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**IMPACT OF CONTEXTUAL FACTORS ON HEARING AIDS USE SATISFACTION
AMONG OUTPATIENTS IN OYO STATE TEACHING HOSPITAL, OGBOMOSO**

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IMPACT OF CONTEXTUAL FACTORS ON HEARING AIDS USE SATISFACTION AMONG OUTPATIENTS IN OYO STATE TEACHING HOSPITAL, OGBOMOSO

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Abstract

The organ of hearing is one of the organs that aid man to function effectively in the environment. Whenever there is problem that impedes the effective functioning of ear, hearing becomes difficult and needs aid that will make it to function. In this wise, the use of hearing aids becomes inevitable for daily adjustment to sound information. However, most users of this device react differently to its use. This study investigated the impact of contextual factors on hearing aids use satisfaction among outpatients in Oyo State 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, and hypotheses were tested using t-test and analysis of variance. The results revealed that both male and female outpatients fitted with hearing for a period derived the same level of satisfaction with the hearing aids fitted to them, degree of hearing loss did not have significant effect on hearing aids satisfaction among the participants and there was a significant difference in the hearing aid satisfaction among the participants based on the length of using hearing aids. It was recommended among others that constant use of hearing aids should be recommended and encouraged among people who have been certified to be having hearing loss not minding gender and degree of hearing loss.

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Introduction

Hearing is the process by which we perceive the sounds around us and through hearing we engage with our environment, communicate with others, express our thoughts, and gain information necessary for our day-to-day activities. In essence, to be able to hear gives one the opportunity to function effectively in our environment. However, condition of life may change when someone experience sudden or gradual decline in auditory functioning as a result of pathologies, ageing and some other activities in human environment that are inimical to effective and positive life engagement. Globally more than 1.5 billion people experience some decline in their hearing capacities during their life's course, of which at least 430 million will require care (World Health Organisation, 2021).

Hearing loss is the fourth-leading cause of disability worldwide and it is associated with some other life adjustment such as depression, social isolation, cognitive decline amongst others (Global Burden Disease, 2016; Mick, Kawachi & Lin, 2014; Li, Zhang, Hoffman, et' al., 2014). WHO estimates suggest that the prevalence of hearing impairment among adults above 15 years old was 15.7% in sub-Saharan Africa and 4.9% in high-income countries (Mulwafu1, Kuper & Ensink, 2016). Though the estimates for Africa are based on very limited empirical evidence, nevertheless, it calls for serious concern especially in Nigeria considering the population and available health facilities. Besides, lack of data on the incidence and prevalence of hearing impairment in Africa with little knowledge about the causes, prevention and treatment services among the vast low educated population put the continent on the threshold of

epicenter of hearing impairment in degrees and onset of losses. In this regard, if prevention of the incidence and spread seems difficult to achieve, there should be a way of helping the affected to person live normal life.

Hearing aids use has been the most common way of rehabilitating individual with hearing loss to ease the burden of hearing difficulty among the affected. Hearing aids is one of the management devices for hearing loss though there are other interventions such as cochlea implant, oral communication, total communication amongst others. This aid has been found to be effective in overcoming auditory deficit, however, the direct and consequential benefit from it varies from individual to individual according to the satisfaction derived. Hearing aid satisfaction can be described as a pleasurable emotional experience as an outcome of a performance evaluation in being fitted with hearing device (Wong, Hickson, & McPherson, 2003). Satisfaction in the use of an aid is derived from mental and emotional pleasure derived from such aid. Hearing aid use according to according to Mulrow, Aguilar, et'al., (1990) in Pouyandeh and Hoseinabadi (2019) improves cognitive structure and reduced depression in patients who received hearing aid compared to those without hearing aids. Hence, the use of hearing according to the authors above can improve quality of life of individuals who is fitted with the aids.

