

Awareness and Knowledge of The Adverse Effects of Ear-Piece Use Among University Undergraduates in Anambra State

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Abstract: Health implications of earpiece use among undergraduate students has a dearth of studies as current literature based in the Nigerian context revealed. Nigerian students have been observed to have a habit of listening to loud music and making phone calls through their earpiece on a regular basis which could cause an implication to their health. It is against this backdrop that this study examined the Awareness and Knowledge of the harmful effects of earpiece use among university undergraduates in Anambra State. The study adopted the survey design while a structured questionnaire was the data collection instrument from a sample size of 370 based on the Krejcie and Morgan method of sample size selection. The study was anchored on the Reasoned Action Theory. The study found out that university undergraduate students in Anambra state are very much aware of the health implications of using earpiece and know that using earpiece can be harmful. They feel there is less sensitization on the health implications of earpiece usage by relevant health authorities. The study therefore concludes that earpiece usage comes with serious health implications which could lead to a serious health challenge on the user, yet in an era of paucity of health campaigns and sensitizations on this subject, the young adult generation takes pride and earns gratification from using earpiece for listening to music and making calls albeit in a high decibel manner. The study therefore recommended that government through its health agencies map out a serious sensitization and campaign strategy towards creating awareness for the youths on the health implications of frequent earpiece usage.

Key words: Earpiece use, Health Implications, Awareness, Knowledge.

I. INTRODUCTION

Earpiece noise induced hearing loss is one of the problems in the Nigerian state. This problem is mostly associated with young adults who are mostly university students that use earpiece (Ogbe, Akor-Dewu & Eze, 2014). With the use of earpiece, comes attendant harmful health effects from the high decibel content emanating from it. Okaro (2016) for example argued that the usage of these earpiece is clearly something that comes with a warning that people should be careful with the rate of usage and volume of usage to avoid health challenges like pain in the ear, hearing loss, dizziness and other harmful outcomes. These warning is very important for the users to avoid the harmful effects like intolerance to intense sounds, dizziness, earache, trouble understanding or

hearing words, ringing in the ear and loss of hearing (Gulliver & Williams, 2013). While there are harmful effects associated with earpiece use, the level of awareness and knowledge on the users on this harmful effect is subject to scholarly discourse. World Health Organization (2017) reported that it campaigned in over 15 countries of the world on the health and social implication of earpiece use among adolescents and other users while in the Nigerian context, Saldanha (2013) has called for a serious awareness of the danger of using earpiece by young adults. Also, other scholars has argued that in order to have optimum awareness, that there is need for serious efforts for educating and warning general population, music professionals, and mostly students who most times use earpiece regarding the risks listening to music with higher frequency. This awareness campaign will no doubt translate to the level of knowledge which they will hold towards it. Thus, it is important to note that if the students who are the dominant users of earpiece know it to be very harmful to their health, there are higher chances that they will backtrack and have behavior change towards their use of earpiece. Thus, knowledge is a very important factor in this study as it is the guide to the students use of earpiece based on the knowledge of the health implications.

Statement of the Research Problem

Over 1.1 billion youths and adolescents over the world are estimated to use earpiece (World Health Organization). Agnoum (2015) reported that 91.2% of the college students used earpiece, 10.4% of the students used earpiece more than one hour a day and 52% of the students set higher than three-fourths of the output capacity when using their earpiece. While the use of earpiece is no doubt problematic and prevalent mostly among university students. Heydari (2017) note that the growing popularity of portable music players and devices such as earpiece that connect directly to the ear is worrying because it may increase the prevalence of hearing loss among young people. Chadevah & Kumar (2018) also notes that listening to music for long periods of time especially with earpiece may predispose the individual not only to hearing loss but also to ear infection, tinnitus and dizziness. It also increases hearing loss and causes the users psycho-emotional balance. However, more problems lie in how much the vulnerable are sensitized and made aware of

such harmful effects of earpiece which could lead to behavior change through campaigns that is available from the relevant bodies and health advocates. With the challenging situation of the adverse effects of earpiece and paucity of awareness campaign, do users know the harm inherent from ear piece use?

