

## Health and Psychosocial Effect of Traffic Noise Exposure on Auditory Performance of Commercial Drivers in Ibadan Metropolis

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### Abstract

Exposure to noise has been observed to have some deleterious effect on the health, hearing mechanism and psychosocial well-being of people working within the noise ravaging environment. Therefore, this study investigated the effect of noise exposure on the auditory mechanism, health and psychosocial well-being of commercial drivers who were purposively selected from five motor parks within Ibadan metropolis. A self-developed questionnaire titled Health and Psychosocial Traffic Noise Exposure Questionnaire with reliability coefficient of 0.78 was used to elicit responses from the participants. Data generated were analysed, using frequency counts, percentage and means. The findings revealed a high prevalence of hearing loss 373 (74.5%) of the participants reported difficulty in hearing whenever people speak in a whisper or at a very low voice. 339 (67.8%) of the participants reported that most times they strained their hearing systems to perceive environmental sound signals, especially while driving as well as after daily routine work. Additional findings revealed that majority of the participants had two or more health-related challenges due to traffic noise exposure and long-time driving activities. 297 (59.4%) of the participants were not aware of any hearing conservation programme. Additional findings revealed that majority of the participants were not aware of the hearing conservation programme as well as hazardous effect of traffic noise on their auditory performance, healthy life and psychosocial well-being. Reduced auditory performance has been found to be associated with continuous exposure to traffic noise among commercial drivers. Therefore, the study recommends effective hearing conservation programme, noise control education, lifestyle and behavioural changes.

**Keywords:** Reduced Auditory Performance, Commercial Drivers, Traffic Noise Exposure, Hearing Conservation Programme

## **INTRODUCTION**

Sound is a pleasant and constant component of the human environment with varying air pressures and waves which travel through a medium to a designated portion of the human brain for perception and understanding of the intended messages or information. Sound travels through air, which makes the atmospheric pressure vary periodically. The number of pressure per second is called the frequency of a sound, and is measured in hertz (Hz) but defined as cycles per second. The higher the frequency, the more high-pitched sound perceived. It has been observed that sounds produced by drums have much lower frequencies than those produced by a whistle. Responses of humans to sound are dependent on the frequency of the generated sound, and the capability of the human auditory systems, and other associated apparatus for hearing, speech recognition, understanding and discrimination.

In the human world, sound is felt all around us, and at the same time becomes undesirable or unwanted when it exceeds the normal. For example, normal speech has a sound level of approximately 60dB therefore sound levels above 120dB becomes some discomfort to human ear. Notably, it has been observed that sound levels between 130dB to 140dB are felt as pain, resulting in what is called "Noise" [1]. Audiologically, 'Noise' is known as any unwanted sound, which interferes with normal activities such as sleep or conversation. Physically, there is no difference between sound and noise. However, sound is a sensory perception, while noise corresponds to undesired sound. By extension, noise is any unwarranted sound within a useful frequency band [2]. It is present in every human activity, and can be produced by many sources; man's vocal cord, a running engine, a vibrating loudspeaker, an operating machine and any other tools. [3]. When assessing its impact on human well-being, it is usually classified either as occupational noise (that is noise in the workplace), or as environmental noise, which includes noise in all other settings, whether in the community, residential, industrial settings, domestic level or even as traffic, playgrounds, sports, musical sounds [4].

Noise is a common phenomenon in the modern society with harmful impact on the activity of human or animal life. Exposure to noise has been observed to have deleterious impact on the health of individuals working within the ravaging environment [5]. Several comprehensive reviews documented numerous adverse effects of noise exposure, including hearing impairment, annoyance, sleep disturbance and hypertension [6]. High noise levels can influence cardiovascular problems in humans, and an increased incidence of coronary artery disease in animals, increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and can also contribute to permanent hearing loss [7]. Furthermore, it has been asserted that the impact of deleterious effect of noise on man has prompted the assertion that noise must be recognized as a major threat to human beings [8]. Noise affects both health and behaviour of people exposed to it. It can cause hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful effects. Among the highly intensified noise environment, hearing loss is one of the most hazardous effects and it is well established that decrease in hearing sensitivity increased after exposure to industrial noise level greater than 85dBA. As noise is usually experienced along with the vibration, there is a

combined assault on the commercial drivers from both sources, especially, the vibration and noise. Thus, commercial drivers always experience elevated stress from the traffic environment during busy schedule of the work [9], and that exposes their sensory organs most especially, the hearing system to a lot of deleterious effects of such exposure.

