ASSESSMENT OF NOISE LEVEL IN RELIGIOUS HOUSES AND THE RESIDENTS' PERCEPTION TO NOISE POLUTION IN ILARO COMMUNITY

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ABSTRACT

Noise exposure is increasingly seen as an important environmental public health issue. Noise level assessment was carried out in 11 religious buildings and questionnaires were distributed to the residents near the religious buildings. The highest indoor noise level was recorded in the RC Church and CM Mosque with a mean indoor noise level of 100.2 and 64.9 dBA respectively while the least noise level was however recorded in LC Church and MM Mosque with a noise level of 86.2 and 52.2 dBA respectively. Indoor noise level in all the religious houses were beyond the permissible limit recommended by World Health Organization while all except one had outdoor levels below the recommended limit. This indicates that the residents near these religious building are exposed to loud noise and these may lead to various physiological and mental effects on the residents. The respondent's reaction to noisy environment showed 73.3% agreed that they feel annoyed when the noise is loud, 6.5% agreed to be irritable. 50.5% of the respondents agreed that loud noise lead to sleep deprivation. During construction the religious buildings should be made to be sound-proof to avoid the sound from disturbing the residents near them.

Keywords: Effects, Noise, Religious buildings, Speakers

INTRODUCTION

The noise is an unwanted sound that may cause some psychological and physical stress to the living and non-living objects exposed to it (Singh and Davar, 2004). Noise exposure is increasingly seen as an important environmental public health issue (Clark and Stanfeld, 2007). Noise is a prominent feature of the environment including noise from transport, industry and neighbours and it interferes in complex task performance, modifies social behaviour and causes annoyance (WHO, 2015). Noise level has increased rapidly over the years due to increase in human population and human activities such as transportation, urbanization and industrialization (Hunashal and Patil, 2012). Noise is a potential hazard to human health, communication and enjoyment of social life. Depending on its duration and volume, the effects of noise on human health and comfort are hearing defects, increased blood pressure, irregularity of heart rhythms, sleeplessness, disturbed sleep, annoyance, irritability and stress and also indirect effects on work performance, such as reduction of productivity and misunderstanding what is heard (Oyedepo, 2013; Olaosun, Ogundiran and Tobih, 2009). Noise exposure is increasingly seen as an important environmental public health issue (Clark and Stanfeld, 2007).

According to Akintaro (2014), religious houses are springing up at an alarming rate in all available spaces because, religion is believed to provide solutions to numerous problems confronting people especially Africans. In Nigeria, there is freedom of worship but central to this is the environmental effect the produced noise effects on people in the community. Religion is a stabilizing force which bound the community as a social force for social and moral changes (Ojoajogwu, 2014). Nigeria is a multi-religious country and the activities in these religious centres mostly take the form of congregational worships in churches, mosques and other locations like motor-parks, fields and some private residential buildings in the daytime and sometimes throughout the night. Significant noise levels are generated assisted by loud public address systems which further escalate the voices of the worshippers with blaring noise from the religious buildings. However, despite the ear-splitting nature of the noise and the adverse effect on human health, not much has been done by the government to address this important public health issue. This study helps to investigate the noise level in various religious houses and the perception of residents close to the religious buildings in Ilaro community.