Literature Review

Literatures have revealed that satisfaction with the use of hearing aids may be affected by several factors, including the age of the patients, pre-fitting assessment of threshold of loss, gender, cost of the hearing aids, degree of hearing loss, the length of hours the patient uses hearing aids per day among others (Uriarte, Denzin et'al., 2005). Studies on gender implication on hearing use satisfaction have been conducted on whether there is gender influence or not. For instance, Cox, Alexander and Beyer (2003) explored the relationship between multiple variables and satisfaction among 154 participants using multivariate analysis of variance (MANOVA) found there was no significant difference between mean satisfaction scores for male and female participants. In the same vein, Williams, Johnson, and Danhauer (2009) used the international outcome inventory for hearing aids IOI-HA to investigate satisfaction among 160 participants with multichannel digital HAs and found no significant effect between gender and satisfaction. Also, in the study conducted by Aurélio da Silvab, Rodriguesc, Kuniyoshid, and Botelho (2012) on satisfaction of patients fitted with a hearing aid in a complexity clinic found no gender influence in hearing aids use satisfaction. However, Humes, Wilson, and Humes (2003), in their study on examination of differences between successful and unsuccessful elderly hearing aid candidates matched for age, hearing loss and gender: Evaluation of the differences between successful and unsuccessful candidates of older age, to the use of hearing aid by age, degree of hearing loss and sex. The study reported that the gender difference was effective in hearing aids satisfaction. In similar study, Staehelin, Bertoli, Probst, et'al., (2011) on gender and hearing aids: patterns of use and determinants of non-regular use reported that men commonly indicated a limited satisfaction as a reason for non-regular use. The multivariate analyses showed that non-regular use was significantly less in women.

Another major factor which raises concern to the Audiologists and researchers is that “does degree of hearing loss present barrier to hearing aids users being satisfied with the amplifying device?” Studies have remained inconclusive on this. For instance, Uriarte, Denzin, Dunstan, et'al. (2005) study on measuring hearing aid outcomes using the satisfaction with amplification in daily life found that found that hearing aids users who had more severe hearing impairment (based on better ear three frequency pure tone audiometry) were significantly more satisfied with their hearing aids (based on satisfaction with amplification in daily life global scores) than those with less severe hearing. However, in the study carried out by Hosford-Dunn and Halpern (2001) on clinical application of the Satisfaction with Amplification (SADL) scale in private practice II: Predictive validity of fitting variables. The outcome revealed a mixed relationship between SADL scores, and hearing impairment severity based on four frequency (500, 1000, 2000, and 3000 Hz) PTA. Severe hearing loss was related to reduced satisfaction for the negative feature subscale due to more problems with feedback and background noise. In another dimension, Dillon, Birtles and Lovegrove (1999) used the hearing aids user questionnaire to measure the relationship between satisfaction and degree of hearing impairment (based on a 500, 1000, and 2000 Hz PTA). The study revealed a moderate negative correlation. In a new twist, a systematic review of literature by Knudsen, Öberg, Nielsen et al. (2010) on factors influencing help seeking, hearing aid uptake, hearing aid use and satisfaction with hearing aids, five out of the seven articles that compared hearing aids satisfaction and hearing impairment severity did not find an association hence it was concluded that overall degree of hearing impairment does not affect satisfaction. Furthermore, it has been found that the length of the use of hearing aid may be related to the benefits derive from hearing aids (that is, improving speech comprehension) and patient's satisfaction (Uriarte, Denzin, Dunstan, Sellars, & Hickson, 2005; Roup, & Noe, 2009). The basic problem confronting this finding is how a researcher would monitor the duration of usage if the client is not under any regimented control. Nevertheless, the issues of duration of usage cannot be overlooked when trying to measure the satisfaction derive from using hearing aids.

Statement of the Problem

Kochkin (1995) noted that some people believe that the use of hearing aids more than four hours in a day is an indicator of the success of hearing aids. In this wise, the longer the time one uses his/her hearing aids, the better the satisfaction. This notion is coming from the submission that one gets use to the equipment by constancy and number of hours one engages it. However, some patients with limited and specific hearing needs can be successful users, with limited time, they can still derive satisfaction in the use of hearing aids (Jerram, & Purdy, 2001). In another development, studies by Uriarte, Denzin, Dunstan, Sellars, and Hickson, (2005) and Kaplan-Neeman, Muchnik, Hildesheimer, and Henkin, (2012) found no relationship between the hours of using hearing aids and satisfaction the users derive from it. From various research, it becomes contentious if the length of time the hearing aid is used per day will influence the satisfaction derived from it. Body of research keeps growing on what can make hearing aid users to be satisfied with the fitting and usage. It is on this premise that this study investigated the impact of contextual factors on hearing aids use satisfaction among outpatients of Ladoke Akintola Teaching Hospital, Ogbomoso

