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Age and Gender differences in perceptions and health impacts of noise in an academic environment

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ABSTRACT

This study assessed age and gender differences in the perceptions and health impacts of noise exposure within the University of Lagos main campus. An opinion pool of staff and students (male and female) was sampled with an online questionnaire survey that inquired about the likely contributory sources of noise, and health impacts. The findings revealed that the perceptions of the impact of noise exposure were generally similar irrespective of gender, but varied by age group. This study provides crucial insights to inform the knowledge-based formulation of policies and regulations for noise abatement and control.

1. Introduction

Noise pollution, which has significantly risen especially in urban environments, is a major source of concern in our environment today (Gholami et al., 2012). Various sources of noise pollution have been identified and their impacts studied in various contexts (Ruge et al., 2013; Zuo et al., 2014), and can pose major threats to the wellbeing of individuals living in such environments.

There are several contributory sources of noise pollution in our environment, including vehicles, audio systems from social events and religious houses, construction and other human activities (Bublić et al., 2010; Sotiropoulou et al., 2020). Sequel to this rise in noise levels, various national and global agencies have suggested regulatory limits for acceptable noise levels (WHO, 2018). However, not many seem aware of the extent of the often negative impact of these noise sources of pollution to their wellbeing (Munzel et al., 2018).

In a previous study, Alademomi et al. (2020) had mapped the noise level variations within the University of Lagos main campus, with the use of spatial and statistical analysis, and a conformity assessment based on internationally recognized noise limits. In the study, it was shown that the noise levels within the university campus exceeded the tolerable limits for academic, commercial, and residential areas set by World Health Organization (WHO) and the National Environmental Standards and Regulations Enforcement Agency (NESREA).

In this study, we go further to assess the knowledge and perceptions of noise levels based on a well-structured questionnaire survey with members of the university community. We also evaluate the impacts of the noise on the attitudes and health of the respondents, based on age and gender.

2. Methods

2.1. Study area

The University of Lagos is a higher institution of learning and a popular choice for tertiary education by many residents of Lagos and Nigeria. Its urban location makes it a beehive of activities beyond academia, including commercial and social activities, thereby exposing it to regular noise pollution. The map of the study area is as shown in Fig. 1.

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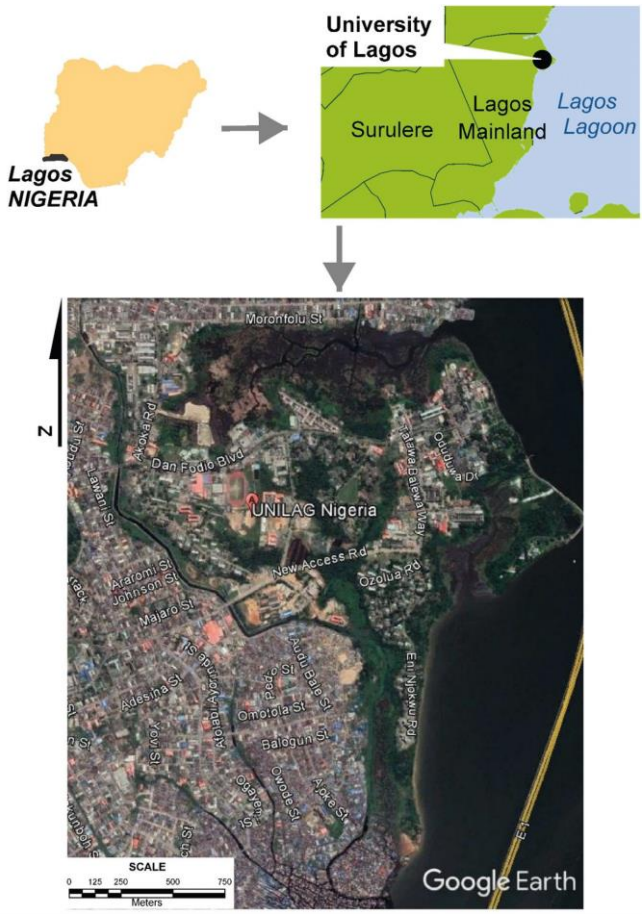

