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CITY-WIDE CACOPHONY: THE PUBLICITY AND HEALTH ACTION IMPERATIVE

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ABSTRACT

Noise is among the commonest environmental exposures that could hold significant consequences for human health, but it appears not to be given much attention as air pollution, chemical pollution or water pollution. Prioritizing the health risk of noise seems not to be part of considerations in policy making in Nigeria. Even though there is research evidence linking noise to certain health conditions such as sleep disturbance, hearing loss, cardiovascular effects, interference with cognitive functions, changes to the body's chemical balance etc., it is apparently an underestimated threat to public health in Nigeria. Nigerian urban cities are beehive of activities. The presence of active populations, road traffic, markets, entertainment, industry and construction, make Nigerian cities very noisy. Against this backdrop, our study sought to ascertain who among market traders in Nigeria is aware of the health implication of noise pollution; and who necessarily takes health action against the effects of this pollution? The study was designed as a survey. The context was Onitsha commercial city; which is prone to noise. A pre-coded structured interview was used to ascertain who is aware of noise

pollution and takes necessary health actions against the effects of noise pollution among a sample of 399 traders drawn from a population of 383,250 traders that are estimated to make up 75% of the population of Onitsha town (511,000). Findings from the study indicate that the respondents are aware of noise pollution but oblivious of the harmful effects to human health. The findings also indicate that about 80% of the respondents did not take health action to mitigate the effects of noise pollution. We therefore recommended that more awareness should be created to educate these traders and the generality of the Nigerian populace on the health implications of noise pollution and the health actions to mitigate it.
Keywords: Noise, Noise pollution, Onitsha commercial city, urban cities, Onitsha market Traders

Introduction

How dangerous is it to be oblivious of the health implication of noise pollution? How more dangerous is it to be aware of the health implication of noise pollution and do nothing?

In this spirit we can say that any sound that is unacceptable at any point in time is unwanted. And such sound which interferes with wanted sounds constitutes noise. Noise can emanate from traffic, transportation, industrial activities, markets, sports activities, religious or political rallies etc (Egbo, 2016). Sounds that are agreeable give us our music. The absence of audible sound or the presence of low intensity sound implies silence which could be regarded as the opposite of noise. Who then wants silence and why? Is silence necessary as opposed to noise?

The issue of noise pollution appears to make silence imperative. But the idea of silence here is not the absence of noise of some sort but the reduction in the intensity which can be injurious to the health of human persons. Noise pollution refers to “undesired sound that is disruptive or dangerous and can cause harm to life, nature, and property” (Lai, 1996). Also, noise pollution implies unwanted or disturbing sound that interferes with normal activities such as sleeping, conversation, or disrupts or diminishes the quality of life (United States Environmental Protection Agency). Furthermore, noise pollution is the “intolerable corruption of human space” (Russolo, 2004).

Noise or sound is measured in decibels (dB). When we have an increase of about 10 dB, this is approximately double the increase in loudness. There is the general consensus that exposure to levels of sound less than 70 dB may not result in hearing damage, the duration of exposure notwithstanding. But exposure for more than 8 hours to sound levels in excess of 85 dB can be potentially hazardous (Goines & Hagler, 2007).

Though noise is among the commonest environmental exposures that could hold significant consequences for human health, it appears not to be given much attention as air pollution, chemical pollution or water pollution (Briggs, 2016). Prioritizing the health risk of noise appears not to be part of considerations in policy making in some communities and societies (Hammer, Swinburn & Neitzel, 2014).
Even though there is research evidence linking noise to certain health conditions such as sleep disturbance, hearing loss, cardiovascular effects, interference with cognitive functions, changes to the body's chemical balance etc. (Mercola, 2015), noise is apparently an underestimated threat to public health (Basner**,** Brink**,** Bristow**,** deKluizenaar**,** Finegold**,** Hong**,** Janssen**,** Klaeboe**,** Leroux**,** Liebl**,** Matsui**,** Schwela**,** Sliwinska-Kowalska**,** & Sörqvist, 2015).

