28
	Other specify	2	4

Source: (Fieldwork, Accra, 2020)

4.3 HEARING LOSS

4.3.1 Awareness of Hearing Loss

The three ways by which the respondents identified their awareness of hearing loss were through initial self-reporting, complaints from their spouses or significant others, and later confirmation through diagnostic audiometric testing thresholds done at the various assessment centres of this study namely, the Hearing Assessment Center, Korle-Bu Teaching Hospital, Hearing Aid Supply and Services West Africa Clinic (HASS), National Assessment Centre, and The Speech and Hearing Centre (SHC) all in Accra. (Table 4.2).

Table 4.2: Mode of awareness of hearing loss

Variable	Frequency (N=50)	Percentage (%)
Audiometric tests	30	60
Initial self-report followed by audiometric testing	12	24
Informed by significant others	8	16
Total	50	100

The result revealed that 60.0% (*N*=30) of the respondents reported awareness of their hearing loss through audiometric examinations. Some of the hearing impaired did self-reporting(*N*=12, 24.0%) which was confirmed by audiometric testing. The last group of respondents (*N*=8, 16.0%) reported that they became aware of their hearing status through complaints fromtheir spouses or significant others.

4.3.2 Time Duration Before Awareness of Hearing Loss

Hearing loss may not occur instantaneously. On average, it takes some people with hearing loss seven years before they are typically aware of a hearing loss and do something about the situation (Maltby, 2002). In such cases, an essential crucial interventional period elapses and this can worsen the hearing impairment to severe to profound that may demand the use of power hearing aids. Power hearing aids normally, are bigger and are easily visible. If this happens, a negative attitude towards the acquisition and use of the hearing aids is enhanced due to the hearing-impaired persons' perception of stigmatization from the public. The study, therefore, assessed the time duration before the respondent's awareness of their hearing impairments to ascertain or otherwise their attitudes. From Table 4.3, 39 respondents (78.0%) reported that 1-10 years elapsed before they noticed and did something about their hearing loss.

Eleven (N= 11, 22.0%) respondents revealed that they noticed their hearing loss after 10 years of living with the condition.

Table 4.3: Duration before awareness of hearing loss

Duration before awareness of hearing loss	Frequency (*N*=50)	Percentage (%)
Between 1 to 10 years	39	78
More than 10 years	11	22
Total	50	100

Source: (Fieldwork, Accra, 2020)

This table indicates how long it took the respondents to seek treatment when they noticed their hearing impairments. The consequence of late awareness or detection and diagnosis of hearing loss may influence the type of hearing aids to acquire and use.

4.3.3 Causes of Hearing Loss

Fig. 4.1 shows the causes of hearing loss identified via audiometric testing among the respondents.

