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Noise Exposure Levels and Health Impact in Ikorodu, Lagos State, Nigeria

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Abstract

Background: Noise pollution poses a significant threat to urban health in Nigeria, yet the issue remains unaddressed. This study assessed noise exposure levels and their health impact among residents of Ikorodu, Lagos State.

Methods: A cross-sectional design was used to collect data from 500 respondents across residential, commercial, and industrial areas. Noise levels were measured using calibrated sound level meters during morning, afternoon, and evening periods. Questionnaires were used to collect socio-demographic information and perceived health effects. Data were analyzed using descriptive statistics, one-way analysis of variance (ANOVA), and Pearson and Spearman correlation tests at a 5% significance level.

Results: Demographic analysis showed that the majority of participants were aged 30–39 years (57.4%) and male (54.5%). Mean noise levels ranged from 65.5 dB in residential areas to 81.6 dB in commercial areas, exceeding WHO (55–70 dB) and LASEPA limits. The mean health-impact score was 3.52, reflecting a high level of perceived annoyance and discomfort. One-way ANOVA indicated significant differences in mean noise levels across areas ($P<0.001$). Both Pearson and Spearman rank correlation analyses showed a strong positive correlation ($P<0.01$) between noise level and health impact, indicating that as noise exposure increases, perceived health effects, including stress, headache, fatigue, and sleep disturbance, rise.

Conclusion: The study concludes that noise pollution in Ikorodu exceeds safe limits and significantly affects residents' well-being. Strengthened noise-control regulations, periodic monitoring, and urban planning interventions are recommended.

Keywords: Decibels (dB), Nigeria, Noise pollution, Sound meter, Urban health

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Introduction

Noise pollution is a global concern driven by population growth, urbanization, and industrialization. It is an invisible environmental hazard that can cause long-term health problems (1). Noise is commonly defined as unwanted, excessive, or irritating sound that adversely affects humans, animals, property, and the environment (2). Measured in decibels (dB), noise has become an integral part of daily life (3). Environmental noise levels vary widely, from the rustling of leaves (20–30 dB) to a thunderclap (120 dB) or a siren's wail (120–140 dB) (4). Major sources of noise pollution include industrial operations, religious centers, road and rail traffic, music studios, machinery, power generators, construction activities, neighborhoods, and aircraft (5).

Often referred to as a "silent killer," noise pollution is often overlooked by many people due to its ubiquitous nature (6). It is considered the third most hazardous form of pollution after air and water pollution (7). Prolonged noise exposure can lead to cardiovascular diseases, hypertension, stress, anxiety, and sleep disturbances (8). Additionally, noise pollution negatively impacts social interactions, the quality of the living environment, work performance, and communication (5). Among all noise-related health issues, hearing loss is the most prevalent (9). Sound levels exceeding 80 dB can cause irreversible hearing damage (6). Noise exposure is responsible for approximately one-third of the 12% or more of the global population suffering from hearing impairment (9). Although noise pollution affects everyone, it is particularly detrimental to vulnerable groups, including children, pregnant women, newborns, fetuses, and infants (5,10). Children living in noisy environments often experience stress, memory deficits, attention problems,

and reading impairments (10). Despite these severe health consequences, noise pollution receives less attention compared to other environmental pollutants (11). The problem is especially severe in urban centers, where high population density and increased human activities contribute to elevated noise levels (11). Addressing noise pollution in urban areas could significantly reduce the prevalence of noncommunicable diseases such as cardiovascular disease, metabolic disorders, and mental health issues (12).

Lagos, Nigeria, is facing severe noise pollution due to high population density and extensive economic activities. As Nigeria's most populous and economically significant city, Lagos is a major commercial hub in Africa. The city has an exceptionally high population density of 7,530 individuals per square kilometer (13) and a vehicle density exceeding 222 vehicles per square kilometer (14). Lagos also accommodates approximately 70% of Nigeria's industrial and commercial establishments (15). The intense noise generated from these sources has been the subject of several studies, including those by Adekunle et al. (16), Byaello (17), and Osuji and Usiosefe (18). However, despite these research efforts, noise pollution in Lagos remains inadequately addressed, and policy recommendations from previous studies have yet to be effectively implemented. Consequently, further studies are essential to raise public awareness and encourage policymakers to take necessary action. This study aimed to assess noise pollution levels in Ikorodu, Lagos, and their impact on residents by land use. The study also aimed to compare noise levels in the study areas with those of major cities in Nigeria and selected countries worldwide. This will provide data-driven insights that can guide effective noise management policies in the study areas.

Materials and methods

Study Area

The study was conducted in Ikorodu, Lagos, a city in southwestern Nigeria, located at latitude 6°31'27.7644"N and longitude 3°22'45.1416"E (Figure 1).