Objectives of the Study

The general objective of this study was to examine awareness and Knowledge of the harmful effects of earpiece among university undergraduate students in Anambra State. Specifically, the study pursued the following objectives:

1. To determine the proportion of university undergraduate students in Anambra State who own and use earpiece.
2. To ascertain if university undergraduate students in Anambra State are aware of the adverse effects of earpiece use.
3. To find out if university undergraduate students in Anambra State know the adverse effects of earpiece use.
4. To establish the gratifications university undergraduate students in Anambra State derive from using earpiece.

Research Questions

The study is guided by the following research questions;

1. What proportion of university undergraduate students in Anambra State own and use earpiece?
2. Are university undergraduates in Anambra State aware of the adverse effects of earpiece use?
3. Do university undergraduate students in Anambra State know of the adverse effects of earpiece use?
4. Are there gratifications university undergraduate students in Anambra state derive from using earpiece?

II. LITERATURE REVIEW

The use of earpiece by young adults has become a culture in the 21st century Nigeria. (Gaya, 2017). Listening to music from the earpiece, as a leisure activity, is on the rise among adolescents and young adults. (Ansari & Asghar, 2019) In Nigeria, Fredrick(2018) notes that looking round public places and common sights shows a common sight where young people especially students are seen with earphones firmly plunged to their ears and listening to loud music blaring from them. They nod to the rhythm vibrating from the accessory as they walk down busy roads or streets. Oneniyi (2018) agrees that the use of earpiece is a common practice among Nigeria students as many of them either use it to listen to music and ease stress or to make long calls. Due to the young adults affinity to earpiece and inherent danger, the WHO recommends that the teenagers and young people can better protect their ears by keeping the sound volume down when wearing earphones or headphones, students and young people

who have an obsession for earphones can use the accessory in a safe and comfortable environment and not when they are walking on the road or crossing the highway.

Health Effects of Ear Piece Usage among Young Adults

One of the previous studies on effects of earpiece has reported an increase in hearing problems in younger people, so that among subjects between 6 and 19 years, about 14.9% had low or high frequency hearing loss in at least one ear, also 12.5% suffered from audiometric evidence of noise induced hearing loss (NIHL). Unfortunately, the adolescents or young people expose themselves to loud noise or music for a long period, while they are unaware of its consequence. Aishan (2019) asserts that ear piece produce sound waves that reach the ears, making the eardrum vibrate. This vibration spreads to the inner ear through small bones and reaches the cochlea which is a chamber in the inner ear which is filled with fluid and consists of thousands of small hairs. When this vibration reaches the cochlea, the fluid vibrates making the hairs also move. The louder the sound, the stronger the vibrations and the more the hair move. The continuous and long term exposure to loud music makes the hair cells to eventually lose their sensitivity to vibration. Sometimes, the loud music also results in the cells bending or folding over which leads to the sensation of temporary hearing loss. The hair cells may or may not recover from these extreme vibrations. However when they recover, they mostly cannot function normally which can cause permanent hearing loss or deafness and is almost impossible to be recovered from. Furthermore, the main problem is that hearing impairments or hearing loss may not be recognized for many years so treatment and intervention may be difficult when it is detected. (Vogel, 2019).

Empirical Studies

Rekha, Mihtra, Kuma, Bukelo, & Ballala (2017) studied 'Perceptions and Practices regarding use of personal listening devices among medical students in Coastal South India. Data were collected using a 31 item semi-structured questionnaire that was distributed among 570 medical students, of which 485 completed questionnaire were received giving an overall response rate of 86.14%. Data were analyzed using SPSS version 11.5, Chi-Square test for association was used and $P < 0.05$ was considered statistically significant. Of the total study participants, 83.1% of them used PLDs regularly of whom 77.7% used it for more than one hour a day. Overall, 18.0% of the study population was aware that prolonged use of PLDs could be harmful to their health. Majority of the study subjects (72.4%) felt that the safe duration of listening to PLDs is 3 to 5 hours. Among the subjects using PLDs > 1 hour, 60.1% preferred earphones and among those using PLDs < 1h, 44.1% preferred earphones. Overall, 12.4% experienced temporary hearing loss on usage of PLDs.