Exposure to excessive noise has been observed as the major avoidable cause of permanent hearing impairment worldwide [10]. It is usually classified as either occupational noise or environmental noise. Occupational exposure to noise usually results in Noise Induced Hearing Loss (NIHL), which is Sensorineural Hearing Loss (SNHL) in nature. Sensorineural hearing losses occur when the sound that gets to the inner ear is not transmitted to the brain or is transmitted in a distorted manner. Damage to the cochlea and the auditory nerves which is mostly due to continuous exposure to noise or viral diseases always bring about Sensorineural hearing loss. Both SNHL and NIHL do manifest irreversible subtle change in the sensory cells and other structures in the organ of corti in the cochlea. Consequently, the hair cells and supporting cells within the inner ear will become disappeared resulting in permanent threshold shift, and hence irreversible hearing loss at the higher frequencies will then occur.

Noise pollution is emerging as a major environmental threat to the developed and developing countries of which road traffic is considered as the most important source in major cities. The professional bus drivers who drive buses at the busy traffic lanes are always at risk of exposure to high level of noise due to traffic congestion along roadside [11]. Studies from American Hearing Research Foundation have shown that long term exposure to loud noise affects the hearing capacity and a decrease in work performance. The magnitude and duration of the effects are determined in part by individual characteristics, lifestyle behaviours and environmental conditions. However, the situation is improving in developed countries as more widespread appreciation of the hazard led to the introduction of protective measures [12]. The average noise levels in developing countries may be increasing because industrialization is not always accompanied by total adherence to safety hearing conservation regulations. Effective regulations against noise and noise induced hearing loss preventive programme lack well established structures in Nigeria and many other countries [13]. Therefore, the rate of noise in the society is getting alarming especially in industrial areas. Heavy machines are used in such industries and yet precautions to prevent hazards caused by noise emitted by these machines are not taken into consideration, thereby putting the auditory performance and health of workers exposed to noise pollution at risk. It is evident that workers who are exposed to industrial noise in their places of work do experience some of these problems over time. The hazardous effects of industrial noise pollution on workers make these workers vulnerable and susceptible to auditory disorders, fatigue, annoyance, cardiovascular disorders, sleep disorder, performance effect, immune effect and biochemical effects [14].

Noise is of great concern in occupational health and wellness, because noise is one of the occupational and environmental hazards that affect health and safety of workers in transportation, manufacturing, construction, agriculture and various industrial activities. Transportation systems including roads, railway and traffic have caused environmental noise

pollution. In recent years, road traffic has a significant role in causing environmental noise, which can have adverse effects on communities. It is noteworthy to emphasize that noise caused by traffic remains a major source of environmental pollution in any developed nations [15]. With this, commercial drivers are exposed to high noise levels for long time and duration due to the nature of their occupation and associated demands, therefore making them vulnerable and susceptible to auditory disorders, reduced auditory performance as well as psychosocial hearing related issues.

Research findings have shown that noise is an occupational hazard to commercial drivers [16]. Thus, cases of auditory insensitivity, health-related problems and other attendant psychosocial problems are rampant among the commercial drivers. It is worthy of note to state that the environment in which commercial drivers spend the majority of their time is polluted, noisy and hazardous. It is an environment, over which they have no control whatsoever, and is an environment that promotes reckless and negative social habits. On a constant basis, commercial drivers are also exposed to a significant amount of health damaging air pollutants while at work. In fact, the diesel fuels have carcinogenic properties, and exhaust emissions from the total vehicle fleet which contain pollutants such as carbon monoxide, nitrogen oxides and sulphur dioxide all of which can damage the respiratory system which could be associated with asthma, bronchitis and a range of other health problems including headache, sore eyes and ear problems, such as otalgia.

