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PSYCHO- PERSONAL CONSTRUCTS AS PREDICTORS OF HEARING AIDS SATISFACTION AMONG OUTPATIENTS OF LADOKE AKINTOLA UNIVERSITY TEACHING HOSPITAL, OGBOMOSO, OYO STATE

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Abstract

The organ of hearing is vital to man as about 70 percent of the information needed for daily life is aided by normal functioning of human ears. Whenever there is a problem that impedes the effective functioning of the ear, hearing becomes difficult and needs an aid that will make it function. The fitting and the use of hearing aids become necessary to aid the audibility of any person that suffers audibility loss. However, most users of this device react differently to its use. This study investigated the influence of psycho-personal constructs on hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso. The study employed descriptive survey research design with samples of 37 outpatients using hearing aids. The instrument used for the study is hearing aids usability inventory with reliability of 0.80 using cronbach alpha. Three research questions were answered. Data collected was analysed using descriptive statistics, Pearson Product Moment Correlation and Multiple regression analysis. The results revealed that their significant relationship between the independent variables (hearing aids experience, hearing self-efficacy, hearing ability on hearing aids and confidence using HAs) and hearing satisfaction, the independent variables jointly predict hearing satisfaction and hearing aids experience was found to have the most significant contribution to hearing aids satisfaction among the participants. It was recommended that the right hearing aids should be fitted with any patient with hearing loss to aid their positive experience.

Introduction

The sense of hearing is very vital to the existence of man. Hence, loss of this essential organ may have a devastating effect on those concerns. Hearing loss is a common problem that may end in disability and handicap. Hearing loss (HL) has been reported as one of the most prevalent chronic diseases among adults (Mulwafu,Kuper & Ensink 2016). Globally, more than 1.5 billion people

experience some degree of hearing loss of which an estimated 430 million have hearing loss of moderate or higher severity in the better hearing ear (WHO, 2021). The prevalence of hearing loss varies across regions with most people affected living in low and middle-income countries of the world. It is estimated that 6 per 1000 live births in sub-Saharan Africa are affected by hearing impairment, with a lower incidence of hearing loss of about 1 per 1000 live births in developed countries (Mehra, Eavey, & Keamy, 2009; Olusanya, Neumann, & Saunders, 2014). If such estimate is recorded in sub-Saharan Africa, there is a great concern for Nigeria whose population might be up to one quarter of the total population of countries within the sub-Saharan. The greater concern is lacking adequate data that captured the prevalence and incidence of hearing loss in Nigeria.

Hearing loss has a negative impact on lives. It affects communication as it reduces the ability to hear and understand speech signals, hampers social interaction, and may present psychological trauma to the affected and consequently leads to withdrawal from social activities (Arlinger, 2003), feelings of isolation, loneliness, and frustration (World Health Organization, 2014), reduced quality of life (Stark & Hickson 2004), and difficulties at work (Jennings & Shaw, 2008). The general implication of hearing impairment is that it leads to poor health status, poor socio-educational efficacy, and economic downturn. These consequences may not be overcome very easily as it may even turn to lifetime disadvantages.

According to World Health Organisation, hearing impairment can be classified as mild, moderate, severe, or profound when the pure tone average ranges from 26 to 40 dB, 41 to 60 dB, 61 to 80 dB or is over 81 dB, respectively (WHO,2021). On the other hand, hearing loss can be conductive, sensori-neural, mixed and central auditory dysfunction depending on the place of loss due to pathological conditions. Conductive loss occurs when there is a defect in the sound conducting mechanism of the ear. The pathologies could be anywhere from external auditory canal to the footplate of the stapes (Beigh, Malik, Islam, Yusuf &,Pampori, 2012). This is usually treatable, and the condition can be reversed (Kakehata, Futai, Sasaki & Shinkawa, 2006). Sensori-neural hearing loss may be due to abnormality in the cochlear, auditory nerve, neural pathway, or their connection with auditory cortex (Kakehata, Futai, Sasaki & Shinkawa, 2006). A loss of this nature may be associated with grievous consequences usually irreparable and sometimes requiring rehabilitation (Michael, Murad & Richard, 2010). Mixed hearing loss is due to abnormality causing both conductive and sensorineural hearing losses. Hearing loss can also be congenital and

