Use of Ear-Piece Among Nigerians: An Overview of Social and Medical Implications

By
Ishaku Usman Gadzama
Department of Sociology,
Faculty of Social Sciences,
Ahmadu Bello University, Zaria
Kaduna State E-mail: iugadzama(a)gmail com +234 816 5560 660

Abstract
The use of an ear-piece to listen to electrical audio signals consistently could be harmful. It may cause temporary or permanent hearing impairment or deafness and other health-related problems. Ear-piece users may turn up the volume dangerously high which can cause hearing disorder. More credence on the potential for social isolation is offered in most literature. Headphones usage can impair the detection and localization of ambient sounds in the environment, placing the users at a disadvantage. The use of cell-phone ear-piece among Nigerian adolescents for instance, has become a way of life, a consequence of their very design of transporting users into the music, movies or songs they cherish to listen. People often go to hospitals in order to seek for cure and never mind the cause. There have been numerous reported studies conducted by scientists confirming that up to 60 per cent of the radiation emitted by ear-piece penetrates the heads and necks of the users. To this end, the paper attempted to examine prevalence of ear-piece usage, factors facilitating use of the ear-piece, social and medical implications of using the device and strategies to minimize effects of the ear-piece usage which include that; Nigerians who usually make use of the device as a way of life should eat enough balance diet to build a strong immune system that can resist the effects of electro-pollution and there should be a regular hygienic washing or cleaning ofthe headphone/ear-phone in accordance with manufacturer's instruction to prevent any reservoir of bacteria or fungi that can cause external canal infection.

Keywords: Ear-piece, Nigerians, Social and Medical Implications, Technology, Users.

Introduction

Human society have existed for many centuries having evolved in its natural self and dominated by natural phenomenon which man had little knowledge about (Dennis, 2007). Technology is not necessarily a product of modern science because even before its advent, different human societies have experienced different levels of technological development. But modern science has introduced different and higher level of technology into the world such as the ear-piece (Moebius and Midel-Annen, 2004). An ear-piece is the part of an electronic device that people use or put into their ears so that they can listen to music, news, sermons as well as receiving calls while engaged in other activities. The ear-piece was introduced at the beginning of the 20th century, and was anchored by Nathaniel Baldwin who made it by hand and sold to the American Naval Force. Headphones cordless ear-piece are not connected via wire but it can receive a radio or infrared transmission link while Frequency Modulation (FM), Bluetooth or Wi-Fi are actually made of power receiver systems of which the ear-piece is only a component (Rosen, 2004),

Cellular telephone represents wireless carriers that man uses for his comfort, as manufacturers have reported that the use of telephone ear-piece is growing at a rate of 40 per cent each year (Franklin, 2007). The number of telephone ear-piece users worldwide grew to over 3.3billion by the end of 2007 with a total rate of 49 per cent. The African continent shows the greatest increase and more than two-thirds of all cell-phone subscribers are found in developing countries including the contemporary Nigerian society. Consequently, cell-phones account for nearly 90 per cent of all telephone use in Africa. India and China stood at 154 million and 143 million subscribers respectively (Franklin, 2007). The ear-piece was the only way to listen to electrical audio signals before amplifiers were developed and apparently, still in use up till date (Christensen, Schiiz, Kosteljanetz, Pouisen, Thomsen and Johansen, 2004).

It is observed that there is a direct link between ear-piece usage and memory loss, and consequent effect on people's hearing ability (Moore, 1999). For example, many Nigerian students are fond of using ear-piece while in lecture halls, hostels, libraries, studios, workshops, laboratories, riding on motorcycles,walking along the streets, inside vehicles and even in the toilets. The complete isolation from outside noise can be hazardous in itself as a user could miss the sound of a vehicle horn and walk into traffic with fatal consequences; losing situational awareness. A study conducted by the University of Toronto in 2006 stated that an estimated 1000 people die annually from phone-related car accidents, and the number of crashes is expected to double as more people use telephone ear-piece (Peng, Tao and Huang, 2006). However, the rate at which the habit is increasing among the student population in particular and the public in general has become a source of concern. To this end, this paper discusses the prevalence of ear-piece usage, factors facilitating its use, its social and medical implications as well as strategies to minimize such effects.