In another study, Alnuman & Ghinmat (2019) examined Awareness of Noise induced Hearing Loss and Use of

Hearing Protection among Young Adults in Jordan. This study sought to identify and raise awareness of the effect of loud sounds on hearing and effective ways to protect ears among young adults in Jordan. Using non-probability and convenience sampling, 245 students (113 females and 132 males, aged 21.5years + 2.18) from three universities participated in the study and filled the questionnaire completely. The questionnaire consisted of 19 questions targeting hearing health. The answers were analyzed statistically and comparisons were made using the t-test. Hearing loss was regarded an important issue by 64.1% of the participants. Among the participants, 58% already suffered from at least one morning symptom, even though only 9.8% used earplugs to protect their hearing. After receiving information on noise induced hearing loss, 56.3% were likely or somewhat likely to use earplugs in the future. ($p < 0.01$).

From the above studies, it appears none of these studies incorporated knowledge as a study and none of these studies reviewed was situated in Anambra State, Nigeria. This study attempts to fill this gap by incorporating Knowledge and situating the study in Anambra state Nigeria.

Theoretical Framework

The study is anchored on the Reasoned Action Theory, which is famous as one of the three classic theories of Persuasion. It is useful for predicting how individuals will behave based on their pre-existing attitudes and behavioral intentions. The theory holds that an individual's decision to engage in a particular behavior is based on the outcomes the individual expects will come as a result of performing the behavior. Ajzen writes that the best predictor of behavior is intention and this intention is determined by three things; Their attitude towards the specific behavior, their subjective norms and their perceived behavioral control. There are three factors that determine whether intention will lead to goal according to the theory of reasoned action are:

1. **Correspondence:** For intention to lead to behavior, the measure of intention must correspond with respect to their levels of specificity. This means that to predict a specific behavior, the behavioral intention must equally be specific. (Roberto, Krieger, Katz, Goei & Jain, 2011).
2. **Stability:** Before intention could result to behavior, the second condition is that there must be stability of intentions between time of measurement and performance of behavior. (Roberto et al). In other words, one's intention must remain stable, that is unchanging until the time of expected behavior. Change of intentions could mean that the behavior would not happen. The intention must remain the same between the time that it is given and the time the behavior is performed.
3. **Control:** The third condition is that carrying out the intention should be under the volitional control of the individual. Stated differently, the individual should

always have the control of whether or not to perform the behavior.

Within the context of awareness and knowledge of the use of earpiece among university undergraduates in Anambra state, the theory of Reasoned Action may help in understanding how and why an individual will decide to use or not to use such resources like the earpiece. The theory reasons that individuals consider their actions before they decide to perform or not perform a certain behavior. Intention is a major factor driving the decision towards action of this theory and intention comprises two major attributes: an individual's attitude towards behavior, basically whether it is right or wrong and an individual's beliefs regarding social pressures to either perform or not perform the behavior. Hence, earpiece users are likely to decide upon using it based on these considerations as anchored on intention.

III. METHODOLOGY

This study was designed as a survey and the area of study is Anambra State of Nigeria. The state hosts six universities; two public and four private universities. The universities are; Nnamdi Azikiwe University, Awka. (Federal), Chukwuemeka Odumegwu Ojukwu University, Igbariam (State), Madonna University Okija, (Private), Paul University, Awka (Private), Tansian University, Umunya (Private) and Legacy University, Okija (Private).

Population of Study

The population of the study comprised all undergraduates of universities in Anambra State. They number 63,743 according to data sourced from the records of the respective universities.