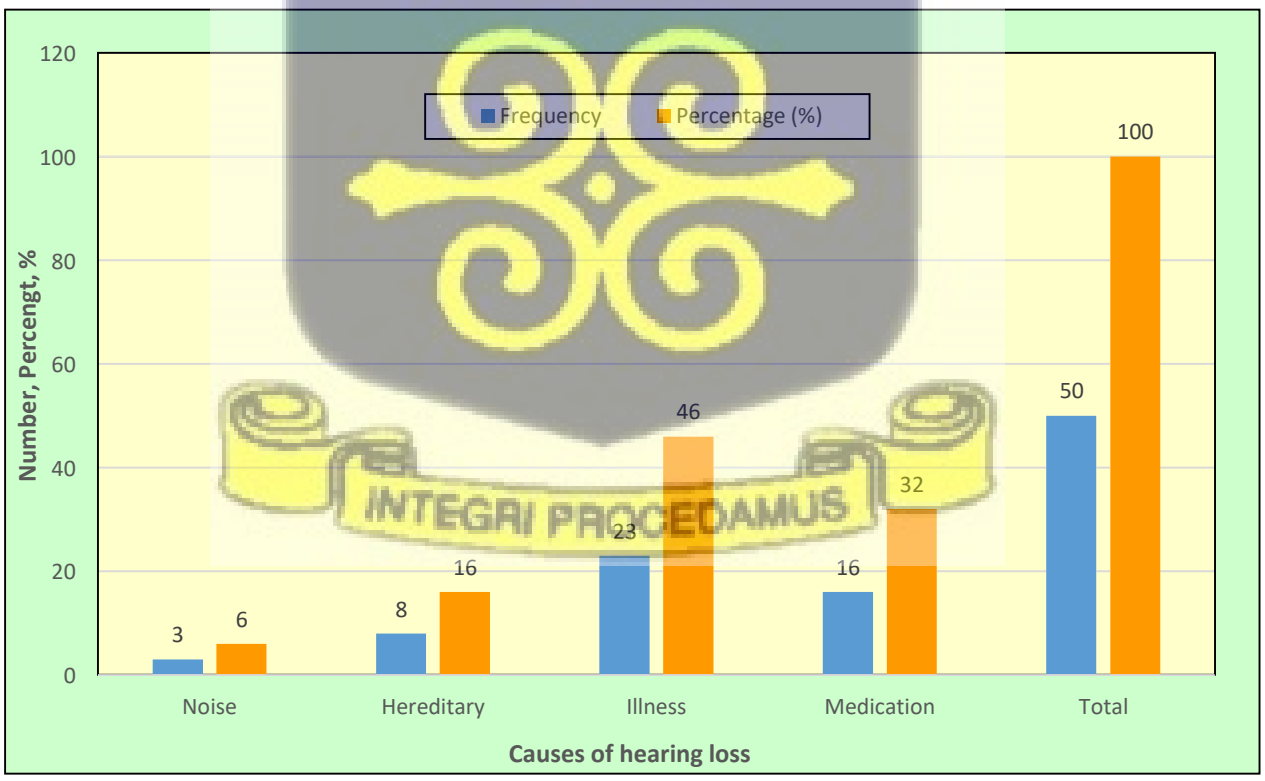


Fig. 4.1: Causes of hearing loss among respondents

The illness was identified as the most common cause of hearing loss as reported by 23 (46.0%) of the respondents. Medication and hereditary factors were identified as other causes of hearing loss by 16 (32.0%) and 9 (16.0%) of the population. Excessive noise was least identified by the respondents as the cause of their hearing impairment (*N*=3, 6.0%).

4.3.4 Field Audiometric Screening Test

Table 4.4 shows the age distribution of the results of the audiometric screening test. The results show respondents who failed the audiometric screening test and were not able to respond correctly to stimuli at 30dB HTL for all frequencies for left ears and those who failed the audiometric screening test which means they were not able to respond correctly to stimuli at 30dB HTL for all frequencies for their right ears, and finally, respondents who failed audiometric screening test and were not able to respond correctly to stimuli at 30dB HTL for all frequencies for both ears. Out of the 50 respondents selected in the Greater Accra Metropolitan area, the majority of the respondents 23(46 %) failed the audiometric screening test on both ears, while, 15 (30%) of the respondents failed the audiometric screening test on their left ears. Twelve (N=12,24%) respondents also failed the audiometric screening test on their right ears. However, they were all accordingly referred to appropriate hearing specialist centres for further clinical examination and management.

. The analysis is shown in the table below.

Table 4.4: Result of Audiometric Screening

Age Group	Failed Screen Left	Failed Screen Right	Failed Both Ears	Total
Age 20	4	0	1	5
21-30	6	4	10	20
31-40	3	5	7	15
41-50	2	3	5	10
Total	**15**	**12**	**23**	**50**

Source: (Fieldwork, Accra, 2020)

4.3.5 Laterality of Hearing Loss

The laterality of hearing loss reported among the respondents is shown in Table 4.4. Twenty-three (46.0%) of the respondents reported hearing loss in both ears while hearing loss in the right and left ears were detected in 12 (24.0%) and 15 (30.0%) of the population respectively. These results showed that most of the hearing loss or impairment affected both ears.