Figure 1. Map of the study area

2.2. Questionnaire survey and analysis

A questionnaire was created using Google forms. Google forms allow for either usage and/or customization of existing templates or creation of a new form using the Graphical User Interface (GUI) drag and drop elements. The latter was the chosen option for the design of the questionnaire; divided into two pages to limit the volume of information displayed per page and give users a feel of progress as they quickly finish a page before moving to the next. Most of the questions required respondents to select a single option on a 5-level intensity scale. Other questions had predefined options for selection (especially the checkboxes) and a single yes/no question was included as well. The questions asked in the questionnaire are summarized in Table 1 below.

3. Results

There was a total of 324 respondents comprising of 209 males (65%) and 115 females (35%). The age distribution is as follows: Less than 20 years (66.4%), 20 – 25 years (66.4%), 26 – 30 years (16.4%), 31 – 40 years (8.6%), above 40 years (0.9%). The findings are shown in Tables 2- 4 and Fig. 2.

From Table 2, it can be seen that majority of the male (113) and female (63) respondents perceive average noise level on campus as normal. Both genders also agreed that the noise level is far from being very low as only 2 respondents each chose this option. A similar trend is observed in their responses based on age. From Table 3, majority of the respondents (175) agreed that the noise level on campus is normal. About 67% of this (174) is from responses of the age group 20 – 25. Table 4 shows that both males and females on campus believe that noise level sometimes influences their sleep pattern. Majority of the males agreed that they seldom feel dizzy due to noise levels, while most female respondents believe noise levels never make them dizzy. A similar response was seen in the responses to influence of noise on headache. In Table 5, majority of the male and female respondents agreed that noise levels on campus rarely cause ear aches and tinnitus.

Figure 2 shows the impact of these noise levels on their concentration levels, with most of the respondents still faring quite well even at noise levels deemed beyond moderate to them. From Figure 3, social activities are percieved by both the male and female gender to be the main noise source causing irritation followed by interaction with humans.

Table 1. Summary of questions provided for survey.

S/N	Questions
1	Age
2	Gender
3	What is your assessment of the average noise level within the campus?
4	Which of the following challenges/issues do you experience due to excessive noise?
5	How often do you experience earaches as a result of noise?
6	How often do you experience headaches from excessive noise exposure?
7	How often do you feel dizzy after excessive noise exposure?
8	How often do you experience ringing in the ears (tinnitus) due to excessive noise exposure?
9	How well do you concentrate beyond noise levels deemed moderate to you?
10	What noise sources generally irritate you the most?

Table 2. Perception of average noise levels based on gender

Average noise level	Male	Female
Very High	13	5
High	60	43
Normal	113	63
Low	21	2
Very Low	2	2
Total	209	115

Table 3. Perception of average noise levels based on age

Average noise level	Age				
	< 20	20 – 25	26 – 30	31 – 40	> 40
Very High	1	13	3	1	0
High	5	66	23	7	2
Normal	16	117	24	18	0
Low	2	16	3	2	1
Very Low	1	3	0	0	0
Total	25	215	53	28	3

Table 4. Gender differences in response to noise causing sleeping difficulties, dizziness and headaches

	Sleeping Difficulties		Dizziness		Headaches	
Frequency	M	F	M	F	M	F
Every time	18	13	5	3	20	10
Never	25	11	62	41	12	8
Oftentimes	35	19	18	9	49	30
Rarely	51	32	86	36	49	34
Sometimes	80	39	38	25	79	33
Total	209	115	209	115	209	115