Lagos, a highly cosmopolitan city, has an estimated population of approximately 17.5 million, with an annual growth rate of 3.2% (19). The city experiences a tropical savanna climate, characterized by distinct wet (April to October) and dry (November to March) seasons. Temperature variations are relatively minimal, with average monthly temperatures ranging from 24 °C (December–January) to 30 °C. Lagos receives approximately 1657 mm of mean annual rainfall. As Nigeria's most populous and industrialized state, Lagos is home to diverse ethnic groups, predominantly the indigenous Yoruba, as well as settlers from other regions, including the Igbo, Hausa, and various minority groups. Due to its rapid urbanization and economic activities, Lagos faces significant noise pollution from vehicular traffic, industries, markets, religious centers, and artisanal workshops.

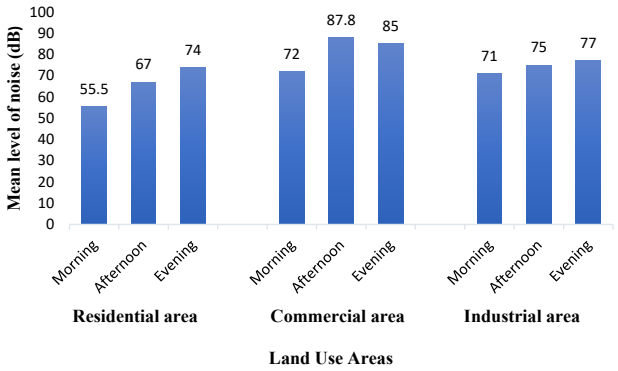

Figure 1. Mean level of noise pollution in the study area

Ikorodu, situated in the northeastern part of Lagos State along the Lagos Lagoon, shares a boundary with Ogun State. It covers approximately 411.3 square kilometers (158.8 square miles) and has a population exceeding 1 million (19). If treated as a separate entity, Ikorodu would rank as the 12th-largest city in Nigeria. The area is densely populated and features numerous industrial estates, markets, commercial establishments, religious centers, and high vehicular traffic. These factors make Ikorodu a suitable location for this study, as it offers a diverse and representative demographic of the state.

Study design and data collection

Samplings were conducted on working days in November 2024 during daytime hours—specifically in the morning, afternoon, and evening—to capture variations in noise exposure across the day. A multistage sampling procedure was employed to select participants for the study. First, three sampling sites were selected based on distinct land-use patterns (Table 1). A cross-sectional descriptive approach was used to recruit 500 respondents who expressed willingness to participate in the study. After informed consent was obtained, each participant was administered a researcher-designed, structured questionnaire scored on a 4-point Likert scale. The questionnaire collected information

Table 1. Sampling locations

Land use	Locations	Coordinates
Residential	Wera estate	Latitude 6.63597, Longitude 3.50152
	Soromade street	Latitude 6.45407, Longitude 3.39467
	Alowanle close	Latitude 6.63597, Longitude 3.50152
	Temade street	Latitude 6.46542, Longitude 3.40645
	Ojokoro road	Latitude 6.6797, Longitude 3.283500
Commercial	Benson street	Latitude 6.6235, Longitude 3.500200
	Soyebo street	Latitude 6.4541, Longitude 3.394700
	Ladega street	Latitude 6.524379, Longitude 3.3792
	Ikorodu garage	Latitude 6.6062, Longitude 3.5107000
	Ikorodu town hall	Latitude 6.4589, Longitude 3.239498
Industrial	Obang Wills Street	Latitude 6.6750, Longitude 3.5122
	A.O.J Sunmoni Street	Latitude 6.2980, Longitude 3.2072
	15/18 Investment close	Latitude 6.4907, Longitude 3.3882
	AV power line road	Latitude 6. 3795, Longitude 3.3706
	Ade Ifeyemi Avenue	Latitude 6.6370, Longitude 3.4145

on demographic characteristics (age, gender, marital status, and educational level) and assessed participants' perceptions of the health impact of noise exposure.

To ensure the reliability of the research instrument, a pilot study was conducted prior to the main data collection. Sixty respondents, who were not part of the main sample, participated in the pilot test. The instrument demonstrated good internal consistency, yielding a Cronbach's alpha reliability coefficient of 0.78, within the acceptable range of 0.5 to 0.83, for science research. Based on these results, the questionnaire was deemed suitable for data collection in this study.

Noise level measurement

A Dwyer SM-100 digital sound level meter (SLM), also known as a sound pressure level (SPL) meter, was used to measure noise levels at the selected locations. The sound level meter consists of a microphone, an attenuator, and an amplifier. The microphone captures sound waves and converts them into an equivalent electrical signal. This signal is then processed by a weighting network that adjusts the response to approximate human hearing sensitivity. The resulting sound level, measured in decibels (dB), is displayed on the meter's screen. Before use, the sound meter was calibrated by connecting the calibrator to the sound level meter's microphone and ensuring that both the calibrator and the sound level meter read the same value. Noise measurements were taken three times a day—morning (7.30–8.30 am), afternoon (11.30 am–12.30 pm), and evening (3.30–4.30 pm)—over a period of four weeks to capture daily variations in noise levels. Readings were taken each minute for three consecutive minutes, after which the mean reading was calculated and recorded.

