

Policy Communication and Media Influence on Public Awareness, Perceptions, and Compliance with Noise Pollution Regulations in Lagos, Nigeria

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Abstract

Lagos is the most populous metropolitan city in Nigeria, with various human and machine activities that generate noise. The city's noise level reaches 80–95 dB in commercial areas despite the state's noise pollution policies and efforts to enforce them. This study assessed the effectiveness of communicating noise reduction policies in the state by examining the level of public awareness of noise pollution through media coverage, public perceptions of noise pollution, the role of media in shaping public knowledge of government noise reduction policies, and the impact of media-driven campaigns on behavioural changes towards noise pollution mitigation. The study employed a survey method using purposive and voluntary response sampling techniques. With a sample size of 384, the questionnaire

was distributed online via WhatsApp, and after four months of data collection, 306 responses were received. Data were analysed using SPSS version 28. The results indicate low exposure to noise pollution policies. Awareness of noise pollution policies in the state was moderate, and residents did not perceive the enforcement of these policies as effective. They agreed that they took measures to reduce noise pollution in their daily activities, although they believed the media did not influence them to do so. The study concludes that the government should collaborate with the media for greater exposure to, awareness of, and effective enforcement of noise pollution policies in Lagos State.

Keywords: Behaviour change, Media coverage, Noise policies, Noise pollution, Public awareness, Public perception

Comunicação de Políticas e Influência dos Media na Consciencialização Pública, Perceções e Conformidade com as Regulamentações sobre Poluição Sonora em Lagos, Nigéria

Resumo

Lagos, a maior cidade metropolitana da Nigéria, enfrenta níveis elevados de poluição sonora (80–95 dB em zonas comerciais), apesar das políticas estaduais de controlo do ruído. Este estudo avalia a eficácia da comunicação dessas políticas, analisando o grau de exposição pública, as perceções dos residentes, o papel dos media na formação do conhecimento sobre as medidas governamentais e o impacto das campanhas mediáticas nas mudanças comportamentais. Com base num inquérito online (306 respostas válidas), os resulta-

dos revelam baixa exposição às políticas de redução do ruído, consciencialização moderada e perceção de fraca aplicação das medidas. Embora os residentes afirmem adotar práticas individuais para reduzir o ruído, consideram que os media não influenciaram essas ações. O estudo conclui que o governo deve reforçar a colaboração com os media para aumentar a visibilidade pública das políticas, melhorar a consciencialização e promover uma aplicação mais eficaz das medidas de mitigação da poluição sonora em Lagos.

Palavras-chave: Mudança comportamental; Cobertura mediática; Políticas de ruído; Poluição

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Introduction

Globally, as urban populations expand and demand for housing, transportation, energy, and commercial services rises, environmental systems face increasing stress. This results in the deterioration of air, water, land, and noise quality, creating significant challenges for public health and environmental sustainability (Schwela 2022; United Nations 2023; WHO 2021). Among these environmental pressures, noise pollution has become a critical yet often overlooked issue, especially in rapidly urbanising areas where governance structures are either weak or overstretched. According to the European Environment Agency (2020), environmental noise is estimated to cause 12,000 premature deaths and 48,000 new cases of ischaemic heart disease each year in Europe. It also impacts learning outcomes in children and contributes to widespread sleep disturbance and psychological distress. Similarly, in the United States, noise pollution has been linked to higher risks of hypertension, cognitive impairment in children, and sleep disruption, particularly in low-income and minority communities (Casey et al. 2017). Importantly, the burden of noise pollution disproportionately affects vulnerable and socioeconomically disadvantaged populations, underscoring its environmental justice implications (World Health Organisation 2021; Basner & McGuire 2022).

In South Korea, a national study reported that persistent exposure to road traffic noise significantly increased the incidence of depression and anxiety disorders among urban residents (Kim et al. 2021). Additionally, in India, chronic exposure to high-decibel urban noise has been associated with elevated stress hormone levels and cardiovascular strain, further emphasising the global health impact of this environmental hazard (Garg et al. 2020). In Nigeria, particularly in cities like Lagos, Abuja, Ibadan, and Port Harcourt, rising urban noise levels have raised significant health and environmental concerns (Akinyemi & Ojo 2016; Ogunjuyigbe & Adekoya 2012). Yet, despite the availability of regulatory frameworks such as the Lagos State Environmental Protection Agency (LASEPA) Law, implementation remains weak due to poor public awareness, non-compliance, and a lack of political will (Lagos State Government n.d.; Oyediran 2024; Alabi & Osasona 2023).