acquired. Congenital can take the form of hereditary and nonhereditary factors such as maternal rubella and syphilis (Grundfast, Atwood & Chuong, 1999), low birth weight, birth asphyxia, drugs such as aminoglycosides and cytotoxics as well as severe neonatal jaundice (Grundfast, Atwood & Chuong, 1999). Acquired hearing loss may occur at any age and can be due to infectious diseases such as meningitis, measles, and mumps. Others are chronic ear discharge, ototoxicity, noise induced, and aging. All may be bilateral, which means the two ears are affected or unilateral, affecting only one ear. Whichever ways the hearing loss manifest, intervention can reduce the impact of hearing loss on the affected person.

Hearing impairment deprives the affected some unavoidable events of life. To children, language development is impeded, and life becomes miserable and to adults, there is deprivation of some vital information inform of verbal conversation, music and some basic auditory information that make life good. However, with auditory rehabilitation with appropriate hearing aids, most people with hearing impairment are living normal lives. A hearing aid is an electro- acoustic body apparatus which typically fits in or behind the wearer's ear and is designed to modulate sounds for the wearer. The principle of hearing aids hinges on the conviction that every hearing-impaired person has residual hearing which if provided with amplification could be useful in enabling him to undertake his communication needs with better success. It is one of the devices that technology has made to improve the hearing ability of individuals with hearing loss. Amplification via hearing aids (HAs) is a common and effective way of overcoming the deficits related to hearing impairment.

Hearing aids use have been found to be effective in overcoming auditory deficit, however, satisfaction derived from it varies from individual to individual. Satisfaction can be defined as a pleasurable emotional experience derived from engaging in a particular activity. Oliver (1997) defines satisfaction as a pleasurable fulfillment in consumer feeling that his or her needs, desires, and goals have been fulfilled in a pleasurable manner. Hearing aid satisfaction can then be described as a pleasurable emotional experience as an outcome of a performance evaluation in being fitted with hearing device (Wong, Hickson, & McPherson, 2003). Hearing aids satisfaction may be affected by several factors such as the age of the patient, the cost of the hearing aids, experience using hearing aids, self-efficacy, confidence in using hearing aids, the amount of

experience with amplification, degrees of hearing loss and host of other personal- social factors (Uriarte, Denzin, Dunstan, Sellars & Hickson, 2005).

Becoming a successful hearing aids user may be a difficult task for many individuals with hearing impairment, especially the adults because of social and psychological adjustment at the time of being fitted with the amplified device. One of such is the ability and belief to successfully adjust to its use and wearing psychologically. This is known as hearing aids use self-efficacy. Self-efficacy is the belief individuals have in their abilities to perform the set of skills needed to accomplish a specific task (Bandura, 1977). There is an increasing awareness of the role that non-audiological factors, such as perceived self-efficacy, positive attitudes, and support from communication partners, play significant role in the success of adult hearing aid users (Hickson, Meyer, Lovelock, Lampert & Khan, 2014; Meyer, Hickson, Lovelock, Lampert & Khan, 2014; Singh, Lau, & Pichora-Fuller, 2015; Ridgway, Hickson, & Lind, 2015). Research findings have revealed that individuals with higher levels of self-efficacy are more likely to have obtained hearing aids and become successful users (Hickson et al, 2014; Meyer et al, 2014). However, these studies have remained contentious in view of their limited retrospective design. This is because it is unclear whether the participants had high self-efficacy prior to obtaining hearing aids or if their high levels of self-efficacy resulted from their success with hearing aids (Meyer et al, 2014). But, it must be borne in mind that self-efficacy of a man whether positive or negative play major role in the ability of a man to function.

Study on the adoption and maintenance of hearing aids has shown the important role of the individuals' beliefs and expectations about hearing loss and hearing rehabilitation Gregory, Bilings, Wilson, Livinston, Schilder & Cosstafreda, 2020). The individual's perceived hearing handicap has been shown to be a more reliable predictor of hearing aids use than the degree of hearing loss as measured through audiometry (Knudsen, Oberg, Nielsen, et al., 2010). Comfort and perceived benefit of hearing aids have previously been rated as the most important factor among users of hearing aids (Garstecki, & Erler, 1998). Studies have considered experience as predictors of hearing aids satisfaction have found reported that individuals with previous experience have greater satisfaction than new users (Cox & Alexander, 2000; Kochkin,1996; Paving & Philip 1991). However, Jerram and Purdy (2001) reported contrary as regards previous experience and hearing aids satisfaction. So, if hearing aids users perceive that he may not be

comfortable using it because of his experience or some negative information from others may unduly influence his satisfaction using hearing aids.