Table 4.5: Laterality of hearing loss

Laterality	Frequency (*N*=50)	Percentage (%)
Left ear only	15	30
Right ear only	12	24
Both ears	23	46
Total	50	100

Source: (Fieldwork, Accra, 2020)

4.3.6 Motivating Factors for Seeking Audiological Treatment

The study assessed the respondents' plans to seek different audiological treatments for their conditions. In this regard, three motivating factors including complaints from significant others, difficulty in following conversations, and inability to effectively follow or hear conversations on the telephone were identified by the respondents as motivating factors for seeking assistance as shown in Table 4.5. Difficulty in following conversations from relatives, friends, and other persons was mostly reported as a key motivating factor for seeking assistance (*N*= 16, 32.0%) by the respondents. Inability to effectively follow or hear conversations on the telephone was reported by 13 (26.0%) as a factor that motivated them to seek assistance from the relevant hearing specialist centres, while 12 (24.0%) confirmed that all the three factors motivated them to seek assistance.

Table 4.6: Motivating factor of seeking help

Motivating factors	Frequency (*N*=50)	Percent, %
Complaints from significant others	9	18
Could not follow conversations	16	32
Could not hear from telephone	13	26
All of the above	12	24
Total	50	100

Source: (Fieldwork, Accra, 2020)

4.4 HEARING AIDS

4.4.1 Types of Hearing Aids

Hearing aids are electronic acoustic devices designed to amplify acoustic energy or sound so that hearing-impaired persons can hear, communicate, and effectively participate in hearing activities. In this study, the type of hearing aids used by the respondents is shown in Fig. 4.2. A few (*N*=5, 10.0%) used completely in the canal devices, while most of the respondents used behind-the-ear (*N*=17, 34.0%) and in-the-ear (*N*=21, 42.0%) hearing aids. Only 7 (14.0%) used different hearing types other than these three.