Research Questions

1. Is there any significant difference in the hearing aid satisfaction of male and female outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso?
2. Is there any significant difference in the hearing aid satisfaction of outpatients based on the degree of their hearing loss in Ladoke Akintola University Teaching Hospital, Ogbomoso?
3. Is there any significant difference in the hearing aid satisfaction of outpatients based on the length of using hearing aid in 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 two sections namely: Demographic data (Age, Gender, Degree of loss and Onset and Duration of time they have been fitted with hearing aids) and Hearing aids satisfaction scale constructed in 4 likert type namely: Often, Sometimes, Somehow and Not at all. Example: "Compared to using no hearing aid at all, do your hearing aids help you understand the people you speak with most frequently?" The scale was given to the outpatients who came for clinical check and who have been fitted with hearing aids for a period. Prior responding to the scale by the respondents, consent forms were given to them to and thereafter the scale was given to those who indicated their willingness to partake in the investigation. Responses were immediately collected after they have satisfactorily attended to the scale. Three research questions were answered. Data collected was analysed using inferential statistics of independent sample t-test and analysis of variance (ANOVA).

Results

Research Question 1: Is there any significant difference in the hearing aid satisfaction of male and female outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso? (t-test will answer Hypothesis not RQ)

Table 1

Independent sample t-test of the hearing aid satisfaction of male and female outpatients

	N	Mean	SD	Std.	95% confidence interval of the difference		t	df	Sig.	(2-tailed)
					Lower	Upper				
Male	28	33.50	2.49	0.47	-0.77	3.17	1.23	36	0.225	
Female	10	32.30	3.06	0.97						

Table 1 indicates that the mean score of the hearing aid satisfaction by male outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso (33.50) is slightly higher than that of the female outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso (32.30). The mean difference is 1.20, the t-test showed that the difference is not statistically significant, $t = 1.23$, $df = 36$, $p > 0.05$. This implies that there is no significant mean difference between the hearing aid satisfaction of male outpatients and their female counterparts as they both have the same level of hearing aid satisfaction.

Research Question 2: Is there any significant difference in the hearing aid satisfaction of outpatients based on the degree of their hearing loss in Ladoke Akintola University Teaching Hospital, Ogbomoso?

Table 2

One-way Anova of outpatients' degree of hearing loss on their hearing aid satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.949	2	13.474	2.009	0.149
Within Groups	234.762	35	6.707		
Total	261.711	37			

Table 2 shows the difference between the levels of hearing loss of outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso on their hearing aid satisfaction. Results then shows that there is no significant difference in the degree of hearing loss of outpatients on their hearing aid satisfaction: $F(2, 35) = 2.009$, $p > 0.05$. This implies that outpatients with the diverse four levels of degree loss which are mild, moderate, moderately severe and severe have equal hearing aid satisfaction.

Research Question 3: Is there any significant difference in the hearing aid satisfaction of outpatients based on the length of using hearing aid in Ladoke Akintola University Teaching Hospital, Ogbomoso?

Table 3

One-way ANOVA of outpatients' length of using hearing aid on their hearing aid satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	75.741	3	25.247	4.616	0.008
Within Groups	185.970	34	5.470		
Total	261.711	37			

Table 4

Post-hoc Result (The table can also follow APA format)

(I) How long have you been using hearing aid	(J) How long have you been using hearing aid	Mean		Sig.	95% Confidence Interval	
		Difference (I-J)	Std. Error		Lower Bound	Upper Bound
3-6 months	7-12 months	.167	.955	.999	-2.64	2.97
	2-6 years	3.118*	1.022	.039	.11	6.12
	7-12 years	2.800	1.812	.505	-2.53	8.13
7-12 months	3-6 months	-.167	.955	.999	-2.97	2.64
	2-6 years	2.952*	.928	.030	.22	5.68
	7-12 years	2.633	1.761	.532	-2.54	7.81
2-6 years	3-6 months	-3.118*	1.022	.039	-6.12	-.11
	7-12 months	-2.952*	.928	.030	-5.68	-.22
	7-12 years	-.318	1.798	.999	-5.61	4.97
7-12 years	3-6 months	-2.800	1.812	.505	-8.13	2.53
	7-12 months	-2.633	1.761	.532	-7.81	2.54
	2-6 years	.318	1.798	.999	-4.97	5.61

*. The mean difference is significant at the 0.05 level.