Furthermore, confidence in one's ability to manipulate, use and control emotion of change in social life especially among adults using hearing aids may be another factor facilitating satisfaction using hearing aids. For instance, those who do not consistently use hearing aids may be concerned about public reactions and this may affect their perceived satisfaction using the device (Garstecki, & Erler, 1998). In a study by Kricos, Lesner & Sandridge (1991), on expectations of older adults regarding the use of hearing aids found that over 92% expected speech to be easy to hear Bilings, Wilson, Livinston, Schilder & Costafreda (2020and understand, to hear better in church, and that the aid would improve their confidence. Also,) conducted study on experience of hearing aid use among patients with mild cognitive impairment and alzhemer's disease dementia: a qualitative analysis reported that some participants spoke of increased confidence of hearing aids use and increased audibility. It can then be concluded that confidence can also increase hearing aids satisfaction among users.

Hearing aids' satisfaction may also anchor on perceive performance of the electro-acoustic device. This is based on how efficient hearing aids work and auditory gains and its derived audibility gain. If the device does not bring much desire gain, satisfaction using it may be very low. Bilings, Wilson, Livinston, Schilder & Costafreda (2020) also reported that participants with increase audibility often feel secure and protected. With these feelings, hearing aids users may derive maximum satisfaction using the device. Contrary, if hearing on hearing aids isles or difficult, satisfaction using hearing by old, new, adults and young ones will be less, hence, using hearing will be of less value. Therefore, owing to a few factors contributing to hearing aids users' derived satisfaction, this study examined some psycho-personal factors as predictors of hearing aids among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso, Oyo State.

Research Questions

1. Will there be significant relationship between independent variables (Hearing aids experience, Hearing Aids' self-efficacy, Hearing ability on hearing aids and Confidence in using hearing aids) and Hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso?

2. To what extent will the independent variables jointly predict hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso.?

3. To what extent will the independent variables relatively predict hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso?

Methodology

The study employed descriptive survey research design with samples of 37 outpatients fitted with hearing aids purposively selected. The instrument used for the study is hearing aids usability inventory with reliability of 0.80 using cronbach alpha. The instrument is divided into six sections namely: Demographic, hearing self-efficacy, Hearing ability on hearing aids, Confidence in using hearing aids, Hearing aids experience and Hearing aids satisfaction sections. Hearing aids self-efficacy designed in 4 likert (much like me, little like me, somehow like me and not at all like me; hearing aids confidence also constructed in 4 likert (very well, moderately well, somehow well and not all well, hearing aids experience also in 4 likert (exactly my thinking, my thinking, somehow my thinking and not my thinking and hearing ability on hearing aids (very well, moderately well, somehow well and not at all well). Three research questions were answered. Data was collected from the participants by first seeking their consents and thereafter the instrument was given to each outpatient who came for routine check-up at ENT section of the teaching hospital and responses were collected. Data collected was analysed using descriptive statistics, Pearson Product Moment Correlation and Multiple regression analysis.

Results

Research Question 1: Will there be significant relationship between independent variables (Hearing aids experience, Hearing Aids' self-efficacy, Hearing ability on hearing aids and Confidence in using hearing aids) and Hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso.

Table 1
Correlation matrix of the independent variables (Hearing aids experience, Hearing Aids' self-efficacy, Hearing ability on hearing aids and Confidence in using hearing aids) and Hearing aids satisfaction among outpatients

Variables	Hearing Aids Experience	Hearing aids Self-efficacy	Hearing Ability on Hearing aids	Confidence in using hearing aids	Hearing aids Satisfaction
Hearing aids experience	1				
Hearing aids Self-efficacy	0.554 p = 0.000	1			
Hearing ability on hearing aids	0.406 p = 0.011	0.508 p = 0.001	1		
Confidence in using hearing aids	0.275 p = 0.094	0.391 p = 0.015	0.782 p = 0.000	1	
Hearing aid Satisfaction	0.691 p = 0.000	0.395 p = 0.014	0.423 p = 0.008	0.257 p = 0.120	1