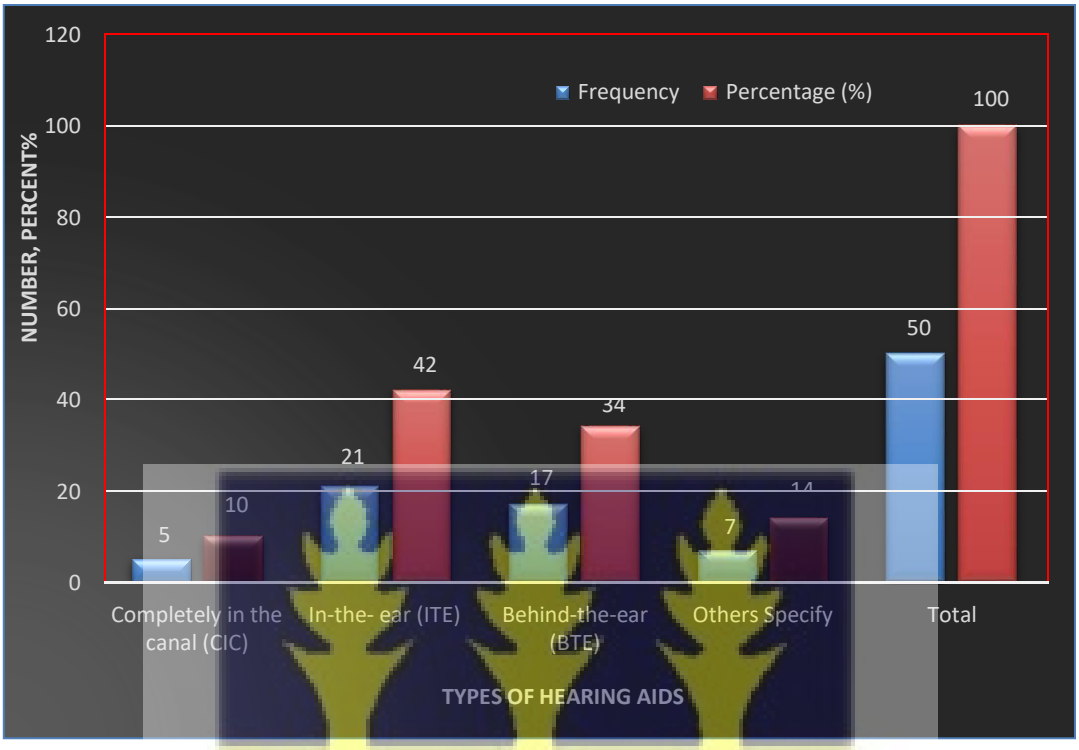


Figure 4.2: Types of hearing aids *Source (Fieldwork, Accra, 2020)*

4.4.2 Usage, Benefits, and Feelings About Hearing Aids

The respondents' desire to use recommended hearing aids, the frequency of their utilization, the benefits, and feelings about using hearing aids were assessed in this study. The results are presented in Table 4.6.

In responding to the questions *"Do you like using the recommended hearing aids,* 30 (60.0%) of the respondents answered *yes* and explained that the hearing aids helped them to maintain conversational touch with people. On the other hand, 20 (40%) of them answered *no* and said that they did not necessarily use the recommended hearing aids because they feared stigmatization. Concerning the frequency of usage, 27 (54.0%) of them said they sometimes

used hearing aids, 18 (36%) said they used them very often, while only 5 (10%) confirmed they *always* wore their hearing aid devices. The implication is that although the hearing aid helps enhance hearing, most patients did not use the hearing aids or devices as expected.

Table 4.7: Usage, benefits, and feelings about hearing aids

Question	Response	Frequency (*N*=50)	Percent, (%)
Do you like using recommended hearing devices by a doctor?	Yes	30	60
	No	20	40
How often you use aided recommended device	Always	5	10
	Very often	18	36
	Sometimes	27	54
	Not always	0	0
Is a hearing aid beneficial to your hearing?	Yes, strongly agree	27	54
	No, strongly disagree	23	46
What are your feelings about hearing aid usage	Feel relieved	29	58
	Feel embarrassed in the public	21	42

Source: (Fieldwork, Accra, 2020)

Twenty-seven (54.0% of the respondents *strongly agreed* to the question "*Is hearing aids beneficial to your hearing*? On the contrary, 23 (46%) stated *no*, and *strongly disagreed*. The respondents expressed their attitudes about using hearing aids. The results showed that 29 (58.0%) of the respondents said they felt relieved and heard very well whenever they used the hearing aid because their hearing acuity was completely enhanced. However, 21 (42%) said they felt embarrassed in public whenever they wore them. This implies that although most hearing aid users felt relieved, other users were unhappy due to public perception of their disability, with its associated stigmatization.

4.4.3 Hearing Aids and Restoration of Hearing

It is the expectation of every patient to believe that getting first aid or medicine will help reduce any sickness if not fight it off completely. Most people go to the hospital with the hope of getting healed. Contrary, Hearing aids are provided to enhance, not to restore hearing. The respondents' expectations of using hearing aids to restore hearing, and their recommendations for its users based on their experiences were therefore examined (Table 4.7).

Table 4.8: Hearing Aids and Restoration of Hearing

Question	Response	Frequency (*N*=50)	Percent, (%)
Would using the hearing aid restore hearing impairment?	Believe in the hearing aid	21	42
	Some degree of restoration just like other medications	19	38
	Trust doctor's recommendation of temporal restoration	10	20
Would you recommend hearing aids to others?	Yes	48	96
	No	2	4
What should be done to encourage the hearing impaired to acquire hearing aids	Mass testing	21	42
	Public education and sensitization	12	24
	More accessibility	10	20
	Less costly	7	14

Source (Fieldwork, Accra, 2020)

Specifically, 42% of them indicated their expectation in using hearing aids to restore their hearing, while 38% likened hearing aids to any kind of medication and hence expected the use of hearing aids to provide some degree of hearing restoration. Finally, 20% said that they trusted the doctor's recommendation that hearing aids provided temporary solutions to their hearing problems. Based on their experiences of using hearing aids, 48 (96.0%) of them readily

agreed to recommend a hearing aid to others with hearing impairment. However, 4% said they would not recommend any hearing aid to others based on their experiences.