Environmental pollution continues to be one of the most common impacts of urbanisation and modern industrial activities. In Lagos, one of Africa's fastest-growing megacities, noise pollution resulting from traffic, industry, and informal markets has become a major environmental health issue, yet it remains insufficiently addressed in public discourse and policy enforcement (Akinyemi & Ojo 2016). A significant gap exists in how noise pollution policies are communicated to the public. Mass media, especially newspapers and digital platforms, serve as intermediaries between policy implementation and public understanding. However, research suggests that media coverage of environmental issues in Nigeria, particularly noise pollution, tends to be irregular, under-reported, and poorly framed (Adebayo & Omobowale 2021; Adeniyi 2023; Chukwu & Emole 2023). This lack of consistent and thematic reporting not only reduces awareness of the urgency but also hampers public engagement with environmental policies.

This study seeks to deepen understanding of the role of strategic environmental communication in shaping urban health outcomes and facilitating effective noise policy implementation in expanding urban centres like Lagos. Against this backdrop, this study guided by the following objectives:

- 1) To assess the level of public awareness of noise pollution through media coverage.
- 2) To evaluate public perceptions of noise pollution.
- 3) To analyse the role of media coverage in shaping public knowledge of government noise reduction policies.

4) To explore the impact of media-driven campaigns on behavioural changes related to noise pollution mitigation.

Noise pollution policies and enforcement in Lagos, Nigeria

The level of environmental noise exposure among urban populations is directly connected to a country's level of development (Schwela 2025). This is especially true for Lagos, Nigeria. Lagos is one of Africa's most populous cities, with an estimated 21 million residents. It has all the characteristics of an urban settlement, functioning as a fully developed cosmopolitan city with seaports, international and local airports, bordered by the Atlantic Ocean, and hosting numerous industrial and residential estates. Lagos is a lively metropolis with human activities occurring around the clock (World Population Review 2025).

The lively city of Lagos, densely populated by millions, also faces numerous environmental challenges caused by human activities and machinery. These include air pollution from vehicle exhaust fumes and industrial chimneys, land pollution due to street littering, open defecation, and various noise sources that pollute the city's soundscape. Even affluent residential areas experience noise issues, as residents operate power generators and animals such as dogs bark in many gated communities (Aderemi, 2025).

According to a 2023 report, 81.8 percent of environmental complaints to Lagos State Government agencies relate to noise pollution (The Guardian, 2023). A more recent report provides a breakdown of noise pollution in the state, indicating that 63 per cent of the 1,616 noise petitions were against religious organisations. The report states that 1,018 complaints targeted religious organisations, 434 involved entertainment venues, and 308 concerned residential homes. Factories and generating sets made up the remaining cases (Salau 2025; This Is Lagos 2025; Folarin 2021). Despite these issues, the Lagos State Government has consistently strived to address the numerous socioeconomic and environmental challenges encountered daily.

Through its Ministry of Environment and Water Resources, the Lagos State Government instructs the Lagos State Environmental Protection Agency (LASEPA) to address noise-related issues affecting the city. LASEPA works with international organisations and local sources to minimise environmental risks within the metropolis. The agency complies with key legislation such as the Environmental Management and Protection Law of 2017 and follows guidance from the Centre for Hearing and Communication to raise awareness about the risks of noise pollution. Each year, LASEPA marks the International Noise Awareness Day (INAD), established in 1996, which is observed on the last Wednesday of April each year.

The Lagos State agency not only raises awareness but also becomes the first West African city to act in addressing the rising issue of noise pollution (Shonibare, 2024). The Environmental Management Protection Law of 2017, Part VI, outlines several regulations on noise pollution in Lagos State. It mainly restricts sound levels in public areas to 55 decibels during the day and bans sounds exceeding 45 decibels at night. Industrial zones must not surpass 90 decibels during daytime. Furthermore, noise levels in commercial districts should not exceed 70 decibels, and religious houses, clubs, and entertainment venues are required to operate within enclosed, soundproofed environments. religious structures should host loud activities at night (LASEPA 2024; Shonibare 2024).

Despite all the legislation, enforcement, and monitoring, one would expect Lagos residents to enjoy a peaceful environment across the metropolis. The commercial and business activities in the city mainly violate the noise policy in the State (Aderemi, 2025). In 2024 alone, over 352 facilities, including churches and mosques, were sealed by the Lagos State Government for violating noise pollution regulations (Onyebuchi 2025; Akoni 2024). Although the Lagos State Government is endeavouring to curb

environmental noise pollution, the situation remains largely unchanged. This study aims to investigate another variable: the audience. Are they aware of the various noise pollution guidelines and laws? If so, are they responding to government awareness programmes?