Sampling Frame

S/N	Institution	Ownership	Student Population
1.	Nnamdi Azikiwe University, Awka	Federal	34,650
2.	Chukwuemeka Odumegwu Ojukwu University, Igbariam	State	16,700
3.	Madonna University, Okija	Private	6,102
4.	Paul University, Awka	Private	723
5.	Tansian University, Umunya	Private	4,365
6.	Legacy University, Okija	Private	1,203
	Total		63,743

Source: University Registry

Sample Size and Sampling Procedure

The sample size for the survey was determined by referring to the sample sizes for various population ranges as worked out by Krejcie & Morgan (1970). The sample sizes are seen below:

Populations and Sample Sizes at 5% Error Margin, 95% Confidence Level

Population Size	Sample Size
100	80
500	217
1,000	278
10,000	370
100,000	383
500,000	384
1 million and above	384

Therefore, since the study population is 63,743, the researcher settled for 370 as the sample size. Thus, the sample size of 370 is adopted at 5% error margin and 95% percent confidence level. The sample selection involved a multi-stage procedure. To ensure spread, one university each was selected from three groups; Federal, State and Private. The researcher then purposively selected a federal university (Nnamdi Azikiwe University, Awka) which is the only federal university within the area of study. In the same vein, Chukwuemeka Odumegwu Ojukwu University, Igbariam, the only state university in the study area is also automatically chosen. Then employing the simple random approach, the researcher selects one of the four private universities in the area of study (Madonna University Okija, Paul University, Awka, Tansian University, Umunya and Legacy University, Okija) Tansian University, Umunya is thus eventually selected.

At the second stage, two faculties are randomly selected from each of the three universities chosen above as follows: Nnamdi Azikiwe University (Engineering & Arts), Chukwuemeka Odumegwu Ojukwu University (Social Sciences & Education), Tansian University (Enviromental & Social and Management Sciences). The faculties of each university are listed in an alphabetical order and then a table of random numbers is employed for choosing two per university.

At the third stage, two departments are randomly selected from each faculty as follows: Nnamdi Azikiwe University Faculty of Engineering (Civil Engineering & Mechanical Engineering). Nnamdi Azikiwe University Faculty of Arts (Religion & Linguistics) Chukwuemeka Odumegwu Ojukwu University Faculty of Social Sciences (Political Science & Psychology), Chukwuemeka Odumegwu Ojukwu University Faculty of Education (Science Education & Education Management), Tansian University Faculty of Social & Management Sciences (Bussiness Administration and Economics & Statistics).

At the fourth stage, the researcher randomly selected a predetermined number of respondents from each of the departments mentioned above. The number selected from each department is based on the number of sample allotted to each university as determined using the formula to ensure proportionality.

$$R = I X S$$

N

Where R= Number of respondents allotted to an institution

I=Student population of the institution

N=Total population of the three institutions sampled

S= Sample size

Nnamdi Azikiwe University:

$$\frac{34,650}{N} \times 370 = 230$$

55,715

Chukwuemeka Odumegwu Ojukwu University:

$$\frac{16,700}{N} \times 370 = 111$$

55,715

Tansian University:

$$\frac{4,365}{N} \times 370 = 29$$

55,715

Total=370

Hence, 230 students are randomly selected from Nnamdi Azikiwe University, 111 selected from Chukwuemeka Odumegwu Ojukwu University and 29 from Tansian University to get the desired sample size of 370. The selection is (as far as mathematically possible) distributed proportionally across the various faculties and departments selected.

Sample Distribution

S/N	Institution	Population	Sample
1.	Nnamdi Azikiwe University, Awka	34,650	230
2.	Chukwuemeka Odumegwu Ojukwu University Igbariam	16,700	111
3.	Tansian University Umunya	4,365	29
	Total	55,715	370

The data collection instrument is questionnaire. The questionnaire consists of only structured questions framed to generate quantitative data in line with the variables measured in the study.

The method of data analysis is quantitative. Answers extracted through the questionnaire will be recorded as numeral data. The frequency of each answer will be found and the percentage computed accordingly. Statistical tables and charts will be employed for the presentation of these data.

Data Presentation, Analysis and Interpretation Response Rate of Respondents

Response	Frequency	Percentage
Returned	300	86%
Not Returned	70	14%
Total	370	100

Data in table 2 shows that 86% of the distributed questionnaire was returned while the remaining 14% was not returned. This data indicates that majority of the questionnaires were returned.