In responding to the question "*What should be done to encourage the hearing impaired to acquire hearing aids?",*42.0% of the respondents indicated that conducting mass hearing screening for the public would help identify the hearing impaired and then recommendation to acquire hearing aids. Others (24.0%) proposed that more public education and sensitization exercises to encourage hearing loss persons to acquire hearing aids, while 20.0% also thought that making the hearing aids more accessible to hearing-impaired persons will help them to acquire hearing aids. Finally, 7 (14.0%) said making the hearing aids less costly would be sufficient to encourage hearing impaired persons to acquire hearing aids.

4.4.4 Use of Hearing Aid

The table below the analysis shows the degree to which respondents use a hearing aid. The analysis reveals that 16 respondents (32%) disagree that they use their hearing aid daily, while 14 respondents (28%) strongly disagree that they use the hearing aid daily. Only 14% and 10% of the respondent agree and strongly agree respectively that they use the hearing aid daily. However, 8 (16%) of them are neutral. This means that they neither agree with the use of hearing aid daily nor disagree that they do not use hearing aids daily. The implication however is that about 60 percent of people living with hearing loss in Accra do not use their hearing aid or device regularly. The analysis is shown in the table below.

Table 4.9: Hearing Aid Daily usage

Views of respondents	Frequency (N=50)	Percent, %
Strongly agree	5	10
Agree	7	14
Neutral	8	16
Disagree	16	32
Strongly disagree	14	28
Total	50	100

Source: (Fieldwork, Accra, 2020)

4.4.5 Irregular use of Hearing Aids due to Discomfort in Usage

In table 4.9 below, the result from the analysis shows most of the respondents agreed that they do not like using hearing aid because they feel uncomfortable using the hearing aid. For example, from the analysis, 17 respondents (34%) strongly agreed that they felt uncomfortable using the hearing aids, while 15 respondents (30%) agreed that they were not comfortable using the hearing aid. This means that about 64 percent of the respondents felt uncomfortable using the hearing aids. However, 6 respondents (12%) disagreed that they feel uncomfortable when using the hearing aid. Fourteen (14%) strongly disagreed on the same premise that they did not feel comfortable when using the hearing aid. The study confirmed Brooks and Hallam's (1998) study which administered the Hearing Attitudes in Rehabilitation Questionnaire (HARQ). The said study revealed that patients felt reluctant to wear hearing aids due to stigma toward hearing aids usage.

The analysis is shown in the table below.

Table 4.10: Not Comfortable using a hearing aid

Views of respondents	Frequency (N=50)	Percent, %
Strongly agree	17	34
Agree	15	30
Neutral	5	10
Disagree	6	12
Strongly disagree	7	14
Total	50	100

CHAPTER FIVE

DISCUSSIONS

5.1 INTRODUCTION

This chapter discusses the results of the study. This study employed a quantitative research method to explain the extent of impact and relationship that exists between hearing loss and the use of hearing aids in Accra, Ghana. The study looked at theories of hearing loss, problems, causes, and effects of hearing loss, and the attitudes toward the use of hearing aids among the hearing impaired in the literature review.

5.2 DISCUSSION OF FINDINGS

A large-scale, repeated, robust survey has shown that around 60% of the adult population in Accra who are hearing impaired and have been fitted with hearing aids do not use them. The findings of this study collaborate with the study by Dillon *et al* (2020) "*on adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics*." The study revealed that the proportion of hearing-impaired persons who did not use their hearing aids at all after acquisition decreased from 21% to 18% over 12 years.