Urban cities are beehive of activities. The presence of active populations, road traffic, markets, entertainment, industry and construction, make cities very noisy (Bhatia, 2014). The noise health challenge therefore seems to be more serious in urban cities.

In New York City, authorities have received more than 40,000 complaints against noise in 2012 alone, suggesting that noise impinges on the quality of life of residents in this city (Wellington, 2015).

In Sao Paulo, Brazil, traffic noise is a major determinant of the hearing status of workers who are daily exposed to noise due to traffic because they are involved in the co-ordination of vehicular traffic (Barbosa & Cardoso, 2005).

Cairo has noise levels that can reach 90 decibels, way above the normal 60 decibels that might not have health consequences. Sources of noise pollution in Cairo ranges from, blaring car horns to wedding parties (Goines, Hagler & South, 2007).

Karachi is a major city in Pakistan. Traffic noise pollution in this city is significantly higher than all the available international data (Zaidi, 1989).

Mumbai has been described as unfit for living because of cacophony. In 2011 it was declared the noisiest city in the world by the Central Pollution Control Board. Indiscriminate honking, construction, firecrackers and loudspeakers at festivals have been identified as the major sources of noise pollution in this city (World Health Organization, Report 2011).

The European Union estimates that 20 percent of their population is exposed to noise pollution (European Agency for Safety and Health). Madrid is about the noisiest city in Europe. The cacophony of traffic, construction works, rubbish Lorries, cars horns, bars etc generate high decibel sounds in this city. Noise is regarded as golden in the Madrid bar (Lentin, 2014)

Noise pollution is common and pervasive in Japan. Trivial government announcements at intervals on public loud speakers, political messages from loud speakers mounted on vans, the activities of touts outside busy train stations, noise from plenty motorcycles and restaurant staff shouting *Irasshaimase* (Japanese for welcome or come in) add to the high decibel noise levels in Japanese cities, especially Tokyo (Spacy, 2012).

Nigeria is generally regarded as a noisy country. In major Nigerian cities like Lagos, Ibadan, Kaduna, Onitsha, Aba, Warri, Port Harcourt, Kano etc, noise emanating from traffic, loud speakers from religious groups, music stores, portable generating sets, commuter bus conductors, open-air markets, construction works, entertainment facilities and the like, are commonplace. And the populace goes about their normal business

obviously oblivious of the dangers of high decibel noise to their health and well being (Ogunmosunle, 2014)

Figure 1: NESREA noise pollution awareness campaign poster

The National Environmental Standards and Regulations Enforcement Agency is the body charged with the regulation of noise pollution in Nigeria. The National Environmental **(Noise Standards and Control)** Regulations, 2009. S. I. No. 35. provides as main objective:

> To ensure tranquility of the human environment or surrounding and their psychological well-being by regulating noise levels.

To fulfill this mandate, NESRA occasionally embark, as is stated on their website (http://www.nesrea.gov.ng/nesrea/news/noise.html), on awareness campaigns involving public seminars and the distribution of fliers and stickers to drive home the message of the effects of noise pollution. But how effective are these campaigns?

In this study we are paying particular attention to Onitsha, an urban city in Anambra State, Nigeria, noted for commercial activities. During the 19th century the establishment of a station by the British Royal Niger Company in Onitsha had turned the city into a boom town. Many people from the hinterland migrated to Onitsha for the purpose of trade. And to this day the commercial orientation of this city stands it out among other urban cities in Nigeria. This attribute makes the city a good case study for noise pollution generated by open-air market activities. The city of Onitsha is the base of,

arguably, the largest open-air market in West Africa, and perhaps sub-Saharan Africa. This makes it those traders from all walks of life far outnumber any other group engaged in economic activities in the city. Every available space in Onitsha is utilized for one form of commercial activity or the other. There is apparently no clear distinction between commercial areas and residential areas in Onitsha city. This means that close to a million inhabitants of Onitsha might unconsciously be suffering from the effects of noise pollution generated by commercial activities (Bosah, 1979).