Demographic Data

Sex of Respondents

Sex	Frequency	Percentage
Male	105	35%
Female	195	65%
Total	300	100

Age Distribution of Respondents

Age	Frequency	Percentage
15-20 years	189	63%
21-25 years	90	30%
26-30 years	21	7%
Total	300	100

Data in table 3 indicates that 63% of the respondents are in age bracket 15-20 years, another 30% of the respondents are in age bracket 21-25 years while the remaining 7% are in age bracket 26-30 years. This data shows that majority of the respondents are in age bracket 15-20years.

Level of Study of Respondents

Level of Study	Frequency	Percentage
100L	120	40%
200L	60	20%
300L	45	15%
400L	75	25%
Total	300	100

Data in table 4 shows that 40% of the respondents are in 100 level of their study, another 20% are in 200 level, another 15% are in 300 level while the remaining 25% are in 400 level of their study. This data shows that majority of the respondents are in 100 level of their study.

Research Question 1: What proportion of university students in Anambra own and use an earpiece?

Do you have an earpiece?

Response	Frequency	Percentage
Yes	267	89%
No	20	6.67%
I don't Know	13	4.3%
Total	300	100

Data in table 5 shows that 89% of the respondents admit they own an earpiece, another 6.67% of the respondents said they do not own an earpiece while the remaining 4.3% of the respondents do not know if they own an earpiece or not. This data therefore indicates that majority of the respondents own an earpiece.

How often do you have your earpiece on?

Response	Frequency	Percentage
1-6 hours	125	44.0%
7-12 hours	64	22.3%
12-18 hours	53	18.5%
19-24 hours	45	15.7%
Total	287	100

Data in table 6 indicates that 44.0% of the respondents use earpiece between 1-6 hours, another 22.3% of the respondents use theirs between 7-12 hours, another 18.5% use theirs between 12-18 hours while the remaining 15.7% of the respondents use theirs for 19-24 hours. This data indicates that majority of the respondents use their earpiece for 1-6 hours. This level of exposure to earpiece by the respondents is enough to cause harm to the ears if use is prolonged.

Research Question 2: Are University Undergraduates aware of the Adverse effects of earpiece use?

Are you aware that constant use of earphone has harmful health effects?

Response	Frequency	Percentage
Yes	215	71.7%
No	56	18.7%
I don't know	29	9.7%
Total	300	100

Data in table 7 shows that 71.7% of the respondents are aware that constant use of earpiece could be harmful, 18.7% of the respondents are not aware while 9.7% of the respondents are indifferent. This data indicates that majority of the respondents are aware that constant use of earpiece has harmful effects. This means that as majority of the respondents who use earpiece are equally aware of its harmful effects which could be as a result of them experiencing some of the harmful effects at some point in time thereby creating some form of awareness in them.

If yes, do you know it causes ear infection?

Response	Frequency	Percentage
Yes	166	55.3%
No	91	30.3%
I don't know	43	14.3%
Total	300	100

Data in table 8 indicates that 55.3% of the respondents know that constant use of earpiece causes ear infection, another 30.3% do not know that it causes ear infection while 14.3% do not know if it causes ear infection or not. This data indicates that majority of the respondents know that constant use of earpiece causes ear infection and so this knowledge may guide them towards using earpiece with caution.

Research Question 3: Do university undergraduate students know of the adverse effects of earpiece use?

Is their need for you to reduce your frequency of using ear phones?

Response	Frequency	Percentage
Yes	142	47%
No	99	33%
I don't know	59	20%
Total	300	100

Data in table 8 shows that 47% of the respondents feel there is need for reduction in their usage of earpiece, another 33% of the respondents feel that there is no need while the remaining 20% don't know if there is need for earpiece users to reduce the frequency of its use or not. This data indicates that majority of respondents agree that there is need for users to reduce the frequency of their earpiece use. This means that most of the respondents know that there could be harmful effects emanating from the constant use of earpiece hence their seeing the need to reduce in the frequency of their earpiece usage.

Do you think that there is enough health campaign/literacy on the use of ear phones?

Response	Frequency	Percentage
Yes	38	12.6%
No	250	83%
I don't Know	12	4%
Total	300	100

Data in table 9 shows that 12.6% of the respondents agree that there is enough campaign on the health implications of using earpiece, another 83% of the students state that there is a dearth of health campaigns while the remaining 4% opine that they don't know if there is enough health campaign or not. This data indicates that majority of respondents agree that there is a dearth of health campaigns as regards the use of ear

phones reason many undergraduate students may not be aware of the harmful effects of earpiece use.