Also, Van den Brink *et al.,* (1996) conducted a study that indicated that people with hearing loss who consulted for help but ended up not acquiring hearing aids had less favourable attitudes toward hearing aids than those acquiring hearing aids. (Hickson *et al.,* 1986 & 1999)

Furthermore, the full-time or part-time use of hearing aid by 40% or less of those who try them supports the cost-effectiveness of hearing aid provision. Efforts to identify and address reasons for non-use and under-use are, urgently needed. This may include new methods of helping people adapt to their hearing aids or otherwise support their on-going use, or making hearing aids better adapt to the listening situations they are used in.

The key findings from this study revealed that about 16% of the hearing loss persons sampled developed the problem as a result of hereditary. This finding is consistent with Brobby *et al.*, (1998) wherein Ghana, where the first study to associate Hearing Loss to genes. The study examined several families in a village in the Eastern region of Ghana that had a high prevalence of HL and the result showed quite a number of the people had an issue of HL as a result of inherited gene.

Again, one key finding showed that about 60% of the population or sample size indicated that they did not know they had hearing loss until they had a hearing test at a hospital or hearing specialist centres. There were 24% who revealed that they guessed about their hearing loss issues and they were right when it was finally proven. Only 16% of the participants revealed they were told by significant others who detected the signs in them. This finding confirms the previous studies by Convery *et al.* (2011) ''whose findings included the assertion that most hearing-impaired persons have negative attitudes towards the use of hearing aids due to the unavailability and unreliable access to hearing care services globally''. Particularly in developing countries and in remotely located, underserved regions of the developed world, where people with hearing loss do not get proper attention. The situation is compounded in a developing country like Ghana where a significant disadvantage and scarcity of locally manufactured hearing aids coupled with a lack of hearing health care professionals lead to the high cost of hearing aids.

Another key finding from the study revealed that seventy-eight percent (78%) of the people with hearing loss noticed or were told that they have a hearing loss within 1-10 years, while twenty-two percent (22%) revealed that they noticed that they had hearing loss after 10 years of living with the situation. This implies that most of the hearing impaired people in the country do not detect the problem early enough to be able to find a solution to it. Late detection and diagnosis of hearing loss make it difficult to intervene with appropriate aural rehabilitation.

Also, the findings from the study showed 58% of the respondent felt relieved and hear very well whenever they use a hearing aid device as it enhances their hearing completely. However, 42% of the study findings revealed otherwise, because whenever they wore the hearing aids, they felt embarrassed in the public. This implies that most of the hearing impaired persons are not comfortable using hearing aids because of public perception and stigmatization.

From the analysis, the result revealed that 96% expected that when they start using the aid it would help restore the hearing acuity to normalcy completely. While only 4% felt that they never had any expectation that the hearing aid would restore completely their hearing status. From the study, it was also discovered that, although the hearing aid help improves hearing, most patients do not use the hearing devices as expected. These study findings are consistent with Dillon *et al.*, (2020) and Convery *et al.*, (2011)

Finally, the study results revealed a desire by 42% of the respondent advocating for the conduct of public audiometric screening of people. This they agreed would encourage the hearing impaired to acquire hearing aids. Furthermore, 24% of the respondent felt there should be more public education and sensitization exercise to encourage hearing loss persons to know how to acquire and use the hearing aids devices effectively. Twenty percent (20%) think that making the hearing aids devices more accessible to the hearing impaired will help them to acquire the hearing aids. As espoused in the literature (Chisolm et al. 2007; (Ferguson et al. 2017) Hearing aids are effective in reducing the handicap caused by hearing loss, even for mild and moderate hearing impairment. To this end, robust sensitization and public education would be the key to educating people with hearing loss on the need to use hearing aid devices.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The conclusions drawn from the study and recommendations are presented in this chapter. It further looks at the implications of the study and highlights revelations and lessons drawn from the study.