**M- male, F - female*

Table 5. Gender differences in response to noise causing earaches and tinnitus

Frequency	Earaches		Tinnitus	
	M	F	M	F
Every time	2	0	3	5
Never	40	27	59	24
Oftentimes	17	12	10	5
Rarely	112	53	101	54
Sometimes	38	22	36	26
Total	209	115	209	115

**M- male, F - female*

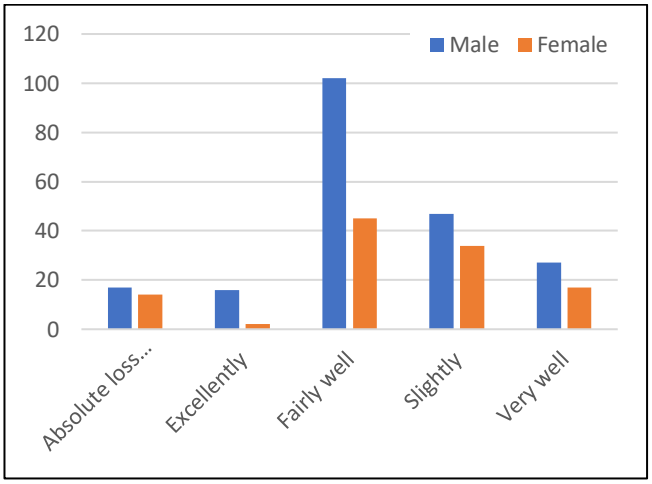

Figure 2. Gender differences in response to noise affecting concentration

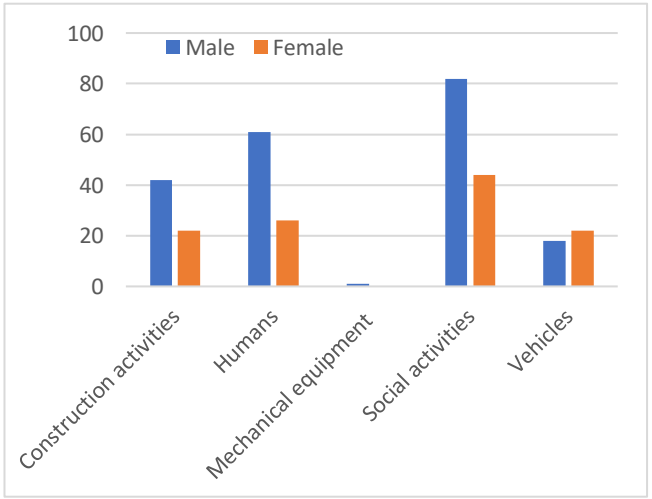

Figure 3. Gender differences in response to noise sources causing irritation

4. Discussion

A significant proportion of respondents below the age of 25 years, and between the ages of 31 – 40 perceive noise levels as being normal/moderate on the campus. With the exception of those between the ages of 31 – 40 years, the perception of moderate noise levels by the young population – under 25 years, relative to others is probably because of the high auditory preceptory levels which is generally expected in such a young population. It is possible that they might be major contributors to human sources of noise in the environment, hence the relative indifference/numbness to high noise levels. Between the ages of 26 – 30, most respondents are split between moderate and high noise level perceptions. While above 40 years of age, 2% think average noise levels are high, and the remaining perceive low noise levels. The perception that human and social activities are the major sources of noise on campus can be attributed to the constant social activities such as sports and student group interactions.

5. Conclusion

Prolonged exposure to noise levels can be detrimental to human well-being. Unfortunately, many are oblivious of the impact of noise pollution to their health and hence do not take adequate measures to mitigate this – since the impact can be due to other widely known sources. Severe noise can lead to mood swings, accumulated stress, loss of concentration among other ailments. And the impact of these noise-related effects varies across gender and age groups.

For a healthy learning environment, especially in an institution of higher learning, serenity is pertinent to ensure knowledge retention, focus and healthy living that ensures academic success. Hence, universities should introduce and implement regulations that would minimize exposure to unhealthy noise levels for the wellbeing of their students, staff and visitors.

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