Prevalence of Ear-Piece Usage in Nigeria

People who listen to news, music, etc in a noisy environment, whether they are factory workers, sports commentators have to hear above the noise of a crowd. Musicians also try to hear a backing track against the sound of a rock band or camera operators who try to hear talkback at a live music event. Nigerians who use ear-phones for most or every working day, such as people working in call centres or those working in the media houses need this device to review, transcribe or listen to programmes (Federal Communication Commission, 2008). Studies of two national representative surveys indicate that the prevalence of hearing loss among the United States of America adolescents has increased by about 30 per cent between 1988 and 1994 with 1 of 5 adolescents had hearing loss in 2005 and 2006 (Peng, Tao and Huang, 2006). There is also 31 per cent increase in the prevalence of hearing loss among teenagers (Walker, 2005).

There is a potential risk to hearing from various types of social noise exposure. However, there are few population-based data to substantiate a case for concern. During the last 10-20 years, the use of Personal Cassette Players (PCPs) has become very much more prevalent and sound levels in public nightclubs and discotheques are reported to have tremendously increased (Bull, 2001). This indicates that social noise exposure has tripled since the early 1980s in the United Kingdom. Most of the present day exposure, measured in terms of sound energy, comes from nightclubs rather than PCPs. Moreover, 66 per cent users of ear-piece reported temporary effects on their hearing ability or tinnitus (Bull, 2001).

Factors Facilitating Use of the Ear-Piece in Nigeria

Noisy environment is one of the factors that influence the use of ear-piece in Nigeria. Many Nigerians are fond of wearing a headset, an ear-piece or a headphone as a way of life. For instance, telephone sales personnel, air trafficcontrollers, television cameramen, television presenters, sound engineers, and staff in the control room of the emergency services or public utilities, audio typists, radio operations and even the occasional noise consultants, all wear headphones of various designs. Most headphones are easy to travel with because of their portability and it allows people listen to high-quality audio while isolating outside noise (Holmes, 2006).

Climatic condition also affects the ear. Many people love to listen to music in the open particularly during the cold season. Choosing a pair of earplugs is appropriate because individuals can enjoy music as well as it can deal with the cold temperature in the outside. Headphones need to be changed due to seasons, if one does not want to freeze his/her ears in the rainy season. It is natural to take into account the temperature factor.

There are many sources of noise encountered in everyday life like traffic, loud music, lawn mowers, machines and so forth. Music is ever present in people's daily lives, establishing a link between humans and the arts through the senses and pleasure. Even those who argue that music is safer than other noises would agree that if it is loud enough and repeated often enough, can damage hearing, even speeches on ear-phones can give an excessive noise dose, just as much as music. Stankievech (2007) observed that the use of headphone has become a norm rather than the exception. Human beings have used music for a long period of time and the headphones have contributed to the desire of individuals to make music machines portable enough to be taken everywhere and not disturb others.

Medical Implications of Using the Ear-Piece

Medical or health implications of using the ear-piece are discussed under two (2) headings; biological and social implications, as follows:

Biological Implications:

There are many health issues related to the use of an ear-piece device that emit electromagnetic radiation. However, the general public is unaware of the health problems associated with the use of these devices. Cellular radiation can cause genetic damage to blood cells, therefore preventing the blood cells from repairing broken DNA. This could result in growth of tumors and breakdown in the immune system. A study conducted by International Agency for Research on Cancer (2011), shows that exposure to electromagnetic wave for a certain period of time could lead to health problems like headache or brain cancer. Scientists have discovered that this radiation might cause human biological damage through heating effects since the human body is made up of approximately 65-70 per cent water, electrolytes and ions. Radio frequency radiations emitted from ear-pieceinteract with human body's natural hearing resulted displacement of electrolytes and ions within the body.

It was also indicated that people who use the ear-piece for more than a decade may have as much as three times greater risk of developing brain tumors on the side of the head. For instance, globally, one in 29,000 men and one in 38,000 women on average develop tumors each year, with people in industrial nations twice as likely as those in developing countries like Nigeria to be diagnosed with one (Peng, Tao and Huang, 2006). The phrase *altered state of consciousness* is generally referred to

as a negative concept that is associated with drugs, tobacco and alcohol use. A more careful examination of the concept shows that the environment is constantly changing people's perceptions, cognitive, emotions and hormonal state. In fact, when fully disconnected from the environment as with sensory deprivation, human beings tend to lose their sanity (Walker, 2005). In addition, loud music overpowers the senses and cognitive judgments. In another study, some students who consistently listened to loud music exhibited maladaptive brain behavioural patterns consistent with substance abuse (Florentine, Hunter, Robinson, Ballou and Buus, 1998). It is also observed that the consistently use of an ear-piece to listen to music can be damaging depending on how long the user uses it (Mariea and Carlo, 2007). For example, like every drug, loud music can be very destructive in high doses. But unlike ordinary drugs, it takes more years of abuse before the damage is noticed. That may be the primary explanation for why loudness is ignored by users of ear-piece in Nigeria. Like mothers who tell their children to brush their teeth in the morning and in the night after supper before going to bed to avoid mouth decay, Nigerian adolescents should also take the future seriously.