6.2 CONCLUSION

The purpose of the study was to assess the attitudes towards the use of hearing aids among the hearing-impaired population in Accra**.** Specifically, the study was guided by the following objectives:

vi. To find out people's level of awareness regarding hearing impairment and the usage of hearing aids in Accra

vii. To assess the level of knowledge that people with hearing loss have on hearing aids

viii. To find out the attitudes of hearing impaired persons towards the usage of hearing aids in Accra

The study reviewed both theoretical and empirical studies on HL as well as types of hearing aid and hearing-impaired general attitude towards the use of hearing aids from different countries. It was found 42% of the study findings revealed whenever they wear hearing aids, they feel embarrassed in the public. This implies that most of the people with hearing problem although feel relief when wearing the device, they are also not happy for wearing because of the public perception and stigmatization.

To find more information, the study used a cross-sectional research design whereby primary data collected were by using a questionnaire. The questionnaire was made in English which is the medium of instruction and communication in Ghana. Finally, the sample size was 50. Simple random sampling was used to select the sample size among the hearing loss persons in Accra. The study was analyzed using tables and graphs and other statistical models. The finding of the study suggested that there are challenges among the hearing-impaired person in using hearing aids. The study contributes to the literature on hearing impairment in Ghana and beyond.

6.3 RECOMMENDATIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER STUDIES

Based on the conclusion of this research I thus recommend that:

1. Hearing-impaired persons should be encouraged to wear hearing aids that would enable them to engage in acoustic interactions with colleagues both at home and workplace
2. Bad medications and dangerous substances or drugs known to cause hearing loss such as aminoglycoside should not be prescribed or should be taken with caution.
3. It is also recommended that people working or living in noisy environments should go for regular medical checkups and use other ear protecting devices.
4. More awareness and education should be conducted periodically to educate the hearing-impaired individuals on the benefits of using a hearing aid. Besides, more health professionals,such as audiologists and hearing technicians should be trained to address the present scarcity of such personnel.
5. Governments, health planners, and other decision-makers must educate and protect society by enacting laws aimed at safeguarding the life and protection of those who might

be vulnerable to hearing loss.

6. 4 FUTURE DIRECTIONS

The most effective way to increase or improve the number of people with hearing impairment use of hearing aids in developing countries like Ghana, is to develop an effective diagnosis, treatment, and preventive measures. It is estimated that over 50% of all HI cases can enjoy an improved quality of life when their attitude towards the use of hearing aids is positively directed.

The following have been identified as a future focus to effectively manage the attitude of using hearing aids or devices in Ghana:

1. Identification of major causes of why hearing-impaired persons in Ghana do not like wearing a hearing aid in public. In Ghana, stigmatization is one of the greatest causes. But future studies can be dwelled on it to find out more reasons as to why there is a poor attitudinal drive toward the use of a hearing aid
2. Finally, few empirical findings have been unearthed in this study on attitudes towards hearing aid usage in Ghana among the hearing impaired. However, data collection is limited. Panel research design, therefore, is recommended to be used in future studies to capture broader sample side and also extend to other regions.

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APPENDIX A

ETHICAL CLEARANCE

UNIVERSITY OF GHANA

SCHOOL OF BIOMEDICAL AND ALLIED HEALTH SCIENCES

May 16, 2020

Mr. Kweitsu, Christian Kwetey
Department of Audiology
SBAHS, Korle – Bu

Dear Mr. Kweitsu,

ETHICS CLEARANCE

Ethics Identification Number: SBAHS/AA/AUD/10701676/2019-2020

Following a meeting of the Ethics and Protocol Review Committee of the School of Biomedical and Allied Health Sciences held on April 9, 2020, I write on behalf of the Committee to approve your research proposal entitled:

"Attitudes towards the use of hearing aids among the hearing impaired population in Accra."

This approval requires that you submit three-monthly review reports of the protocol to the Committee and a final full review to the Committee on completion of the research. The Committee may observe the procedures and records of the research during and after implementation.