Table 3 shows that there is a significant difference in the hearing aid satisfaction of outpatients in Ladoke Akintola University Teaching Hospital, Ogbomoso based on the length of using hearing aid: $F(3, 34) = 4.616, p < 0.05$. This implies that the length of using hearing aids among outpatients has a significant difference in their hearing aid satisfaction. The post-hoc result in table 4 is a pairwise comparison of the levels of the length of using hearing aid. The levels are 3-6 months, 7-12 months, 2-6 years, and 7-12 years. The result in this table showed that outpatients using hearing aids between 3-6 months have greater hearing aid satisfaction among the cohorts. The pairwise comparison result further shows that outpatients using hearing aids between 7-12 months are placed second in the level of hearing aid satisfaction, followed by the outpatients using hearing aids between 7-12 years.

Discussion

The results revealed that both male and female outpatients fitted with hearing for period derived the same level of satisfaction with the hearing aids fitted to them. The satisfaction in using hearing aids by both genders might not be unconnected with fact that suffering hearing loss present a level of burden and disconnected individuals with hearing loss from language rich environment. By fitting them with the amplification device, they are relief of the burden of inability to follow verbal conversation. The study is line with the findings of somebody of research on gender implication of hearing aids' satisfaction. For example, Cox, Alexander, and Beyer (2003) explored the relationship between multiple variables and satisfaction among 154 participants using multivariate analysis of variance (MANOVA) found there was no significant difference between mean satisfaction scores for male and female participants to the use of hearing aids. In the same vein, study conducted by Aurélio da Silvab, Rodriguesc, Kuniyoshid, and Botelho (2012) on satisfaction of patients fitted with a hearing aid in a complexity clinic found no gender influence in hearing aids use satisfaction.

The results further revealed that degree of hearing loss did have significant effect on hearing aids satisfaction among the participants. The implication of this is that whether the hearing loss is mild, moderate, severe, or profound nature by the outpatients coming for routine check, satisfaction derived from using hearing aids has no bearing with their different degree of loses. However, the fact that they can connect back to the hearing world can be the reason for their constant engagement of such aid. The finding is with some previous studies who find no relationship between degree of hearing loss and hearing use satisfaction. For instance, Dillon, Birtles and Lovegrove (1999) used the hearing aids user questionnaire to measure the relationship between satisfaction and degree of hearing impairment (based on a 500, 1000, and 2000 Hz PTA). The study revealed a moderate negative correlation. Likewise, in review of literature by Knudsen, Öberg, Nielsen et al. (2010) on factors influencing help seeking, hearing aid uptake, hearing aid use and satisfaction with hearing aids, five out of the seven articles that compared hearing aids satisfaction and hearing impairment severity did not find an association hence it was concluded that overall degree of hearing impairment does not affect satisfaction. However, the finding differs from the findings of studies by Uriarte, Denzin, Dunstan, et'al.

(2005) and Hosford-Dunn and Halpern (2001) who found that degree of loss influenced satisfaction of their participants with the use of hearing aids.

Also, the findings of revealed that there was a significant difference in the hearing aid satisfaction among the participants based on the length of using hearing aids indicating that those who were newly fitted with hearing device (3-6 months) showed higher satisfaction than who have been using it for some years. The implication of this result could be linked with assumption that losing hearing may be devastating especially at adults because it places a lot of burden on the individual affected. However, if there is an intervention that allows such individual to be connected back with the hearing world, there is a joy and relieves which may bring satisfaction to the user. This study corroborated the submission of Jerram, and Purdy (2001) that some patients with limited and specific hearing needs can be successful users, with limited time; they can still derive satisfaction in the use of hearing aids. From this premise, it can be inferred that the fitting of hearing aid to the first user can be immediate relieve and satisfaction.

Conclusion

This study is on impact of contextual factors on hearing aids use satisfaction among outpatients of Ladoke Akintola University Teaching Hospital, Oyo State. The study revealed that there is no significant mean difference between the hearing aid satisfaction of male outpatients and their female counterparts as they both have the same level of hearing aid satisfaction; there is no significant difference in the degree of hearing loss of outpatients on their hearing aid satisfaction and that outpatients using hearing aids between 3-6 months have greater hearing aid satisfaction.

Recommendations

Auditory assessment must be encouraged and recommended to be done randomly for people to know the status of their hearing for adequate intervention and rehabilitation. Using hearing aids constantly should be recommended and encouraged among people who have been certified to be having hearing loss not minding age, gender, and degree of hearing loss

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