Criteria for selection of participants

Residents who provided informed consent and had lived in the study areas for at least two years were eligible to participate. Additionally, participants were required to have no family history of hearing loss to minimize confounding factors. Residents who did not express interest or did not meet these inclusion criteria were excluded from the study.

Risk assessment of pollution

The study employed questionnaires to evaluate the effects of noise pollution on residents. A four-point rating scale was used to classify the perceived impact: no impact (1 point), low impact (2 points), medium impact (3 points), and high impact (4 points). The cutoff mean impact score was calculated using the formula:

$$\bar{x} = \frac{\sum x}{n}$$

Where $\bar{x}$ is the mean score, $\sum x$ is the sum of all individual scores, and n is the total number of scores.

$$Cutoff\ mean = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$$

The decision rule states that if the mean impact score is less than 2.50, the impact is classified as low. Conversely, if the mean impact score is equal to or greater than 2.50, the impact is considered high (20).

Data analysis

Noise levels were analyzed and presented as mean ± standard deviation (SD) using the Statistical Package for the Social Sciences (SPSS) version 17. The measured values were compared with the noise exposure limits established by the World Health Organization (WHO) and the Lagos State Environmental Protection Agency (LASEPA) to assess compliance with regulatory standards. Additionally, SPSS was used to evaluate the impact of noise pollution based on participants' responses. Bivariate analysis was used to determine differences in noise levels across land-use types. Pearson and Spearman rank correlation were used to assess associations among noise levels, impact, and variables.

Results

Demographic characteristics of the respondents

Table 2 presents the demographic characteristics of the study participants. The 30–39 years age group had the highest representation, accounting for 57.4% of respondents, followed by the 20–29 years (18.0%), 40–49 years (13.6%), 50–59 years (8.4%), and 60 years and above (2.6%) age groups. Regarding gender distribution, 61.8% of participants were male, and 38.2% were female. Regarding marital status, 62.8% of respondents were married, while 38.2% were single. Educational background analysis revealed that 53.2% of participants had attained tertiary education, 34.0% had secondary education, and 12.8% had primary education.

Noise pollution levels

Tables 3, 4, and 5 present the noise pollution levels recorded in the morning, afternoon, and evening,

Table 2. Demographic characteristics of the respondents

Designation		Frequency	Percentage (%)
Age	20–29	90	18.0
	30–39	287	57.4
	40–49	68	13.6
	50–59	42	8.4
	60 and above	13	2.6
Total		**500**	**100**
Gender	Male	309	61.8
	Female	191	38.2
Total		**500**	**100**
Marital status	Single	186	37.2
	Married	314	62.8
Total		**500**	**100**
Education	Primary	64	12.8
	Secondary	170	34.0
	Tertiary	266	53.2
Total		**500**	**100**

respectively, across different locations in Ikorodu. The results indicate that noise levels at all times of the day exceeded the permissible limits set by the World Health Organization (WHO) and the Lagos State Environmental Protection Agency (LASEPA). Among the locations surveyed, commercial areas recorded the highest noise levels, with a grand mean of 72 dB in the morning, 87.8 dB in the afternoon, and 85 dB in the evening (Figure 1). This was followed by industrial areas, which had mean noise levels of 71 dB in the morning, 75 dB in the afternoon, and 77 dB in the evening. Residential areas recorded the lowest noise levels but still exceeded recommended limits, with mean values of 55.5 dB in the morning, 67 dB in the afternoon, and 74 dB in the evening.

Impact of noise pollution

Table 6 reports the respondents' perceptions of the impact of noise pollution. The distribution of responses indicates that 3.5% of participants reported no impact, 6.5% experienced a low impact, 29.0% reported a moderate impact, and 65.8% experienced a high impact. The computed mean impact score (3.52) exceeded the cutoff mean (2.50), indicating that noise pollution had a significant impact on residents in the study area. This suggests that noise pollution is a serious concern, potentially affecting the well-being and daily activities of the population.

To further assess the risk of noise pollution in Ikorodu, the mean noise levels recorded in the city were compared with those reported for other major cities in Nigeria and selected countries (Table 7). The noise levels in Ikorodu were higher than those observed in Oshodi, Lagos (4), Port Harcourt, Rivers State (23), and Kano (24). In contrast, they were lower than the levels reported in Mushin, Lagos (25), and Ibadan (26). Compared internationally, noise levels in Ikorodu were higher than those reported in China (27) and France (28), but lower than those documented in India (29), the USA (30), the UK (31), and Saudi Arabia (32). Statistical analysis revealed no significant difference ($P > 0.05$) in noise levels between Ikorodu and most of the compared cities and countries, except for Ibadan ($P = 0.001$) and China ($P = 0.001$), where significant differences were observed. Additionally, except for China, noise pollution levels in all the evaluated locations exceeded the World Health Organization's recommended safe limits.