Commercial drivers are more vulnerable to hazardous effect of constant noise exposure and vibration even from their own vehicles together with dominated noise from other vehicles while at work. Due to the aforementioned effect of traffic noise, commercial drivers are more likely to experience a range of hearing-related problems than a population matched for age and social class without traffic noise exposure. Therefore, this research work is conducted with the aim of investigating the health and psychosocial effect of traffic noise exposure on auditory performance of commercial drivers. Also, it aims at evaluating the impact of occupational noise on the auditory performance, general well-being and productivity of commercial drivers.

### **Purpose of the Study**

The main purpose of this study is to investigate the effect of continuous exposure to traffic noise on the auditory performance of some commercial drivers in Ibadan metropolis in relation to their health status, psychosocial well-being and quality life. The study also identifies ways to create awareness on the dangers of continuous exposure to traffic noise, and determine the possible ways of curtailing the prevalence of noise-induced hearing loss among the middle-aged population in the country.

### **Research Questions**

1. What is the prevalence of hearing loss among the commercial drivers?
2. What is the effect of continuous exposure to traffic noise on the auditory performance of commercial drivers?

3. Are the commercial drivers aware of the deleterious effect of traffic noise on the auditory performance and psychological well-being?
4. Are the commercial drivers aware of hearing conservation programme?

### **Research Design**

This study adopted a descriptive research design of the survey type.

### **Population of the Study**

The population for this study comprised all commercial drivers in Ibadan metropolis.

### **Sample and Sampling Technique**

The sample of this study consisted of five hundred (500) commercial drivers from five (5) selected motor parks within Ibadan metropolis. 150 commercial drivers were selected from Lagos motor park, Iwo road Ibadan; 50 commercial drivers from Iseyin/Saki motor park, Sango, Poly road, Ibadan; 50 commercial drivers from Bodija motor park, Bodija market, Ibadan; 50 commercial drivers from intra-campus transport motor park of the, University of Ibadan, Ibadan; and 200 commercial drivers were also selected from Kaduna/Kano/Jos motor park, Ojoo, Ibadan. The commercial drivers were between 20 and 55 years, and they were all male participants with 5 – 21 years of driving experience.

### **Research Instrument**

A self-designed questionnaire titled Health and Psychosocial Traffic Noise Exposure Questionnaire was used to collect data analysed. The questionnaire covered both the objectives of the study and the research questions. The questionnaire contains sixty-two (62) structured items that measured the actual variables, in line with the research questions raised. The questionnaire was divided into 8 sections; section A contains some demographic information about the respondents, section B contains some sets of questions that required responses on the prevalence of hearing loss among commercial drivers, section C contains sets of statements on the effects of continuous exposure to traffic noise on auditory performance of commercial drivers, section D contains sets of statements that require responses on awareness of the deleterious effects of traffic noise on auditory performance and psychological well-being, section E contains sets of statements that require responses on hearing conservation awareness, and section F contains sets of statements that require responses on ways through which awareness could be created on the deleterious effect of traffic noise on the auditory performance of commercial drivers.

To ascertain the reliability of the questionnaire, the scale was pilot-tested on different categories of drivers and a reliability co-efficient of 0.78 was obtained.

**Method of Data Analysis**

The filled questionnaires were collated and analysed using descriptive statistics of frequency counts, percentage, and mean.

**Results**

**Demographic Analysis of the Respondents**

The demographic information of the respondents such as sex, age and work experience were presented in the table. Tables 1, 2, and 3 as well as figure 1 and 2 as thus:

**Table 1: Sex Distribution of the Participants Based on Percentage**

Sex	Frequency	Percentage (%)
Male	500	100
Female	0	0
Total	500	500

Table 1 shows the frequency distributions of the participants based on sex. This indicates that all the participants were male, that is only male commercial drivers participated in the study.

**Table 2: Age Distribution of the Participants**

Age (in years)	$\chi$ -Frequency	Percentage (%)	
20 – 25	22.5	45	9
26 – 35	30.5	105	21
36 – 45	35.5	150	30
46 – 55	50.5	200	40
Total	139	500	100

Grand mean of the participants age = 3.92

Table 2 shows that most of the participants were within the age range of 46 – 55years, which represents 40% of the total sample, followed by those in the age range of 36 – 45years, 26 – 35years and 20 – 25years, which represented 30%, 21% and 9% respectively. By implication, those who were between the age range of 46 – 55years account for the largest proportion of the sampled.