Significant at p<.05 level (2-tailed)

From the result in table 1, it is clearly shown that the intercorrelation matrix showing the correlation coefficients of the independent variables (Hearing aids experience, Hearing Aids' self-efficacy, Hearing ability on hearing aids and Confidence in using hearing aids) and the dependent variable (Hearing aids satisfaction) reveals significant relationship between Hearing aids experience and Hearing aids satisfaction ($r = 0.691$, $p < 0.05$), Hearing Aids' self-efficacy and Hearing aids satisfaction ($r = 0.395$, $p < 0.05$), Hearing ability on hearing aids and Hearing aids satisfaction ($r = 0.423$, $p < 0.05$). This therefore implies that Hearing aids experience, Hearing aids' self-efficacy and Hearing ability on hearing aids have a significant relationship with Hearing aids satisfaction.

Research Question 2: To what extent will the independent variables jointly predict hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso.

Table 2

Regression Summary on Hearing Aids Satisfaction

R= 0.714
R Square= 0.510
Adjusted R Square= 0.451

	Sum of Squares	df	Mean Square	F	Sig.
Regression	133.585	4	33.396	8.602	0.000
Residual	128.125	33	3.883		
Total	261.711	37			

Dependent Variable: Hearing Aids Satisfaction
Predictors: Hearing Aids Experience, Hearing Aids' Self-efficacy, Hearing Ability on Hearing Aids and Confidence in using Hearing Aids

The multiple regression relationship shown in Table 2 between all the predictor variables (Hearing Aids Experience, Hearing Aids' Self-efficacy, Hearing Ability on Hearing Aids and Confidence in using Hearing Aids) and Hearing Aids Satisfaction is 0.714 showing a positive high level of correlation among the variables with the adjusted R square equally estimated at 0.451. The predictor variables jointly predict Hearing Aids Satisfaction (ANOVA $F_{(4,33)} = 8.602$; $p < 0.05$). This further implies that all the independent variables (Hearing Aids Experience, Hearing Aids' Self-efficacy, Hearing Ability on Hearing Aids and Confidence in using Hearing Aids) jointly accounted for 45.1% on the total variance of Hearing Aids Satisfaction of the outpatients.

Research Question 3: To what extent will the independent variables relatively predict hearing aids satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Ogbomoso.

Table 3

Relative contribution of Hearing Aids Experience, Hearing Aids' Self-efficacy, Hearing Ability on Hearing Aids and Confidence in using Hearing Aids to Hearing Aids Satisfaction

Independent Variables (Predictors)	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Standard error	Beta	t	Sig.	Tolerance	VIF
Hearing Aids Experience	0.219	0.051	0.640	4.297	0.000	0.668	1.497
Hearing Aids' Self-efficacy	-0.037	0.098	-0.059	-0.373	0.711	0.597	1.674
Hearing Ability on Hearing Aids	0.146	0.107	0.289	1.362	0.182	0.330	3.032
Confidence in using Hearing Aids	-0.067	0.107	-0.122	-0.624	0.537	0.386	2.591
Constant	24.688	3.234		7.635	0.000		

Relatively, the estimated Beta weights of all the predictors are shown in Table 3. The contributions of individual predictors to hearing aids satisfaction are thereby presented: Hearing Aids Experience (β=0.64; t= 4.30; P<0.05), Hearing Aids' Self-efficacy (β=-0.06; t= -0.37; P>0.05), Hearing Ability on Hearing Aids (β=0.29; t= 1.36; P>0.05), Confidence in using Hearing Aids (β=-0.12; t= -0.62; P>0.05). Hearing Aids Experience is found to have significant relative contribution towards hearing aids satisfaction while other variables like Hearing Aids' Self-efficacy, Hearing Ability on Hearing Aids and Confidence in using Hearing Aids did not contribute significantly to the prediction of hearing aids satisfaction among outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso. The value of the standardized regression weight associated with the predictor variables shows that Hearing aids experience is the most potent predictor and also the only significant variable in predicting hearing aids satisfaction among outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso.