Bivariate analysis of differences among variables

Table 8 shows differences in mean noise levels across the three land use types (residential, commercial, and industrial). There were significant differences in mean noise levels across land-use areas ($P < 0.001$). This indicates that land use types significantly influence noise intensity. Commercial zones contribute the highest levels,

Table 3. Level of noise (dB) in residential areas

Location	Week 1	Week 2	Week 3	Week 4	Mean ± SD	WHO (21)	LASEPA (22)
Morning	55	57	54	56	55.5 ± 1.50	55	55
Afternoon	68	66	69	65	67.0 ± 1.82	55	55
Evening	72	74	74	76	74.0 ± 1.63	45	45

Values were expressed as mean ± SD; WHO: World Health Organization; LASEPA: Lagos State Environmental Protection Agency standards

Table 4. Level of noise (dB) in commercial areas

Location	Week 1	Week 2	Week 3	Week 4	Mean ± SD	WHO (21)	LASEPA (22)
Morning	71	74	71	72	72.0 ± 1.41	65	70
Afternoon	87	89	86	89	87.8 ± 1.50	65	70
Evening	85	86	85	84	85.0 ± 0.82	55	60

Values were expressed as mean ± SD; WHO: World Health Organization; LASEPA: Lagos State Environmental Protection Agency standards

Table 5. Level of noise (dB) in industrial areas

Location	Week 1	Week 2	Week 3	Week 4	Mean ± SD	WHO (21)	LASEPA (22)
Morning	71	70	71	72	71.0 ± 0.82	75	90
Afternoon	75	77	74	74	75.0 ± 1.41	75	90
Evening	77	79	75	77	77.0 ± 1.63	70	90

Values were expressed as mean ± SD; WHO: World Health Organization; LASEPA: Lagos State Environmental Protection Agency standards

Table 6. Impact of noise pollution on the residents

Impact of noise	Points	Frequency	Percentage (%)	Total	Mean total
No impact	1	14	3.5	7	1759/500 = 3.52
Low impact	2	42	6.5	26	
Moderate impact	3	115	29.0	174	
High impact	4	329	65.8	488	
Total	10	500	100	1759	

Table 7. Comparison of noise pollution levels in Ikorodu and selected cities and countries

	Noise level (dB)	Noise source	*P* value
Ikorodu	78.66 ± 1.82	Vehicular traffic and bustling market activities	
Oshodi	73.67 ± 2.54	Vehicular traffic and bustling market activities	0.167
Mushin	84.00 ± 4.00	Vehicular movement, generators, and industrial activities	0.141
Ibadan	92.40 ± 3.90	Traffic noise, markets, and industrial activities	0.001
Kano	76.10 ± 3.99	Vehicular movement, generators, and industrial activities	0.470
Port Harcourt	72.91 ± 8.40	Generators, road traffic, and use of loudspeakers	0.115
India	80.00 ± 5.80	Construction and industrial and residential activities	0.704
China	55.00 ± 3.00	Construction and industrial and residential activities	0.001
USA	80.00 ± 4.00	Transportation and industrial activities	0.704
UK	80.00 ± 2.80	Road, rail, and air traffic	0.704
France	76.00 ± 4.52	Road, rail, and air traffic	0.453
Saudi Arabia	79.85 ± 8.15	Traffic noise as a major contributor	0.735

Values were expressed as mean ± SD ($n = 6$); Ikorodu noise level = grand mean of the means of noise levels in the three land use areas.

Table 8. Differences in mean noise levels among the three land use areas (ANOVA)

Source	Sum of Squares	df	*F*	Sig. (*P*)
C (area)	25802.460	2	258.348	0.001
Residual	24818.911	497		

Table 9. Difference in noise impact across the land use area (ANOVA)

Source	Sum of squares	df	MS	*F*	Sig. (*P*)
Between groups	1077.5	3	359.17	13.8	<0.001
Within groups	388.0	496	0.78		
Total	1465.5	499			

consistent with human and vehicular density.

Differences in noise impact across the three land-use areas are shown in Table 9. There was a significant difference ($P < 0.001$) in reported noise levels across land-use areas. This supports the hypothesis that residents experience varying levels of noise-induced effects depending on exposure conditions.

Pearson and Spearman rank correlation analysis between noise levels and selected variables

Table S1 reveals the Pearson correlation between noise levels and selected variables. There is a very strong positive correlation between noise level and health impact ($P < 0.01$), indicating that as noise exposure increases, perceived health effects rise sharply. The other variables show weak or negligible associations, suggesting that noise impacts cut across age, gender, and educational differences.

Spearman's rank correlation also confirms the same strong monotonic relationship between noise level and health impact ($P < 0.01$), suggesting consistency between the variables (Table S2).

Discussion

The primary objective of this study was to assess noise exposure levels and their potential health impact in Ikorodu, Lagos, Nigeria. This research was motivated by the need to raise public awareness about the possible contribution of environmental noise pollution to the rising burden of noncommunicable diseases (NCDs) in urban populations. To achieve this aim, demographic data were collected from participants in selected locations, noise exposure levels were measured, and their health impact was evaluated.