In 2011, the International Agency for Research on Cancer (IARC) states that at least one of the symptoms noted from constant use of the ear-piece which include dizziness, concentration difficulties, memory loss, and a burning sensation showed up in 47 per cent of people who reported using these devices an hour or more daily. The study found that 16 per cent Americans have an impaired ability to hear speech and that more than 30 per cent over the age of 25-55 million Americans have lost at least some level of high frequency hearing. Peng, Tao and Huang (2006) observed that:

> *Damage to the hair cells in the inner ear are one health risks associated with headphones usage. Loud and excessive noise directly in contact with the ear damages the hair cells in the inner ear causing permanent hearing loss. Tumors are another health risk associated with excessively loud noise of headphones that could result in hearing loss. The tumor is slow growing and will over time put pressure on the cranial nerve. The cranial nerve is what senses sound and aids balance. Heart attacks have been associated with high level of noise, such as that produced by headphone usage; high blood pressure is also linked to loud excessive noise.*

Bluetooth is a wireless technology in which a wired connection has been replaced with a receiver and transmitter. This connection communicates on a 2.4 gigahertz frequency and it has the same frequency like the one in a microwave oven. However, the power that is used to send these frequencies is very low because the signal strength is only about 1 mill watt. This means that the lower power used by Bluetooth technology could limit the range to around 30 feet. On the other hand, a cell-phone can operate on a signal of up to three watts while people, who use the ear-piece on their heads continuously, could also suffer from radiation (Bull, 2001).

In addition, at least with a cell-phone you lay the phone down when the conversation is concluded but it is not so with a Bluetooth which is a wireless connection. Cell-phone radiation harms people when they talk or send messages over a Bluetooth connection of any kind that are being exposed to the information carrying radio wave (Mariea and Carlo, 2007). However, it is this wave that does the damage. Therefore, a Bluetooth device is not safer than a non-wireless device and can be more dangerous due to continual exposure of radiation to the head and could cause damage to the auditory nerve or perhaps damage to the inner ear at some points (Mariea and Carlo, 2007).

Social Implications

According to Stankievech (2007), whether an individual is communicating with an iPod, listening to the radio, talking on hand free cell-phones or attentively listening to music, headphone creates a mobile and continually changing architecture that follows the listener, wrapping him/her in a private bubble. The primary social consequences that arise from the use of ear-pieces are twofold namely; hearing loss and social isolation. For instance, the potential for hearing loss is heightened with the use of ear-piece or headphones because by design, they sit very closer to or inside the ear canal, exposing the individual to potentially harmful levels of sound. Researchers like Peng, Tao and Huang (2006), studied the effects of audiometric levels in individuals who use ear-piece to listen to personal music players in American society. According to them, long-term use of personal listening devices can in fact, impair hearing function and causes brain tumors. The data also indicate that extended high frequency audiometric is asensitive method of early detection of noise-induced hearing loss. What is certain is the risk that ear-pieces pose to ones hearing, especially because their use is so pervasive amongst individuals in the contemporary Nigerian society. Moreover, the potential for hearing loss is categorized as a negative social consequence because of how it affects individuals and their ability to effectively communicate.

Another social effect is that of isolation or loneliness, which is perhaps the more insidious of the two classified as negative. Crane (2005), suggested that the use of ear-pieces may impede interactions with and feelings of being connected to others, proximity seeking, closeness or feeling connected to a significant others while at the same time using this connection as a safe haven to separate or become autonomous. Furthermore, the use of headphone tends to alienate those around the users who are often put off from making conversation. In addition, a portable audio device may serve as a transitional object in close relationships (Crane, 2005).\

Also, in urban areas and factories, on campuses, at motor parks and public transportations, individuals are using portable audio technological devices with headphones to listen to all sorts of music and to communicate. Psychologically, the introduction of silence device like headphone/ear-piece has made some Nigerians to be separated from other people. For instance, iPods/mp 3 players have become popular and the wearing of headphone is common place, social norms and availability to interact are compromised. It is a known fact that headphones users do not want to interact with other people around them.