Please note that any significant modification of the research must be submitted to the Committee for review and approval before its implementation.

You are required to report all serious adverse events related to this research to the Committee within seven (7) days verbally and fourteen (14) days in writing.

As part of the review process, it is the Committee's duty to review the ethical aspects of any manuscript that may be produced from this research. You will, therefore, be required to furnish the Committee with any manuscript for publication.

This clearance is valid for three years, with effect from the date issued.

Please always quote the ethical identification number in all future correspondence in relation to this protocol.

Thank you.

Yours sincerely,

Jonathan Quartey (PhD)
Chairman, Ethics and Protocol Review Committee
CC: Dean, SBAHS
Head, Dept. of Audiology, SBAHS
School Administrator, SBAHS

COLLEGE OF HEALTH SCIENCES

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APPENDIX B

PARTICIPANT INFORMATION FORM

UNIVERSITY OF GHANA

DEPARTMENT OF AUDIOLOGY SPEECH AND LANGUAGE

SCHOOL OF BIOMEDICAL AND ALLIED HEALTH

COLLEGE OF HEALTH SCIENCE

TITLE OF RESEARCH: **Attitudes towards the use of hearing aids among hearing impaired population in Accra, Ghana**

PRINCIPAL RESEARCHER: Christian Kwetey Kweitsu

Department of Audiology Speech and Language Therapy University of Ghana

Professional: MSc Audiology

Mobile: 0248878171 Email: **ckweitsu@yahoo.com**

General Information about Research

Under the supervision of Dr. Samuel Anim-Sampong, University of Ghana, School of Biomedical and Allied Health Science, I Christian Kwetey Kweitsu, a post Graduate student of Department of Audiology Speech and Language Therapy, I am conducting research on the attitudes towards the use of hearing aids among hearing impaired population in Accra, Ghana.

Possible Risk and Discomfort

There are no risks of participation in this study. Voluntary Participation and right to leave the research. Participation in this research is voluntary. Participant have the right to withdraw from the research at any time and refuse to participate entirely without jeopardy.

Contact for Additional Information

For any information or questions about the study contact the principal investigator Christian Kwetey Kweitsu, 0248878171.

Confidentiality

All information provided will remain confidential, and will only be reported as a group data with no identifying information. All data will be kept in safe location and only those directly involved in the research will have access to them.

Possible Benefits

Participants get free hearing screened and knowing their hearing status. Also, the study will highlight the importance of using a hearing aid. This will help stakeholders and decision-makers in healthcare to design strategies and policies that increase the level of awareness and attitude toward hearing aids among hearing-impaired people.

Your Right as a Participant

This research has been reviewed and approved by Ethics and Protocol Review committee (EPRC) of the school of Biomedical and Allied Health Science, College of Health Sciences, University of Ghana. If you have any question about your right as a participant you can contact EPRC office between the hours of 8am-5:00pm through the landline +223 030 687974/5 or postal address KB 143, Korle BU Ghana.

APPENDIX C

CONSENT FORM

I …… [PRINT NAME], give my consent to participate in the research project titled [**ATTITUDES TOWARDS THE USE OF HEARING AIDS AMONG HEARING IMPAIRED POPULATION IN ACCRA, GHANA]**

In giving my consent I acknowledge that:

- I have read the Participant Information Statement and have been allowed to discuss the information and my involvement in the project with the researcher.
- I understand that being in this study is completely voluntary and confidential.
- I understand that any research data gathered from the results of the study may be published. However, no information will be used that can identify me.
- I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher or The University of Ghana.
- I understand that if I have concerns about the research at any point, I can contact the research team to discuss any issues I have.

Signature: …….. Thumbprint: ……

Date: ……../……../……..

I certify that I have explained the information on the sheet to the participant and that he/she has understood and agree to take part in this study.

Signature: ……

Name of interviewer: …….. Date:……/……/……