Open-air markets are characterized by noise. Shouts and calls form a critical aspect of the dynamics of open-air markets. There is the belief in some quarters that you are not a market trader if you don't shout and that there is no joy in a market shrouded in silence. But the dangers posed by unbridled noise in open-air markets had necessitated action in some countries. In 2008 laws were put in place to stop noise in the old market of Hexham town, England. Similarly in 2012 noise was banned in markets in the city of Istanbul, Turkey (Allen, 2012).

The traders in Nigeria's Onitsha markets are exposed to high decibel noise from traffic, shouts and calls, music stores, loud speakers from religious organizations and portable electricity generating sets. Questions that might be asked at this point are: are these traders aware that noise pollution can be deleterious to their health? Are these traders aware of any policy of government towards noise reduction especially in open-air markets? Are these traders making any conscious effort to implement such policies towards noise reduction in their areas of business?

Against this backdrop, our study sought to ascertain whether open-air market traders in the city of Onitsha are aware of the health implication of noise pollution; and who among them necessarily takes health action (i.e. deliberate actions that serve to improve the well being of people) against the effects of noise pollution. Specifically, the study sought answers to the following questions:

1. What number among Onitsha open-air market traders believe that shouts and calls form a critical aspect of doing their business?
2. Do these traders understand what constitutes noise pollution?
3. What is the extent of awareness of the health implication of noise pollution among these market traders?
4. Who among these traders periodically go for medical check-up?
5. To what extent are these traders aware of and take preventive measures against noise pollution?

We adjudged these questions pertinent in the quest to establish the existing situation with the Onitsha market traders as regards the awareness of noise pollution and the steps taken to mitigate the effects.

LITERATURE REVIEW

Trading is a means of livelihood for many individuals especially in developing economies and societies with rich ancient heritage. A trader engages in buying and selling mostly in open-air markets or street markets. How aware these traders are to the negative effects of environmental sounds which most times constitute noise pollution has been in study by scholars over the years.

Some people are contented with the sounds they hear in the daily run of life. Traffic noise, loud music, Industrial noise, shouts and calls of traders in the market, construction works, noise from the loud speakers of religious organizations etc. These activities form part of our urban dynamics and we are rarely disturbed by them. But when we notice that we cannot sleep because of sounds or we develop headache because of exposure to traffic noise, then we are not just experiencing noise but noise pollution which is as much of pollution as water pollution and air pollution (Stansfeld & Matheson, 2016).

The generation of unwanted environmental sounds constitutes a form of pollutant because it can lower the quality of life and contaminate the environment. This has the

consequence of nuisance value to the extent that it could affect the health of an individual (Williams, Kemp, Langley, Rick, 2000) Noise pollution is therefore a source of concern to doctors, psychologists and economists (Jamir, Nongkynrih & Gupta, 2014).

Noise generated from commercial and trading activities is a significant source of noise pollution. The processes of carrying out trading activities like hawking, outcry from bus conductors, loud music from record stores involves some high levels of noisiness which can lead to health conditions like loss of hearing, sleeplessness, nervousness, hypertension and other related health challenges (Essandoh & Ato Armah, 2011).

There is therefore a direct link between noise and health. Health challenges related to noise include:

- **Hearing Problems:** Constant exposure to high levels of noise may result in the damage to the ear drums and loss of hearing. It can also reduce sensitivity to sounds that the ears pick up unconsciously to regulate the body's rhythm.
- **Sleeping Disorders:** Loud noise can certainly hamper sleeping pattern and may lead to irritation and uncomfortable situations. Without a good night sleep, it may lead to problems related to fatigue and performance.
- **Cardiovascular Issues:** Blood pressure levels, cardio-vascular disease and stress related heart problems are on the rise. Studies suggest that high intensity noise causes high blood pressure and increases heart beat rate as it disrupts the normal blood flow
- **Emotional Balance:** High decibel noise can lead to severe headache and emotional balance (Passchier-Vermeer & Passchier, 2000).

Noise disrupts the tranquility of the environment and can affect human health negatively (Adejobi, 2012). Noise especially in urban areas can be attributed to the rate of development. Subsequently, a growth in transport systems without noise regulations can result to increase in noise generation and in some cases, regulation of noise emission is hampered by noise measurement, and control.