Discussion

The results revealed that there is significant relationship between independent variables (hearing aids 'experience, hearing aids' self-efficacy, hearing on hearing aids and confidence in using hearing aids) and hearing aids satisfaction among the participants. The implication is that satisfaction using hearing aids is dependent on the experience using hearing aids, the feeling of being able to manage and use hearing aids effectively(self-efficacy), confidence when one uses it

and hearing ability when hearing aids is fitted with an individual. The finding corroborated studies by Cox and Alexander (2000), Kochkin (2000) and Paving and Philip (1991) who found that experience as major predictors of hearing aids satisfaction due to the report that individuals with previous experience have greater satisfaction than new users. This implies that the experience of the users can bring about satisfaction among hearing aids users. Also, the construct of efficacy of self-efficacy was also exemplified as major contributor to hearing aids satisfaction among users. Studies have revealed that individuals with higher levels of self-efficacy are more likely to have obtained hearing aids and become successful users (Hickson et al, 2014; Meyer et al, 2014). This non-audiologic dimension to hearing satisfaction by end users of hearing aids is a new dimention to understanding the behaviour of clients who may pose negative attitudes towards the fitting of hearing aids.

Again, hearing ability on hearing aids is a factor that literatures have supported. For instance, the study by Bilings, Wilson, Livinston, Schilder & Cosstafreda (2020) revealed that participants with increase audibility often feel secure and protected using hearing aids. In inference, the acoustic gain by end users of hearing aids will determine the level of satisfaction. In addition, the relationship between confidence using hearing aids has been corroborated by research findings. In a study by Kricos, Lesner & Sandridge (1991), on expectations of older adults regarding the use of hearing aids found that over 92% expected speech to be easy to hear and understand, to hear better in church, and that the aid would improve their confidence. Also, Bilings, Wilson, Livinston, Schilder & Cosstafreda (2020) conducted study on experience of hearing aid use among patients with mild cognitive impairment and alzhemer's disease dementia reported that some participants spoke of increased confidence of hearing aids use and increased audibility. To this effect, confidence using hearing aids will also lead to end users of hearing aids' satisfaction.

Furthermore, the study revealed that the independent variables jointly contributed to the hearing aids satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso. The finding alluded to the reports of various studies that have individually and or jointly reported the contributions of various variables discussed in this study as major predictors of hearing aids satisfaction among end users. For instance, the impact of hearing experience on hearing aids satisfaction (Cox & Alexander,2000; Kochkin, 2000; Paving & Philip, 1991), self-efficacy and hearing aids satisfaction (Hickson, Meyer, Lovelock , Lampert & Khan, 2014; Meyer, Hickson, Lovelock, Lampert & Khan, 2014; Singh, Lau, & Pichora-Fuller, 2015; Ridgway, Hickson, &

Lind, 2015), hearing ability on hearing aids and satisfaction (Bilings, Wilson, Livinston, Schilder & Cosstafreda, 2020) and confidence using hearing aids and hearing aids satisfaction (Garstecki, & Erler, 1998).

Again, the result revealed that even though most of the independent variables contributed to the hearing aids satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso; hearing aids experience is the most potent predictor and the only significant variable in predicting hearing aids satisfaction among the participants. This result revealed a new idea on recommendation and fitting of hearing aids on patients that suffer from hearing loss who are seeking rehabilitation. It can then be assumed that experience is the best teacher. The result provides empirical support for previous studies and their findings (Cox & Alexander 2000; Kochkin 2000; Paving & Philip 1991.

Conclusion

This study is psycho-personal constructs as predictors of hearing satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso. The study revealed that there is significant relationship between independent variables (hearing aids 'experience, hearing aids' self-efficacy, hearing on hearing aids and confidence in using hearing aids) and hearing aids satisfaction among the participants, also, the independent variables jointly contributed to hearing aids satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso and hearing aids experience contributed mostly to hearing aids satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso.

Recommendations

Recommendation for and fitting of hearing aids on patients diagnose to be hearing impaired should be based on adequate clinical experience of the suitability of hearing aids to the client so that negative experience by the end users will not dissuade them from using hearing aids and, counselling on how to be confident and self-efficacious should be given to all outpatients fitted with hearing aids. This will ease the process of aural rehabilitation.

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