The demographic profile of respondents indicated that the majority were males aged 30–39 years and were predominantly married. This age range represents a critical segment of the population, often referred to as the economically active or working-age group, which forms the backbone of the global labor force. Given that most of the surveyed locations were commercial or industrial zones, it is not surprising that individuals in this age group were most represented. Similar demographic trends have been reported in Lagos by Oluwole et al. (33) and Oyerinde and Adeyemi (34), who also observed a concentration of respondents within this age bracket. The predominance of male respondents may be attributed to men's greater involvement in outdoor occupations and industrial work environments, where noise pollution is more prevalent. This aligns with the findings of Yahaya et al. (35) and Monye et al. (36), who also reported male dominance in similar environmental health studies conducted in Lagos.

Furthermore, a significant proportion of the respondents possessed tertiary education. This may reflect the relatively high literacy rates in the southwestern region of Nigeria, where Lagos is located. According to Haggai et al. (37), this region boasts the highest educational attainment in the country. Other studies by Yahaya et al. (38,35) corroborate the high prevalence of educated individuals in environmental health-related surveys conducted in Lagos. The high proportion of married respondents may be attributed to the age distribution of participants, as individuals aged 30–39 years are typically within the socially normative range for marriage. This demographic pattern is consistent with findings from studies conducted by Eghomwanre et al. (39) and Gadanya and Buhari (40), which also reported a predominance of married individuals in urban survey populations in Abeokuta and

Kano, respectively.

Noise levels were highest in commercial areas, followed by industrial zones and residential neighborhoods. Statistical analysis showed a significant difference ($P < 0.001$) in reported noise levels across land-use areas, indicating that respondents experienced varying levels of noise-induced effects depending on land-use type. This distribution reflects the varying intensities of human and mechanical activities across these areas. Commercial zones were characterized by a high prevalence of vehicular traffic and market-related noise, while industrial zones primarily experienced noise from machinery and production processes. These findings are consistent with previous studies by Ibitoye et al. (41) and Byaello (17), who also reported elevated noise levels in commercial and industrial settings across Lagos. Temporal analysis revealed that noise levels peaked in the afternoon and evening, with the morning period registering the lowest levels. This pattern likely reflects the daily rhythm of urban life, where commercial and social activities intensify as the day progresses. In the mornings, many individuals are either indoors or commuting to work, resulting in relatively lower noise levels. Kareem (42) reported similar diurnal variations in Ikeja, Lagos, with afternoon and evening periods exhibiting higher noise levels. Likewise, Ibitoye et al. (41) observed elevated afternoon and evening noise across several parts of Lagos. However, an exception was noted in the study by Salami et al. (4), who reported higher noise levels in the morning in Oshodi, Lagos. Oshodi is a major transportation and commercial hub that becomes active very early in the day due to dense vehicular traffic and bustling market activities, which may explain the deviation.

Compared with the permissible limits defined by World Health Organization (WHO) and Lagos State Environmental Protection Agency (LASEPA), the noise levels recorded at the study locations exceeded the recommended safe thresholds. Furthermore, the computed mean noise impact score exceeded the cutoffs for both standards, indicating that respondents perceived noise as having a substantial adverse effect on their daily lives. Both Pearson and Spearman rank correlation analyses showed a very strong positive correlation ($P < 0.01$) between noise level and health impact, indicating that as noise exposure increases, perceived health effects rise sharply. These effects may include hearing impairment, sleep disturbances, stress, reduced productivity, and increased risk of cardiovascular and psychological disorders. Prolonged exposure to high noise levels has been associated with various health complications, including tinnitus (ringing or buzzing in the ears), hearing impairment, sleep disturbances, stress, annoyance, headaches, and reduced cognitive performance (43). Moreover, chronic exposure has been implicated in more severe health conditions such as coronary artery disease, myocardial infarction, hypertension, stroke, chronic heart failure, peripheral artery disease, and venous thromboembolism (44,45). The findings of this study align with those of Wojuade and Olateru (46), Okwudili et al. (47), and Anthonia (23), who also documented noise levels exceeding acceptable limits in various parts of Lagos and Port Harcourt, Nigeria. However, contrasting results were reported by Atilade et al. (48), who found that noise levels within the Lagos State University of Science and Technology (formerly Lagos State Polytechnic, Ikorodu) remained within safe limits. This discrepancy may be due to the nature of higher institutions, which typically maintain quieter environments conducive to learning and academic activities.

The finding that noise pollution levels in other cities and countries, compared with those in Ikorodu, generally exceeded internationally recognized safety thresholds, except in China, underscores that noise pollution is a widespread global public health issue. This underscores the urgent need for coordinated international and local interventions to mitigate its harmful effects on human health and well-being.

One limitation of this study was the use of six studies from other cities and countries to compare noise levels. This is due to the dearth of studies that aligned with the objectives of the current study. More studies would have provided more reliable results.