In 2001, it was estimated that 12.5% of American children between the ages of 6 to 19 years had impaired hearing in one or both ears. As many as 80% of elementary school children use personal music players, many for extended periods of time and at potentially dangerous volume settings. There is little doubt that the use of consumer products, which produce increasingly high levels of noise and which are used with headsets or earphones, is growing and may well be responsible for the impaired hearing that is being seen with growing frequency in younger people. This form of noise is largely unregulated, despite warnings by the manufacturers, (Goines et al 2007).

In a study on contributors of noise pollution in Ibadan, Adeboyejo (2012) summarized that the minimum noise levels obtained during the week day from the sampled urban informal enterprises range from 65.1 to 81.2 dB while weekend measured noise levels ranged from 50.0-69.1dB. During the same period the weekday and weekend maximum noise level measured ranged between 74.5 to 90.4 and 51.2 to72.5 dB respectively. Comparing the obtained maximum and minimum noise levels during the weekday and weekend for all the monitored urban informal enterprises with disturbance limit of 45dB and the World Bank limit of 55 dB showed that all the urban enterprises sampled in all locations breached the acceptable standard, because the noise generated exceeded maximum allowable limit. Also, there is a significant variance from the noise level during the weekday and weekend for all the sampled urban informal enterprises.

On the other hand, considering the result of noise level during the weekend shows that virtually all the enterprises recorded noise level-value that is above allowable standard of WHO (45dB) and WB (55dB) only two of the enterprises falls within and below the allowable exposure levels.

According to the WHO, about 120 million people are estimated to have disabling hearing deficiencies while 30 million people were daily exposed to occupational noise. Increased blood pressure has been attributed to daily exposure of 85Dba. Sleep disturbances are probably the most widespread effect of annoyance caused by noise.

The question now is: “how much noise will communities tolerate?” or “at what point would the citizenry have reached its breaking point with noise?” Car horn, people talking, market people, church bells, factory noise, motorcycles, airplanes, car stereo systems, and traffic generally have combined to such a degree that, noise induced irritation; annoyance, discomfort, and hearing impairment are becoming noticeable.

Most of society is now aware that noise can damage hearing. However, short of a threat that disaster would overtake the human race if nothing is done about noise, it is unlikely that many people today would become strongly motivated to do something about the problem. Yet, the evidence about the ill effects of noise does not allow for complacency or neglect. For instance, researchers working with children with hearing disorders are constantly reminded of the crucial importance of hearing to children. In the early years the child cannot learn to speak without special training if he has enough hearing loss to interfere effectively with the hearing of words in context (Bugliarello, et al., 1976).

Molesworth, Burgess and Gunnell (2013) observe that as of now, there are no solutions to reduce sound pollution. On a personal level, everybody can help reduce the amount of noise by abstaining from too much environmental sound. Individuals can also reduce the noise in their homes by lowering the volume of the radio, music system and the television. Listening to music without headphones is also a good step forward. Removal of public loudspeakers is another way in which the pollution can be countered. It is only when our understanding of noise pollution is complete that can we take steps to eradicate it completely.

METHOD

We aimed at a rapid assessment of our subject matter; therefore, our study was designed as a survey. The survey questions were in regard to the respondents’ activities in the market; respondents’ knowledge of what constitute noise; their awareness of noise pollution; and the respondents’ health consciousness. The population for this study comprises 383,250 open market traders (according to market records). A sample of 399 was drawn from this population using the Taro Yamane formula: $n = N/ (1+N [e]^{2})$. A pre-coded 12-item questionnaire was used as the data

collection instrument. These items addressed variables directly related to our research questions. A pretest of the research instrument was conducted using 20 members from the selected focal respondents. Results from this pretest cleared all ambiguities, paving the way for data collection proper. The street intercept method was used to collect data among volunteer-traders who were met at the point of their different businesses within the context of the Onitsha main market.

RESULTS

The gender distribution in our sample was 60 percent male and 40 percent female. This appears to corroborate the suggestion that more male Igbos take to trading than the female who enroll in schools. The majority of the traders were 30 years and above. More than half of the respondents (50%) had primary education; 44 percent had secondary education while 6 percent said they had university degrees.