Research Question 4: Are there gratifications which university undergraduate students in Anambra state derive from using earpiece?

Do you get content gratification when you use earpiece?

Response	Frequency	Percentage
Yes	205	68%
No	66	22%
I don't Know	29	10%
Total	300	100

Data in table 10 indicates that 68% of the respondents get content gratification by using earpiece, another 22% do not get content gratification while the remaining 10% of the respondents do not know if they get content gratification or not. This data indicates that majority of the respondents get content gratification from the use of earpiece. This shows that most respondents use the earpiece to listen to and get the lyrics or sounds of music or movies clearly without unusual noise interruptions hence the gratification they get from this particular earpiece use.

Do you get social gratifications when you use earpiece?

Response	Frequency	Percentage
Yes	239	79.7%
No	37	12.3%
I don't Know	24	8%
Total	300	100

Data in table 11 shows that 79.7% of the respondents get social gratifications from using earpiece, another 12.3% of the respondents state that they do not get social gratifications while the remaining 8% of the respondents do not know if they get social gratifications or not. This data indicates that majority of the respondents agree that they get social gratifications from using earpiece. This shows that most of the respondents use earpiece because they see others using them and so would not want to be left behind in the trend. Hence, there being socially gratified from using earpiece.

IV. DISCUSSION OF FINDINGS

The findings of this study came against the backdrop of the research questions raised in the study, the theoretical framework and existing empirical studies reviewed. Each of these contributed to the proper discussion of the findings of this study. The findings are discussed below:

1. University undergraduate students in Anambra own and use earpiece with most of them using earpiece for 1-6 hours and are heavy and frequent users of earpiece. The finding from the study of Basu, Garg, Singh and Kohli (2019) agreed with this finding

although there was a little discrepancy in the gender roles of usage of earpiece when they found that male undergraduate students used earphones with greater frequency and perceived lesser susceptibility to adverse health effects on prolonged PAD usage compared to female students.

2. University undergraduate students in Anambra are aware of the health implications of frequently using earpiece especially that of ear infection. The study of Rekha, Mihtra, Kuma, Bukelo and Ballala (2017) also found health implications in the use of earpiece. They found that 18% of the study population was aware that prolonged use of earphones could be harmful to health like dizziness, ear infection and even heart related issues.
3. University undergraduate students in Anambra know that frequent and high decibel use of earpiece is totally bad for their health and agree that there is paucity of campaigns regarding the health implications of earpiece usage among university undergraduate students.
4. University undergraduate students in Anambra derive gratification like content gratifications and social gratifications from using earpiece. However, the arguments of Reasoned Action Theory negates this finding as the respondents will avoid using earpiece intentionally if they know about the health implications that come with it.

V. CONCLUSION

Use of earpiece no doubt is a dominant practice among undergraduates in universities and generally young adults which form the bulk of the university undergraduate population. This practice comes with serious health implications which can cause several health challenges. Yet in an era of paucity of health campaigns and sensitization on this subject, the young adult generation take pride and get gratification from using earpiece either for listening to music or for making calls albeit in a high decibel manner. Thus, there is no gain saying that this is a very harmful practice for the young adults which in a way to circumvent this health problem must be chatted immediately through awareness campaigns and sensitization for the vulnerable young adult population.

V. RECOMMENDATIONS

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

1. Government through its health agencies should map out a serious sensitization and campaign strategy towards creating awareness for the youths on the health implications of frequent and high decibel earpiece practice and usage.
2. Parents should mediate in their children's use of earpiece because through this way health implications associated with it will be mitigated.
3. The youths themselves should develop behavior change and compliance towards their usage of earpiece from the little campaigns available in order to protect themselves from harmful health consequences of earpiece usage.
4. Getting various gratifications from the use of earpiece by undergraduate students should be discouraged by the campaigns to be rolled out by health agencies. Most young adults should be made to understand that following certain trends as regards to earpiece usage could be detrimental to their health.

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