Conclusion

The current study measured noise pollution levels in Ikorodu, Lagos, and their impact on residents. Average noise levels across all land-use types (residential, commercial, and industrial) exceeded WHO and LASEPA standards, with commercial areas reaching the highest exposure levels (87.8 dB). The computed mean (3.52) was greater than the cutoff mean (2.50), indicating that noise pollution had a significant adverse impact on people's well-being in the areas. There is a critical need for public education and awareness campaigns to inform residents about the dangers of noise pollution. Authorities should implement effective noise-reduction measures, including urban soundproofing, stricter enforcement of noise regulations, improved traffic control, and zoning reforms. In addition, regular monitoring and periodic assessment of environmental noise levels should be institutionalized, not only in Ikorodu but also in other rapidly urbanizing areas across Lagos and similar cities. Such interventions are essential for safeguarding public health and promoting a more sustainable urban living environment.

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Authors' Contribution

Conceptualization: Yahaya Tajudeen.
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Writing – original draft: Yahaya Tajudeen.
Writing – review & editing: Yahaya Tajudeen, Abdulmalik Abdulazeez.

Competing Interests
The authors declare that there is no conflict of interest.

Ethical Approval
Ethical approval for this study was obtained from the Ethics Committee of the National Open University of Nigeria, Lagos (ethical code: 200520317). Written informed consent was secured from all participants prior to their enrollment in the study. Participants were fully informed about the purpose, procedures, potential risks, and benefits of the study, and participation was entirely voluntary.
Throughout the research process, strict adherence to the ethical guidelines for teaching and research as prescribed by the ethics committee was maintained. In addition, all procedures involving human participants were conducted in compliance with the ethical principles outlined in the Declaration of Helsinki, originally adopted in 1964 and most recently amended in October 2024. These principles include respect for individuals, beneficence, and the right to privacy and confidentiality.
Measures were also taken to ensure that participants could withdraw from the study at any point without any consequences. The data collected were kept confidential and were used solely for the purposes of this research.

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Supplementary File
Supplementary file contains Tables S1 and S2.