Respondents who believe that shouts and calls form a critical aspect of doing their business?

We sought to determine whether select Onitsha open-air market traders believe that shouts and calls are essential to the business that they do. The questions on this issue were measured using question items 5-6 in the questionnaire. The data generated are as presented in figure 2.

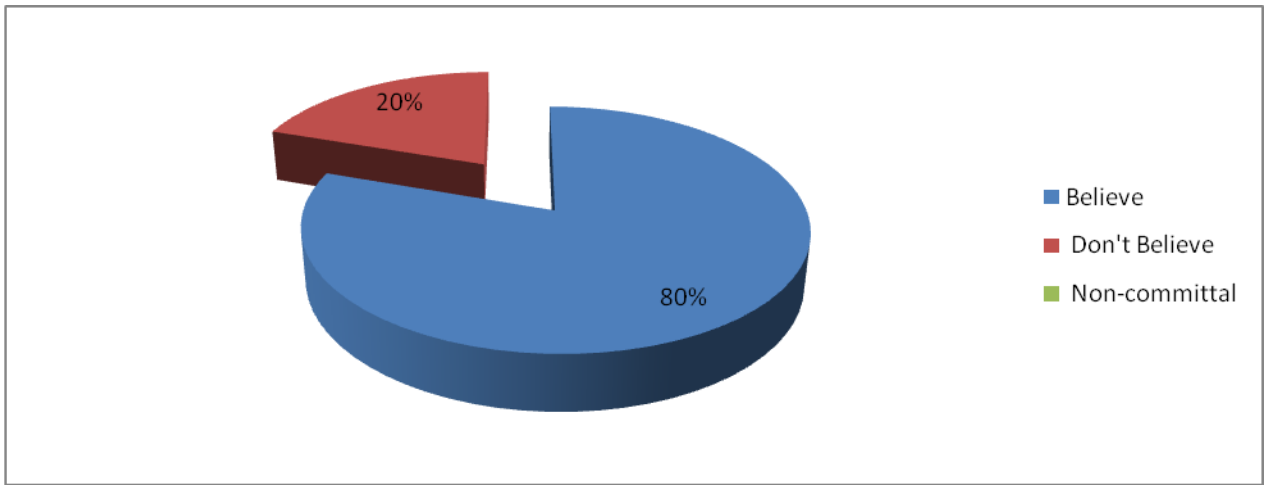

Figure 2: Respondents' perception of shouts and calls as a critical aspect of open-air market activity

Data in figure 2 show that more than two-thirds of the respondents believe shouts and calls form a critical element that aids their business. About 10 percent of the respondents do not believe while 9 percent was non-committal. The belief of the majority here might not be unconnected with the findings in Allen (2012) that there is the belief in some quarters that you are not a market trader if you don't shout and that there is no joy in a market shrouded in silence.

Onitsha market traders' perception of what constitutes noise pollution in the context of the market?

We attempted to establish what our respondents knew about noise pollution using an open ended question that asked to know how the traders would describe noise pollution in the market. Emerging themes show that the majority described noise pollution as loud irritating sound that you have to put up with. The following selected lines reflect their answers:

> "it just discomforting to be subjected to music you are forced to listen to from record stores…those stores; they the ones we bear here"
>
> "the sounds we hear daily here is not pleasant but what can we do…it's what we see"
>
> "I'm so close to traffic here and the sounds are terrible…but that's township"
>
> "When you have a big market like main market…and people doing business…of course noise is natural. It is not very good most times…but it is market"
>
> "In the market the noise and smoke of generating sets can be irritating…most times you can't hear yourself…it's like a war front where you have to shout orders…you know…I fought the Biafra war"

The bottom line here is that noise, though irritating, is a necessity within the market setting. This corroborates the opinions among Istanbul's Beskitas open-air market traders when noise in the market was banned by the government. These lines are characteristic of their views:

> "There's a new noise ordinance in town, demanding the vendors keep their voices low. No shouting… it's ludicrous.
>
> "Imagine going to a stadium to see a soccer game…would you enjoy the game without shouting? Bazaars are just like stadiums, if you can't shout there is no joy."