In terms of learning, people develop socially acceptable mental health; learn societal rules, moral codes and empathy towards others through social cognition (Bandura, 1977). Social cognition suggests that when people interact with other human beings, they learn the norms of behaviour of that dominant culture; practice communication skills, learn diplomacy and socialization leading to patience and empathy towards other people around them. Perhaps, the popularity of headphones technology in everyday life is impacting on the way people interact with one another. Society also creates a set of conditions in which people are always being abandoned, and find it extremely difficult to get the nurturance and support that are essential for psychological health. Human beings need each other, and the essence is to be in relationship with others.

Headphones create social distance instead of fostering cultivated conversation. The communal listening to sound is inhibited in that the headphone user has no reference to or is not

experiencing the people around him/her in the society. This creates a separate experiential reality from those in the same geographical proximity. Perhaps, headphone usage is a means of establishing self-sufficiency while blocking any uncomfortable feeling of being alone in a crowd.

Theoretical Framework

Social learning theory explains human behaviour in terms of continuous reciprocal interaction that exist between cognitive, behavioural and environmental influences. The theory posited that individuals learn certain behaviour through observation, imitation and modeling from other individuals in the society. Tarde (1933-1904) in his theory of *Imitation - Suggestion* holds that all social phenomena can be reduced to the relationship between two persons, one of whom exerts mental influence on the other. According to Tarde, society itself began when human beings first pattern their behaviour on each other. He argued that in every society or group of individuals, one person is another's model. Tarde suggests the process through which an invention becomes socially adopted. Logical laws of imitation stated that individuals imitate a certain model because they think it is more useful or suitable with others previously established in their minds (Charles, 2005). However, some Nigerians use ear-piece in spite of its medical implications in the name of imitating the actions of others.

Bandura (1977) further noted that those individuals whom other people observed are called *models.* Whereas, there are necessary conditions for people to successfully model or learn the behaviour of other individuals, that is, an individual must pay attention and develop keen interest when they want to observe a model in order to copy. He/she should have a retentive memory to be able to vividly remember the behaviour that has been observed. Bandura argued that individuals who want to imitate others should be able to replicate and demonstrate the behaviour they have copied or learnt. For instance, majority of people (Nigerians) learn through imitation or replicate what they have observed other individuals are doing in the society. The issue of ear-piece usage by people is not far-fetched from what Bandura postulated.

In spite of the strengths of social learning theory in situating the phenomenon of ear-piece, it has been challenged for difficulty to succinctly explain the total I reality of the use of ear-piece by Nigerians. The theory fails to take into consideration some personality traits that could have effects on the individual's susceptibility to environmental influences. Critics of this theory argued that some individuals can act independently as rational actors without imitating someone else's behaviour as a model in the society.

Conclusion

The paper concludes that man as a social animal has used music for a long period of time. Radio and audio player have contributed to the desire for Nigerians to make music machines portable enough to be taken everywhere;hence, the use of ear-piece by individuals to listen to news, sermons, giggles, etc. Listening to music has medical implication to hearing ability. Perhaps, as the world gets more populated and complex, there is a growing desire for more solitude. Interestingly, common sense would tell reasonable Nigerians that lack of connection to neighbours, peer groups, school/class-mates, relatives, office/roommates and other community-based social events/organizations must have an impact on social relationships. Another explanation could be that a lack of connection occurs as an extension of tendency to isolate oneself from others in the society. Social learning theory urged people to pay more attention to

what they imitate, retain it in their memories, replicate and put it into practice the behaviour they have observed.

Recommendations

The paper recommends that good nutrition is essential to building a strong immune system that can resist the effects of electro-pollution. Nigerians who usually make use of ear-piece as a way of life should eat adequate balance diet. That is, they should be encouraged to eating fresh natural fruits and vegetables at least twice daily.

Frequent examination/washing of ears and hearing test should be performed prior to employment and admission into any organization, so that a more in-depth study can be done to establish or dismiss the association between the use of headphones and ear infection/hearing loss. Such examination should then be repeatedly done yearly even while in school or working.

It is also useful to suggest regular hygienic wash or cleaning of the headphone in accordance with manufacturer's instruction to prevent any reservoir of bacteria or fungi that can cause external canal infection. Hence, sharing of headphones should be discouraged.

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