Application of Behavioural Change Model and Agenda-Setting in Communicating Noise Pollution Policy

This study is based on behavioural change communication (BCC) theory, focusing on awareness and behavioural change towards noise pollution policy. Noise pollution mainly results from human activities and is often experienced by many people within audible range of the noise source. From the literature reviewed here, it is evident that despite enforcement by public authorities, the problem persists. However, there are other effective ways to reduce noise pollution in Lagos metropolis. The Lagos State Government can tackle this issue through behavioural change communication (BCC) models, rather than allocating resources to ineffective enforcement. Effective communication is often believed to lead to better results in achieving desired behaviour change, as people are less likely to comply due to misunderstandings about the reasons for change (Abbas 2023; White & Muturi 2023).

Interestingly, behaviour change communication is not a complex model but a concept that supports simple strategic messages designed and shared through communication channels to drive transformative change (NeuroLaunch 2024). Based on the activities of law enforcement agents and government policies on public safety compliance, the Lagos State Government still relies on outdated models with the aim of attaining change and cooperation from the public regarding noise pollution in Lagos. The most effective and modern approach for achieving meaningful positive transformation in Lagos is adopting BCC models.

As explained by Journalism University (2023), behavioural change communication (also known as social behavioural change communication) guides the design, implementation, and evaluation of interventions aimed at changing behaviours and fostering societal transformation. According to the Integral World (2024), BCC involves using communication to induce desired behaviours in individuals, groups, mass audiences, and international populations, which requires understanding the needs of the target audience and tailoring messages accordingly. Existing communication theories, such as social cognitive and social learning theories, complement the BCC model. The difference lies in newer perspectives on how efforts are conducted. For instance, earlier public change campaigns aimed to address issues faced by society, whereas current BCC approaches focus on preventive measures (Nancy & Dongre, 2021; Maskey, 2020; Ngigi & Busolo, 2018).

In recent time, BCC has been adopted in development campaigns and has been noted to be an effective approach that sees embraces inclusive communication using variety of programmes and techniques. The study of Briscoe and Aboud (2012) highlights the stages of BCC and how it can be efficiently structured from information, performance, problem solving, social support, materials and media. This model explains how BCC can solve some of the limitations the studies of Bentley, et al. 2011; Hurley, et al. 2011 have observed to bedevil development communication both in the developing nations and developed societies which indicates poor implementation and lack of clarity and major issues that could discourage change. Clearly the veracity of BCC or in broader sense, SBCC has been tested across several development programmes and it has been proven that behaviour change communication is ideal to sustain and record high level of success in any development initiative, which includes policy communication for behaviour change toward comply with noise pollution regulation in Lagos State, Nigeria (Integral World 2024; Gonah & Nomatshila, 2024).

To understand how impact is made with the media, the study of Chernov, et al. (2011); Matthes (2006), found that there are stages and indicators for strong media influence, especially in determining the strength of media influence in salience issues. The scholars noted that mere exposure and encounter

with a message might trigger awareness; until such message is reinforced and be exposed to the public consistently before what they called second agenda level begins to manifest. This goes to show that, when media tools, programmes and resources are committed to development programmes such as noise pollution policy communication. People are most likely to adhere to such information, and may begin to adjust their behaviours.

Materials and Methods

This study employed a survey method, using a structured questionnaire which was distributed among 384 Lagos residents that formed the primary sample size of this study. The sample size was determined using Cochran's formula to delineate the original population of the State which was estimated to be 17, 200,000 as at 2025 (World Population Review, 2025). The survey covered the 20 Local Government Areas in the state. Data specifically for WhatsApp users in Lagos state was not unavailable, at the time of collation, but Nigeria has a reported number of WhatsApp users estimated to be 51 million as of April 2024 (Ajanaku 2024). Only 306 responses were received at the end of the study, representing 79.7% of the total questionnaire distributed. SPSS was used to analyse the data, and the results are presented in tables

For the sampling techniques, a two-stage sampling method was used to select respondents for the study. First, a purposive sampling approach was employed to target the study population, based on the fact that we specifically targeted Lagos residents and people who possess fair knowledge of noise pollution policy in the state. Another indicator for selection is enrolment on App messaging app in Lagos state, as the questionnaire was distributed online via the app.