MATERIALS AND METHODS

Study area

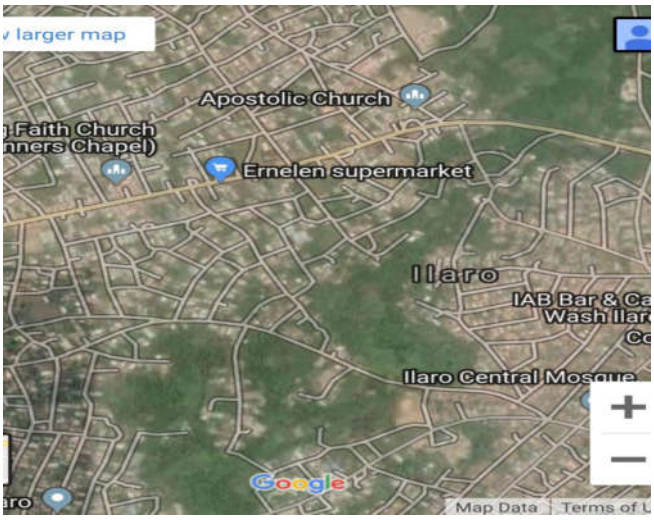

Plate 1: www.google.com

Noise level assessment was carried out in 11 religious houses. Three Mosques and eight Pentecostal churches were selected for this research work in Ilaro, Ogun state Nigeria. Three different locations were selected for each religious house for measuring the noise level; indoor, 10m outdoor and 20m outdoor from the religious houses. The noise level assessment was done once in a week for 4 weeks.
At each location, the noise meter was operated on continuously for a measuring period of 10 minutes. Noise level was measured in Pentecostal churches on Sundays during worship sessions while noise level in mosques was measured during Jumah service. The sound level meter was hand-held and well positioned from the noise source. Sample size of 206 was also calculated using p = prevalence at perceived health effect 84% (0.84) according to Akinyemi and Ojo, (2016) and a degree of freedom of 0.05. Two hundred and six questionnaires were distributed to the residents willing to participate in the study, living near the various religious buildings.

RESULTS AND DISCUSSION

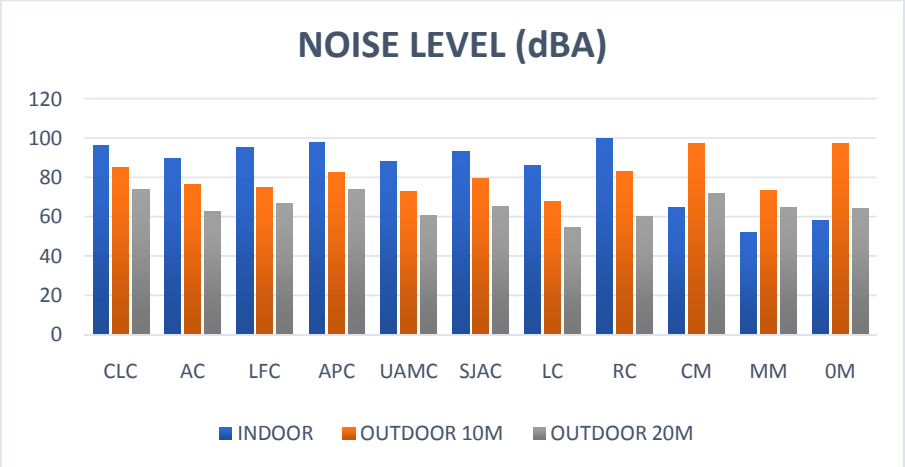

Figure 1: shows the noise level indoor and outdoor of the various religious buildings assessed

Figure 1 shows the mean indoor noise level measured in various religious buildings. The highest indoor noise level was recorded in the RC church with a mean indoor noise level of 100.2 dBA, followed closely by the AC church with a mean noise level of 98.1 dBA, the least noise level was however recorded in LC church with a noise level of 86.2 dBA. The highest indoor noise level was recorded in the central mosque with a mean indoor

noise level of 64.9 dBA, followed closely by the OM mosque with a mean noise level of 58.1 dBA. The least noise level was recorded in MM mosque with a noise level of 52.2 dBA. It was however observed that of all the religious houses assessed only MM mosque while all others exceeded the WHO permissible noise level of 55 dBA in residential areas. It was observed that the churches had different music organs; drum set, piano, guitar and many more whilst the big speakers further projected the sounds from the various music organs. The churches were well built but lacked acoustic sound-proof and the noise emanating from the churches could be heard outside the buildings. The mosques had the big speakers situated outside the building thus the noise level inside the mosques were low compared to the churches.

At 10m away from the source, The AC Church recorded the highest equivalent noise level of 73.9 dBA while LC Church recorded the least. At a distance of 20m away from the source only three churches recorded noise levels below permissible limits of 55 dBA. The values recorded were 41.3, 41.3 and 51.1 dBA corresponding to LC, RC and Anglican Churches respectively as illustrated in figure 1. At 10 m away from the source, Ilaro CM mosque recorded the highest noise level of 97.2 dBA and OM mosque recorded the least value of 71.1 dBA. The mosques recorded noise level beyond the permissible limit at 20m away from the source. This could be due to the fact that speakers in mosques are located outside the building and the speakers are also highly elevated, this could possibly project noise away to farther distance than the churches.