References
1. Anao Edene O, Eghomwanre A. Indoor Noise Exposure and Related Health Risks in a Tertiary Institution within Edo State, Nigeria. Journal of Applied Sciences and Environmental Management 2023;27:631–7. doi:10.4314/jasem.v27i3.31
2. Karki T, Manandhar R, Neupane D, Mahat D, Ban P. Critical Analysis of Noise Pollution and Its Effect on Human Health. International Journal of Educational and Life Sciences 2024;2:161–76. doi:10.59890/ijels.v2i2.1372
3. Ajayeoba AO, Olanipekun AA, Raheem WA, Ojo OO, Soji–Adekunle AR. Assessment of Noise Exposure of Sawmill Workers in Southwest, Nigeria. Sound Vib 2021;55(1):69-85. doi:10.32604/sv.2021.011639
4. Salami L, Akinbomi JG, Kayode VM, Shipe DF, Adebanjo IT, Ayoade RA, et al. Investigation of environmental noise level status in Oshodi/ Isolo local government of Lagos State, Nigeria. Glob J Eng Tech Adv 2022;10(1):107–116. doi:10.30574/gjeta.2022.10.1.0021
5. Mesene M, Meskele M, Mengistu T. The proliferation of noise pollution as an urban social problem in Wolaita Sodo city, Wolaita zone, Ethiopia. Cogent Social Sciences 2022;8(1):2103280. doi:10.1080/23311886.2022.2103280
6. Ogunlade GI, Clottey E. Traffic congestion and air quality in Lagos, Nigeria – a public health perspective [Internet]. Lynchburg (VA): Liberty University; 2023 [cited 2023 Sep 8]. Available from: https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=2125&context=research_symp
7. World Health Organization. Burden of disease from environmental noise [Internet]. Copenhagen: WHO Regional Office for Europe; 2017. Accessed July 22, 2023. Available from: https://www.who.int/publications/i/item/burden-of-disease-from-environmental-noise-quantification-of-healthy-life-years-lost-in-europe
8. Hahad O, Prochaska JH, Daiber A, Muenzel T. Environmental Noise-Induced Effects on Stress Hormones, Oxidative Stress, and Vascular Dysfunction: Key Factors in the Relationship between Cerebrocardiovascular and Psychological Disorders. Oxid Med Cell Longev 2019;2019:4623109. doi:10.1155/2019/4623109
9. Mahomed H, Panday S. Awareness, attitudes and perceptions of students towards leisure noise in Durban, South Africa. S Afr J Commun Disord 2024;71(1):e1–e10. doi:10.4102/sajcd.v71i1.1040
10. Rani P, Dhok A. Effects of Pollution on Pregnancy and Infants. Cureus 2023;15(1):e33906. doi:10.7759/cureus.33906
11. MacCutcheon D. Negative responses to urban residential noise as a social rebound effect of increasing population density: Legislative challenges and auditory territoriality. Noise Health 2021;23(108):35–41. doi:10.4103/nah.NAH_45_18
12. Formichi C, Caprio S, Nigi L, Dotta F. The impact of environmental pollution on metabolic health and the risk of non-communicable chronic metabolic diseases in humans. Nutr Metab Cardiovasc Dis 2025;35(6):103975. doi:10.1016/j.numecd.2025.103975
13. Auwalu FK, Bello M. Exploring the Contemporary Challenges of Urbanization and the Role of Sustainable Urban Development: A Study of Lagos City, Nigeria. Journal of Contemporary Urban Affairs 2023;7(1):175–88. doi:10.25034/ijcua.2023.v7n1-12
14. Yahaya T, Fagbayi T, Abdulazeez A, Izuafa A, Abdulrahman SK, Obadiah C. Assessment of Levels and Health Risks of Atmospheric Particulate Matter (PM10) and Associated Gaseous Elements in Selected Locations in Lagos, Nigeria. Tropical Environment, Biology, and Technology 2024;2(1):34–43. doi:10.53623/tebt.v2i1.438
15. Aliu IR, Akoteyon IS, Soladoye O. Sustaining urbanization while undermining sustainability: the socio-environmental characterization of coastal sand mining in Lagos Nigeria. GeoJournal 2022;87(6):5265–85. doi:10.1007/s10708-021-10563-7
16. Adekunle A, Omange M, Tope A, Caesar S. Estimation of noise pollution parameters and their health effects on building occupants in Lagos State, Nigeria. International Journal of Advanced Academic Research 2021:64–86. doi:10.46654/ij.24889849.e7129
17. Byaello K. Impact of Noise Pollution on Community Health and Well-Being in Lagos, Nigeria. Journal Wetenskap Health 2023;4:15–21. doi:10.48173/jwh.v4i4.203
18. Osuji FO, Usiosefe P. Dissonance Unleashed: Unveiling the threat of Noise pollution in Nigeria and analysing legal remedies. RUN Law J, 2024; 7 (1): 1-19. https://runlawjournals.com/index.php/runlawj/article/view/71
19. Oyewo OT, Oyewale OO. Population Growth and Economic Wellbeing in Lagos, Nigeria. Niger J Hortic Sci, 2023; 27 (2): 95-106.
20. Wokekoro E. An assessment of the effect of noise pollution on rental values of properties in Nigeria. MOJ Eco Environ Sci. 2020;5(5):206-209. doi:10.15406/mojes.2020.05.00195
21. World Health Organization. Regional Office for Europe (2018). Environmental noise guidelines for the European Region. World Health Organization. Regional Office for Europe. Access date: 2019-1-31. Available from: https://iris.who.int/handle/10665/279952
22. Lagos State Environmental Protection Agency (LASEPA) Law. Guidelines on noise pollution. Accessed 2025 May, 16 Available from:https://lasepa.gov.ng/laws-and-services/
23. Ukwu C. Effects of noise pollution on the residents of Port Harcourt Metropolis. Journal of Health, Applied Sciences and Management 2024;7:140–52. doi:10.4314/johasam.v7i2.14
24. Olugbenga OS, Joseph AA. Determination of Level of Noise Pollution in Industrial Estates in Kano, Kano State. Afr Sch J of Afr Sus Dev, 2021; 20 (2): 221-231. content/uploads/2021/06/