**Table 3: Driving Experience of the Participants**

Driving Experience (in years)	$\bar{X}$	Frequency	Percentage (%)
0 – 5years	2.5	40	15
6 - 10 years	8	75	15
11 - 15 years	13	115	23
16 - 20 years	18	140	28
21years and above	21	130	26
Total	62.5	500	100
Grand mean = 14.8			

Table 3 reveals that most of the participants fall within the work experience group of 16 – 20years, which represented 28% followed by work experience group of 21years and above, 11 - 15years, 6 -10years and 0-5years,with the responses represented as 26%, 23%, 15% and 8% respectively. This accounted that most of the commercial drivers sampled had 11-20years of driving experience.

**4.2 Answering the Research Questions**

**Research question 1: What is the prevalence of hearing loss among commercial drivers?**

**Table 4: Prevalence of Hearing Loss**

S/N	Items	Yes	No	Mean		
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	Do you have difficulty hearing when someone speaks in a whisper or at a very low voice	373	74.5	127	25.4	1.25
2	I tune up to high volume when using mobile phone, TV or radio	252	50.4%	248	49.6%	1.49
3	I do strain my ears when using mobile phone for calls most times	339	67.8%	161	32.2	1.32
4	When people talk to me, I require for repetition or clarification	282	56.4	218	43.6	1.43

5	I cannot hear people well when outside my place of work	187	37.4	313	62.6	1.62
6	Do your family members feel uncomfortable talking to you from a far distance or behind you?	275	55	225	45	1.65
7	Has anyone ever told you that you are speaking too loud when talking to him/her at your place of work or elsewhere?	254	50.8	246	49.2	1.49
8	Most times when receiving calls via mobile phone, I frequently change the phone from one ear to another	397	79.4%	103	20.6%	1.20
9	Hearing from television (TV), Radio sets has become a problem to me	184	36.8%	316	63.2%	1.63
10	I hear better in one ear than the other	298	58.6	202	40.4	1.40
11	Do you have difficulty hearing/understanding coworkers, clients or customers	122	24.2%	378	61%	1.61
12	Does your hearing performance cause you to feel frustrated when talking to members of your family?	195	39%	305	61%	1.61
Grand mean =11.3						

Table 4 reveals the prevalence of hearing loss among the respondents. This shows the degree of occurrence of hearing loss among the respondents. Information from the table indicates that 373 (74.5%) of the respondents had difficulty hearing when someone speaks to them in a low voice or whisper, while 127 (25.4%) do not have difficulty hearing low voice or whisper. 252 (50.4%) of the respondents tuned up to high volume when using their mobile phones, TV and or radio sets while 248 (49.6%) 248 did not tune up high the volume. The table also indicates that 161 (32.2%) of the respondents did not strain their ears when using mobile phone for calls most times while 339 (69.8%) strain their ears. Regarding clarification or repetition when people talk, 282 (56.4%) of the respondents affirmed their agreement to this assertion, as against 218 (43.6%). In addition, 187 (37.4%) reported that they did not hear people well while at their place of work or outside while 313 (62.6%) reacted negatively to this. 275 (55%) of the respondents said their



families did feel uncomfortable when speaking to them at far distance or behind them, while 225 (45%) disagreed to this. As regard speaking too loud when talking to people either in their place of work or outside 254 (50.8%) affirmed their agreement to this, while 246 (49.2%) were negative. 184 (36.8%) of the respondents confirmed that hearing from television and radio sets had become a problem while 316 (63.2%) disagreed. In addition, 298 (59.6%) of the respondents said one of their ears heard well as against 202 (40.2%) who heard better with their two ears. Also, 122 (24.4%) of the respondents reported that they did have difficulty hearing/understanding co-workers, clients or customers, while 378 (75.6%) disagreed to having difficulty hearing or understanding co workers, customers or clients. In summary, the table indicates that majority of the participants had difficulty with their hearing and this indicates a high prevalence of hearing loss.