> "I swear its nothing but rubbish…when we shout we attract customers. If I'm selling something for seven lira a kilo, and someone else for nine, they can come and buy from me if it suits them." (http://www.pri.org/stories/2012-05-21/istanbul-stirs-passion-ban-shouting-open-air-market)

Awareness of the health implication of noise pollution among Onitsha market traders

The idea of noise being harmful was lost on the respondents. Noise was just an irritant to them. The questions on this issue were measured using question items 8-13 in the questionnaire. Table1 is a reflection of their responses.

Table 1: *Respondents' awareness of the health implication of noise pollution*

Variable	Loss of hearing	Insomnia	Hypertension	Cardiovascular issues	Emotional Imbalance
Aware	10%	3%	7%	3%	5%
Unaware	90%	97%	93%	97%	95%
Total	100% (N=396)	100% (N=399)	100% (N=391)	100% (N=399)	100% (N=393)

Data in Table 1 show that awareness of the health implication of noise pollution among the respondents was low; going the gamut of 10% (hearing loss) to as low as 3% (cardiovascular issues). Awareness of insomnia, hypertension and emotional imbalance as health issues caused by noise pollution was also low; running along the line of 13%, 7% and 5%. The range of "unaware" was in the 90s and above. The picture here seems to be explained by Bugliarello et all (1976) which hold that even though people are aware of the threat of noise, they are not seeing it as an epidemic yet.

Respondents' health consciousness

We wanted to determine the health consciousness of the traders by probing whether they took medical check-up seriously. Affirmative responses would suggest the likelihood that these traders would take health action against the effects of noise pollution if they knew what they are.

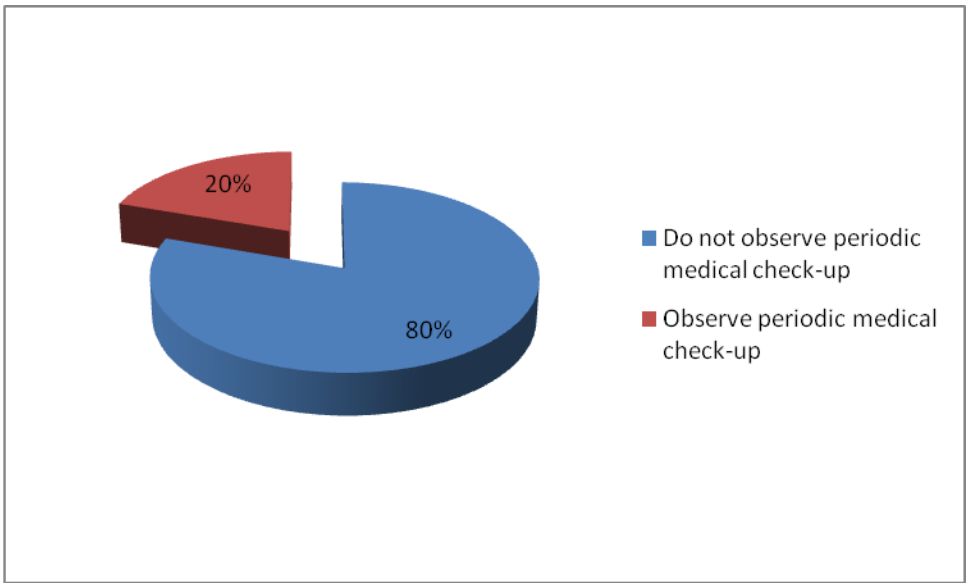

Figure 3: Respondents' observance of medical check-up

An overwhelming number of the respondents were of the response that they do not go for medical checkup. Data in figure 3 show that 80 percent of the respondents gave the option that they did not observe periodic medical checkup while 20 percent indicated that they did. This result seems to almost tally with Eke, ?, Joe-Ikechebelu and Okoye (2012) which found that traders in Southeast Nigeria have low level periodic medical check-up practice.

Awareness and implementation of protective measures against noise pollution

The fifth research question sought to find out who among the traders in Onitsha commercial city was aware of and took protective measures against noise pollution.