This study is in accordance with a study by Usikalu and Kolawole (2018); Ahsan, Hossen and Islam (2015) in which the selected locations were above permissible limits although the noise level was attributed to vehicular movements and loud speakers

Table 1: Sociodemographic characteristics of the respondents

Characteristics	Frequency(n=206)	Percentage (%)
Gender		
Male	96	46.6
Female	110	53.4
Age Range		
15-24 years	44	21.4
25-34 years	74	35.9
35-44 years	37	17.9
45 years and above	51	24.8
Religion		
Christianity	98	47.6
Islam	105	50.9
Traditional	3	1.5
Others	-	
Level of Education		
Primary	4	1.9
Secondary	141	68.4
Tertiary	58	28.2
No education	3	1.5

The table 1 above shows the socio-demographic characteristics of the respondents residing close to religious houses. Female had a percentage of 53.4 as compared to 46.60 for male. Majority of the respondents fell in the age range of 25-34 years while the least was recorded in the age range of 15-24 years. 50.9% of the respondents were Muslims while 47.6% were Christians and 1.5% were traditional worshippers. Majority of the respondents also had secondary level of education (68.4%) while 1.5% of the total respondents had no education.

Table 2: Perception to noise in the environment

Characteristics	Frequency(n=206)	Percentage (%)
Loud noise is an environmental problem		
Yes	165	80.1

No		41		19.9
Quality of sound in your environment				
Silent		-		
Moderately noisy	137		66.5	
Noisy		55		26.7
Very noisy		14		6.8
Reaction to noisy environment				
Annoyance		151		73.3
Irritable		34		16.5
Indifferent		7		3.4
I don't know		14		6.8
Level of annoyance				
Little		29		19.2
Moderate		70		46.4
High		52		34.4
Loud noise is more disturbing				
When about to sleep		104		50.5
When in pains		60		29.1
When nervous		42		20.4
Type of noise most annoying				
Noise that is loud and sudden		110		53.4
Noise that is loud and intermittent	34		16.5	
Repetitive loud noise		41		19.9
All of the above		21		10.2
Loud noise can affect human health				
No		57		27.7
Cause temporary hear loss	0		0	
Cause tinnitus (ringing in ears)		1		0.5
Cause insomnia		148		71.8

Table 2 above shows the perception of noise as an environmental problem by the residents close to various religious buildings. 80.1% of the respondents agreed to loud noise being an environmental problem. None of the respondents agreed that their environment was silent and 66.5% agreed that their environment was moderately noisy while 6.8% said the environment was very noisy. The majority opting for moderately noisy may have been used to the noise emanating from the churches and mosques.

The respondent's reaction to noisy environment; 73.3% agreed that they feel annoyed when the noise is loud, 6.5% agreed to be irritable while 3.4 % feel indifferent towards the loud noise. The annoyance level showed that 46.4% of the respondents were moderately annoyed while 32.4% were highly annoyed. 50.5% of the respondents agreed that loud noise is more disturbing when they are about to sleep, 29.1% when in pains and 20.4% when nervous. 53.4% reported that loud and sudden noise is the most annoying, 19.9% agreed it is repetitive noise, 16.5% agreed its is loud and intermittent noise while 10.2 % agreed that they find all of the above annoying. 71.8% agreed that loud noise can cause insomnia while 27.7% agreed that loud noise cannot cause any health effect in humans. This was also in accordance to a study carried out by Akintaro, 2014 in Osun state stating that respondents are not aware that noise has effects on human health

CONCLUSION

Indoor noise level in all the religious buildings were beyond the permissible limit recommended by WHO while all except one had outdoor levels below the recommended limit. This indicates that the residents near these religious buildings are exposed to loud noise and these may lead to various physiological and mental effects on the residents The data gotten from the respondents showed that majority of them were affected by the loud noise coming from the religious buildings close to them, some of the effects include annoyance, irritability and sleep disturbance, although some of them were not even aware that noise pollution can interfere with day to day

activities like communication, sleeping, studying, resting, and long term exposure to chronic noise can lead to physiological responses like increased heart rate, blood pressure and endocrine outputs. It has been reported that these effects differ from person to person due to other factors. It is however important to study noise pollution health effects, to curb this public health issue on time. I strongly recommend that sound limiters should be attached to sound systems to reduce the noise intensity and during construction the religious buildings should be made to be sound proof to avoid the sound from disturbing the residents near them. Government agencies responsible for noise control should ensure that the religious leaders conform to the permissible limit of noise in their environments.

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