**Research question 2: What is the effect of continuous exposure to traffic noise on the auditory performance of commercial drivers?**

S/N	Items	Yes		No		Mean
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	I am exposed to loud noise everyday for 8 hours or even more in my place of work	412	82.4	88	17.6	1.17
2	The noise brings about echo (continuous ringing) in my ears even after my daily work	323	64.6	177	34.5	1.36
3	Noise from my place of work makes me experience a headache	311	62.2	189	37.8	1.37
4	Noise brings about change/reduction in my hearing after my daily work	285	57	215	43	1.43
5	I often feel a kind of discomfort or pain in my ears after my daily activities	322	66.4	168	33.6	1.36
Grand Mean = 1.33						

**Table 5: Effect of continuous exposure to traffic noise**

Table 5 shows the effect of continuous exposure to traffic noise on the auditory performance of commercial drivers. The findings of the study in respect to effect of traffic noise on auditory performance reveal that 412 (82.4%) of the respondents were exposed to loud noise every day for 8 hours or even more at their place of work, while 88 (17.6%) reported they were not exposed to loud noise for 8 hours or more. The table also indicates that 311 (62.2%) of the respondents claimed to experience a headache due to noise from their place of work, while 189 (37.8%) disagreed on this. In addition, 177 (35.4%) of the respondents said that noise from their place of

work did not bring about echo (continuous ringing) in their ears after daily work, while 323 (64.6%) did experience continuous ringing in their ears. Concerning noise bringing about reduction in the hearing after daily work, 285 (57%) were affirmative, while 215 (43%) were negative. Furthermore, 322 (66.4%) of the respondents agreed that they often felt a kind of discomfort or pain in their ears after the daily work, while 168 (33.6%) disagreed on the assertion. By implication, this table shows that there is negative effect of continuous exposure to noise on the auditory performance of the participants based on their responses. They experienced ringing in the ear, pain, or discomfort, headache and change or reduction in hearing sensitivity after their daily work.

**Research question 3: Are the commercial drivers aware of deleterious effect of traffic noise on auditory performance and psychological well-being**

**Table6: Responses based on the awareness of effect of traffic noise on auditory performance**

S/N	Items	Yes		No		Mean
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	Noise from my place of work is not harmful to my hearing functions and psychosocial life.	322	66.4	168	33.6	1.36
2	I am aware that noise from my place of work is dangerous to my hearing and psychosocial life	122	24.4	378	75.6	1.75
3	I have never been informed about dangers to continuous exposure to traffic noise to my auditory performance and psychosocial life	145	29	355	71	1.71

Grand Mean =1.60

Table 6 shows the level of awareness of the participants on the deleterious effect of traffic noise on auditory performance. 322 (66.4%) of the participants were not aware of the harmful effect of noise from their place of work to their ears and hearing while 168 (33.6%) were aware. Also, 122 (24.4%) of the respondents were aware that noise from their place of work was dangerous to the ears while 378 (75.6%) were not aware of this danger. Similarly, 145 (29%) of the respondents had been informed of the danger in continuous exposure to traffic noise on the auditory

performance, while 355 (71%) had never been informed. In summary, the table shows that majority of the participants were ignorant of the dangerous effect of continuous exposure to traffic noise on their auditory performance, their level of awareness is very low based on the findings.

**Research question 4: Are the commercial drivers aware of hearing conservation programme?**

**Table 7: Responses based on the awareness on hearing conservation programme**

S/N	Items	Yes		No		Mean
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	Are you aware of hearing conservation programme?	203	40.6	297	59.4	1.59
2	I use hearing protector while driving	23	4.6	477	95.4	1.75
3	I know when I should use hearing protectors	122	24.4	378	75.6	1.75
4	I plan to wear hearing protector when I move near loud noise	157	31.4	343	68.6	1.68
5	I am convinced that wearing hearing protector would prevent me from acquiring hearing loss	223	44.6	277	55.4	1.44

Grand Mean = 1.64

Table 7 shows the level of awareness of the participants to hearing conservation programme. The findings reveals that 203 (40.6%) of the respondents were aware of hearing conservation programme, while 297 (59.4%) of the respondents were not aware of this programme. 23 (4.6%) of the respondents used hearing protective device in their place of work, while 477

(95.4%) did not use hearing protective device. Also, 122 (24.4%) of the respondents knew when to use hearing protector, while 378 (75.6%) were not aware of when to make of use hearing protective device. 157 (31.4%) planned to wear hearing protective device when they work near loud noise, while 343 (68.6%) had no plan to wear any hearing protector device. Furthermore, 223 (44.6%) of the respondents were convinced that wearing a hearing protective device would prevent hearing loss, while 277 (55.4%) were not fully convinced of the usefulness of wearing hearing protective device. The table therefore indicates that the level of awareness of the

participants to hearing conservation is very low. The findings through the participants' responses shows that they did not use hearing protective device and were not aware of its usefulness.