Table 2: *Respondents' awareness of protective measures against noise pollution*

Variable	Reducing Radio/TV Volume	Control of the use of loud speakers	Discontinue use of head phones	Move from noisy location	Periodic medical check-up
Aware	2%	6%	5%	11%	2%
Unaware	98%	94%	95%	89%	98%
Total	100% (N=397)	100% (N=399)	100% (N=394)	100% (N=399)	100% (N=399)

Data in Table 2 show that awareness of the protective measures against noise pollution among the respondents was low; as low as 11 percent knew that changing locations can mitigate the effects of noise while a very low 2 percent knew reducing the volume of the radio and TV can reduce the effects of noise; 5-6% of the respondents knew control of loud speakers and discontinuing the use of headphone can serve to reduce the impact of noise pollution. About 90 percent of the respondents, on the average, were unaware of these protective measures against noise pollution.

Table 3: *Respondents who implemented protective measures against noise pollution*

Variable	Reducing Radio/TV Volume	Control of the use of loud speakers	Discontinue use of head phones	Move from noisy location	Periodic medical check-up
Implemented	10%	5%	9%	12%	20%
Did not implement	90%	95%	91%	88%	80%
Total	100% (N=399)	100% (N=399)	100% (N=398)	100% (N=396)	100% (N=399)

The analysis in Table 3 shows that the majority of the respondents (90% on the average) did not take protective measures to mitigate the effects of noise pollution as against 8 percent, on the average, that did. This might be as a result of the issue of low level of awareness of these protective measures.

DISCUSSIONS OF FINDINGS

Our rapid assessment was conducted among 399 market traders spread across Onitsha main market, Anambra State, Nigeria. The overall results offer a wide range of conclusions.

The key research question asked to know if traders in Onitsha main market are aware of the health implication of noise pollution prevalent in their context. Findings from the study led to the conclusion that the respondents studied are not aware of the health implication of noise pollution. Findings from qualitative analysis show that the respondents were of the view that sounds in the market always disturb them but that these sounds also aid the flow of business in the market. This agrees with Uchegbu

(1998) that during the processes of carrying out business activity, operators of informal enterprises generate noise in their areas of operation most especially from hawkers, record selling and the like.

Our rapid assessment also indicates that a greater number (80%) among the respondents did not observe medical checkup. Similarly, about 90 percent of the respondents (on the average) are oblivious of the health implication of noise pollution; and, 90 percent, on the average, neither knew, nor implemented measures to mitigate the effects of noise pollution.

CONCLUSION/ RECOMMENDATIONS

The intangibility of noise may well explain why it has not received as much attention as other types of pollution, such as air pollution, or water pollution. The experience from our rapid assessment would suggest that noise pollution is not being given the full attention it deserves as a health threat. Eighty percent of the focal group covered apparently did not care for their healthy living since the idea of medical check-up was lost on them. This indifference seems to be the attitude towards noise pollution as a health issue both by these potential victims and governmental elements that should wise them up on the health hazard posed by noise pollution and the necessary protective measures to apply.

On billboards along Nigerian highways and streets, we would likely see campaigns against HIV/AIDS. Also, in hospital waiting rooms you would likely see health posters on malaria.

HIV/AIDS billboards and malaria posters are readily seen in public but not much seems to be seen or heard about the issue of noise pollution. This appears to lend credence to the belief that noise pollution is not regarded as a serious health threat which warrants wholesale publicity in Nigeria, as is the case with health issues like HIV/AIDS and malaria. Therefore, publicity on noise pollution as a health threat becomes imperative in order to enlighten the citizenry.

Since it appears that a greater percent of our respondents were not certain as to whether noise pollution has any harmful effects, and less attention seems to be paid on noise pollution as a health issue in Nigeria, this study recommends that:

1. More awareness campaigns should be carried out by concerned agencies like NESRA to educate the majority of the Nigerian citizenry on the issue of noise pollution, its implication to healthy living and protective measures against it.
2. The Nigerian government should pursue legislations that would enable the enforcement of the reduction of noise in our environment as is obtainable in the United States and the EU.

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