AJASD_Vol20_No2_March_2021-16.pdf
25. Adekoya OI, Adebayo OC, Ibikunle YO, Akinnawo OO, Adeojo TT. Noise Levels Measurements at Ladipo and Yaba Markets in Lagos and the Adverse Effects on Humans. Phys Sci Int J 2024;28(4):64-72. doi:10.9734/psij/2024/v28i4838.
26. Oloruntoba EO, Ademola RA, Sridhar MKC, Agbola SA, Omokhodion FO, Ana Gree, et al. Urban Environmental Noise Pollution and Perceived Health Effects in Ibadan, Nigeria. African Journal of Biomedical Research 2024;15(2):77–84. doi:10.4314/
27. Yang D, Liu X, Ren Z, Li M. Relation between Noise Pollution and Life Satisfaction Based on the 2019 Chinese Social Survey. Int J Environ Res Public Health 2022;19(12):7015. doi:10.3390/ijerph19127015
28. Abdmouleh MA, Dahech S. Spatio-temporal variation of noise pollution in South Paris during and outside the COVID-19 lockdowns. Sci Rep 2024;14(1):1487. doi:10.1038/s41598-024-51305-2
29. Sahu AK, Pradhan M, Mohanty A, Mohanty CR, Pradhan PK. Vehicular noise pollution and its environmental impact in Berhampur, India. Adv Environ Technol 2022;8(2):145-157. doi:10.22104/aet.2022.5425.1466
30. Thompson R, Smith RB, Bou Karim Y, Shen C, Drummond K, Teng C, et al. Noise pollution and human cognition: An updated systematic review and meta-analysis of recent evidence. Environ Int 2022;158:106905. doi:10.1016/j.envint.2021.106905
31. Clark C, Paunovic K. WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Quality of Life, Wellbeing and Mental Health. Int J Environ Res Public Health 2018;15(11):2400. doi:10.3390/ijerph15112400
32. Zytoon MA. Opportunities for Environmental Noise Mapping in Saudi Arabia: A Case of Traffic Noise Annoyance in an Urban Area in Jeddah City. Int J Environ Res Public Health 2016;13(5):496. doi:10.3390/ijerph13050496
33. Oluwole EO, Onwumelu NC, Okafor IP. Prevalence and determinants of intimate partner violence among adult women in an urban community in Lagos, Southwest Nigeria. Pan Afr Med J 2020;36:345. doi:10.11604/pamj.2020.36.345.24402
34. Adewoye J, Oyerinde, Salau A. Ict and family survival in Lagos State, Nigeria. 2023;9:1394–405.
35. Yahaya T, Abdullahi H, Muhammad Z, Ibrahim Y, Abdullahi M, Ribah S, et al. ABO Blood Group Genotypes and Demographic Traits in Susceptibility to Type 1 Diabetes Mellitus in Lagos, Southwest, Nigeria. Niger J Physiol Sci 2023;37(2):199–205. doi:10.54548/njps.v37i2.6
36. Monye IN, Oseni TIA, Makinde MT, Adelowo AB, Yahaya-Kongoila S, Njoku-Adeleke MC, et al. Prevalence and perception of pre-morbid lifestyle-related risk factors among covid-19 survivors in Lagos state and Abuja capital city of Nigeria. BMC Public Health 2024;24(1):1918. doi:10.1186/s12889-024-19502-w
37. Baum DR, Abdul-Hamid H, Wesley H. Inequality of educational opportunity: the relationship between access, affordability, and quality of private schools in Lagos, Nigeria. Oxford Rev Edu 2018;44:459-475. doi:10.1080/03054985.2017.1421153
38. Yahaya T, Oladele E, Salisu T, Liman UU, Clement Gomo B. Toxic metals in cement induced hematological and DNA damage as well as carcinogenesis in occupationally-Exposed block-factory workers in Lagos, Nigeria. Egyptian Journal of Basic and Applied Sciences 2022;9:499–509. doi:10.1080/2314808X.2022.2106097
39. Eghomwanre AF, Tijani YA, Oguntoke O, Liasu MO. Assessment of Noise Levels and Health-Related Problems in Selected Hospitals in Abeokuta, Nigeria. Afr J Health Safety Environ 2023;4(1):49-58. doi:10.52417/ajhse.v4i1.392
40. Gadanya MA, Buhari IA. Exposure and consequences of noise pollution among residents of Bichi Town, Kano State, Nigeria. Fudma Journal Of Sciences 2021;5(2):52–8. doi:10.33003/fjs-2021-0502-521
41. Ibitoye ZA, Aweda AM, Ofojebe PC. Assessment of noise level distributions in Lagos metropolis and the potential for adverse health effects. Journal of Environmental Health 2017;79(10):E1–E5.
42. Kareem MI. Assessment of Environmental Noise Level in Selected Rural and Urban Areas of Lagos State, Nigeria. Int J Adv Acad Res 2022;8(12):195-205. Available from: https://www.ijaar.org/articles/v8n12/ijaar81218.pdf
43. Lee Y, Lee S, Lee W. Occupational and Environmental Noise Exposure and Extra-Auditory Effects on Humans: A Systematic Literature Review. Geohealth 2023;7(6):e2023GH000805. doi:10.1029/2023gh000805
44. Salazar MR. Hypertension, a linchpin between environmental noise exposure and the development of cardiovascular disease? J Clin Hypertens (Greenwich) 2023;25(2):165–7. doi:10.1111/jch.14618
45. Hahad O, Gilan D, Michal M, Tüscher O, Chalabi J, Schuster AK, et al. Noise annoyance and cardiovascular disease risk: results from a 10-year follow-up study. Sci Rep 2024;14(1):5619. doi:10.1038/s41598-024-56250-8
46. Wojuade CA, Olateju AP. Assessment of traffic noise pollution in residential neighborhood of Lagos, Nigeria. Int J Res Rev 2020;**7**(9):396-403. Available from: https://www.ijrrjournal.com/IJRR_Vol.7_Issue.9_Sep2020/IJRR0054.pdf
47. Okwudili NM, Okorie EA, Oparaocha R, Mercy OS, Chinedu OE, Ugochinyere AA, et al. Assessment of noise pollution and its perceived health risks on residents of Owerri Metropolis, Imo State, Nigeria. World Journal of Advanced Research and Reviews 2021;10(2):146-156. doi:10.30574/wjarr.2021.10.2.0201
48. Atilade AO, Okedeyi AS, Idowu IA, Akinyemi J, Ogede RO, Taylor JI. Noise level assessments of students' activities center in lagos state university of science and technology, ikorodu, Lagos, Southwestern Nigeria. Nigerian Journal of Physics 2021;30(2):182-186.