**Research question 5: What are the ways through which awareness could be created on the deleterious effect of traffic noise on the auditory performance and general wellbeing of commercial drivers?**

**Table 8: Frequency distribution of ways through which awareness could be created**

S/N	Item	Yes		No		Mean
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	Alert on the dangers of loud noise exposure through social and public media	316	63.2	184	36.8	1.36
2	Campaign by National Orientation Agency and other public enlightenment agencies should be made on associated health challenge to loud noise exposure	307	61.4	193	38.6	1.38
3	Commercial drivers should be encouraged to use personal protective equipment	325	65	175	35	1.35
4	Indulgence in smoking and alcoholism should be discouraged	193	38.6	307	61.4	1.38
5	Government should ensure strict adherence to rules guiding noise pollution in various industrial occupation	258	51.6	242	48.4	1.48
Grand Mean =		1.39				

The result reveals that majority of the participants agreed that awareness should be made through National Orientation Agency and other public enlightenment agencies, alert through social and public media on dangers associated with health in relation to continuous exposure to loud noise. Also, encouragement should be given on the use of personal protective equipment and that government should ensure strict adherence to rules guiding noise pollution in various industrial occupation. The finding affirms that there should be formulation of abatement strategies,

implementation and monitoring of noise abatement measures [17]. Also, enforcing the Noise Control Ordinance and promoting partnership with stakeholders.

### **Prevalence of Hearing Loss among the Commercial Drivers**

Table 4 shows the frequency distribution and summary of the findings based on the prevalence of hearing loss among the commercial drivers. It is visible from the table that majority of the participants had difficulty hearing in a low voice or whisper, tuned up to a high volume when using mobile phone, TV or radio. Also higher percentage of the participants did strain their ears when using mobile phones, required repetition or clarification while people talk to them and also found it difficult to hear well from radio sets and television. In addition, majority of the participants heard better with one ear, change their phone frequently mobile phone when receiving phone calls. The findings corroborates the earlier findings which established a high prevalence of hearing loss among the commercial drivers [18]. Also, the findings corroborates the report based on the survey of World Health Organization 2007 that there is prevalence of hearing loss excluding those with mild hearing impairment in the developing countries. This study therefore notes that there is high prevalence of hearing loss among commercial drivers in Ibadan metropolis.

### **Effect of continuous Exposure to Traffic Noise on the Auditory Performance of Commercial Drivers**

The finding also indicates that there is effect of continuous exposure to traffic noise on the auditory performance of commercial drivers in Ibadan Metropolis. This is visible from table 8 which shows that higher percentage of the participants is daily exposed to loud noise for 8 hours and even more. Also, higher percentage of the respondents affirmed that the noise made them to experience a headache afterwards and also experienced continuous ringing in their ears after daily work. In addition, majority of the respondents affirmed that noise brings about change/reduction in their hearing after their daily work, and that they often feel a kind of discomfort or pain in their ears after their daily activities. In this regard, the study acquiesced with the past findings affirm that due to longer working hours per day, commercial drivers are exposed to negative health outcome such as reduced hearing threshold, digestive disorders, changes in sleep quality, behavioural disorders, cardiovascular complications [19]. This exposure has caused changes in the behaviour of the commercial drivers, in addition to evidence of irritation, mental fatigue, frustration and stress. Therefore, this study showed that long term exposure to loud noise affects the hearing capacity of drivers, eventually resulting in hearing loss and a decrease in work performance.

### **Awareness of the Deleterious Effects of Traffic Noise on Auditory Performance**

Table 6 shows the result of the level of awareness of the participants to the deleterious effects of traffic noise on auditory performance. The findings revealed that higher percentage of the participants were not aware of the harmful effects of noise from their place of work to their ears, hearing and health respectively and also claimed to have never been informed about dangers to continuous exposure to traffic noise. This finding is in line with a study conducted in Morogoro

municipality among commuter bus and taxi drivers which shows that most drivers are less aware of the possible impacts of noise on their auditory performance [20]. Also it has been established that majority of the participants are personally unaware of the hazardous effect of noise at their place of works [21].

### **Awareness and Use of Hearing Conservation Control**

Table 7 shows the findings which revealed that the majority of the respondents were not aware of any hearing conservation programme. Also that majority of the respondents were not aware that noise from their places of work is dangerous to their ears, hearing and health. The result also revealed that the respondents have never been informed about dangers of continuous exposure to traffic noise on their auditory performance. This study is similar to the research conducted in Morogoro municipality among commuter bus and taxi drivers, the study shows that most drivers do not use and had never used any kind of noise protective gears due to non-availability and unawareness [20]. Also, this finding is tandem with the study that some workers feel that earmuffs are too hot, heavy or awkward in some situations and therefore would avoid the use of these protective devices [22]. This finding also corroborates a trend of nonchalant attitude to the use of hearing protective device which was reported in a recent study among the Rickshaw drivers of Karachi as only 7(5.47%) participants out of 128 used protective devices in the presence of excessive noise, thereby most of the Rickshaw drivers were unaware and ignorant of deleterious effect of noise on their hearing and health [23].

### **Ways through which Awareness could be Created on the Deleterious Effect of Traffic Noise on the Auditory Performance and General Well-being of Commercial Drivers**

The result revealed that majority of the participants agreed that awareness should be made through National Orientation Agency and other public enlightenment agencies, alert through social and public media on dangers associated with health in relation to continuous exposure to loud noise. Also, encouragement should be given on the use of personal protective equipment and that government should ensure strict adherence to rules guiding noise pollution in various industrial occupation. The finding is in consonance with the study which states that there should be formulation of abatement strategies, implementation and monitoring of noise abatement measures [19]. Also, enforcing the Noise Control Ordinance and promoting partnership with stakeholders.

### **5.2. Conclusion**

Noise pollution has been reported as a major environmental threat, affecting the quality life of people with ten percent of the world population suffering from hearing loss, due to exposure to very loud noise. Majority of the commercial drivers are unaware of the presence of environmental sound at damaging levels, or of the level at which sound becomes harmful. This is found in the responses of the participants in this study as majority of the participants were not aware of the deleterious effect of continuous exposure to noise on hearing and general well-being.

Put differently, the damaging effect of noise is cumulative and insidious in nature. Continuous exposure to traffic noise brings about gradual hearing loss, occasioned by gradual degeneration of the hearing mechanism. Also, high frequency hearing loss was common among the commercial drivers sampled. In addition, the commercial drivers claimed not to be aware of hearing conservation programme which reflected in their inaction towards the use of hearing protective device which will help to reduce the prevalence of hearing loss. Therefore, further research should be carried out to enlighten the commercial drivers about the usefulness and importance of hearing protective devices as well as effects of long duration exposure to loud noise.

### **5.3 Recommendations**

Based on the findings of the study, it is necessary to recommend the following:

1. commercial drivers should endeavour to go for periodic evaluation and other related medical examination.
2. The use of hearing protective devices should be made mandatory for all commercial drivers.
3. periodic awareness workshop/seminars must be instituted to educate the commercial drivers and other vulnerable groups to noise exposure and the psychosocial attendant effects.
4. rigorous campaign should be organised by the governmental agencies and other health-related institutions as well as non-governmental organisations to educate commercial drivers on the deleterious effect of noise exposure at their places of work to hearing and general well-being.
5. compliance to issues related to health and hearing health as well as lifestyle changes should be encouraged among the participants.
6. Hearing conservation programmes should be sponsored by the government so as to educate commercial drivers on their hearing, and overall health status.
7. Government should ensure strict adherence to rules guiding noise pollution in various industrial occupation as well as establishment of monitoring committee.

### **Acknowledgements**

The authors are very grateful to all the participants

### **Conflict of Interest**

None

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