Second, a non-probability voluntary response sampling method was used to collect data from the digital population of WhatsApp users. The questionnaire was posted as a link in WhatsApp groups and broadcast lists, and participants self-selected to respond or not. For more efficiency, the respondent driven sampling-RDS was adopted alongside the voluntary response method. This method was useful for this study as it allows the researchers to recruit initial participants, who then had to recruit others through various platforms, groups and direct messaging to various Lagos Estate residents' platforms, work groups, church groups using the group admins as main contacts. The RDS method has been well reported by authors who have utilised it in their various studies to be very efficient in reaching highly diverse an impenetrable group (Heckathorn, 2008; Gile & Handcook, 2010; Rorondi & Rotondi, 2023).

The questionnaire was designed to align with the research objectives. Accordingly, section one collected respondents' demographics. Section two assessed their media exposure to noise pollution policies. Section three examined public awareness of noise pollution. Section four evaluated respondents' perceptions of noise pollution policies, and section five assessed participants' behavioural changes towards noise pollution in the state.

Ethical Consideration

All participants and respondents volunteered to be surveyed, and gave their consent. Also, a written consent was included in the survey invites and were all granted. All the participants understood clearly that no personal data would be collected and every response and detail would be treated with strict anonymity. No vulnerable persons were surveyed, and all participants were above 18 at the time of this

study. This is in line with global regulation and policy as documented in the 45 CFR 46.104(d)(2), (Mayo Clinic 2022). Also, this is guided strictly by the principles outlined in the 2013 Helsinki Declaration (World Medical Association, 2025).

Data Presentation and Analysis

The demographic distribution of the 306 respondents shows a broad cross-section of Lagos residents in terms of age, gender, educational background, occupation, and local government area (LGA) of residence. The age distribution of respondents was 18–24 years (n=87), 28.4%, 35–44 years (n=66) 21.6%, 25–34 years (n=60) 19.6%, 45–54 years (n=44) 14.4%, 55–64 years (n=34) 11.1%, and 65 and above (n=15) 4.9%. For gender, (n=165) 53.9% are male, and (n=141) 46.1% were female. The respondents' education level ranged from secondary school to PhD.

Table 1: Media Exposure to Noise Pollution Policies

Variable	Category	Freq	%	Mean	SD
1. I frequently see or hear news about noise pollution policies in the media.	SA	7	2.3	2.31	1.174
	A	76	24.8		
	N	33	10.8		
	D	78	25.5		
	SD	112	36.6		
	Total	306	100.0		
2. The media provides clear and understandable information about noise pollution policies.	SA	8	2.6	2.32	1.203
	A	75	24.5		
	N	29	9.5		
	D	88	28.8		
	SD	106	34.6		

	Total	306	100.0		
3. From which communication channels do you most frequently receive noise pollution policy information?	Television	60	19.6	N/A	N/A
	Radio	49	16.0		
	Newspapers	10	3.3		
	Magazines	2	0.7		
	Billboards and posters	2	0.7		
	Social media (e.g., Facebook, Twitter)	142	46.4		
	Websites and blogs	9	2.9		
	Public talks or workshops	7	2.3		
	School or university courses	5	1.6		
	Community organisations	3	1.0		
	Government campaigns	2	0.7		
	Non-governmental organisations	2	0.7		
	Environmental activists	9	2.9		
	Others	4	1.3		
Total	306	100.0			

Field Survey, 2025

Table 1 presents data on respondents' exposure to media messages about noise pollution policies, their perceptions of the clarity of this information, and the communication channels through which they most often receive it. A notable number of respondents reported low exposure to noise pollution poli-

cies in the media. The overall mean score was 31, with a standard deviation of 174, indicating a general tendency to disagree and a moderate variation in responses. Most respondents also expressed dissatisfaction with the clarity and understanding of information about noise pollution policies communicated through the media. The mean score of 32 and a standard deviation of 203 support the idea that most respondents lean towards disagreement regarding clarity, with some variation in opinions. Social media emerged as the primary channel through which respondents most frequently received information on noise pollution policies, followed by television.

Table 2: Public Awareness of Noise Pollution

Variable	Category	Freq	%	Mean	SD
1. I am aware of the existence of noise-pollution laws in Lagos State.	SA	23	7.5	3.31	1.011
	A	145	47.4		
	N	55	18.0		
	D	73	23.9		
	SD	10	3.3		
	Total	306	100.0		
2. I understand the health risks associated with excessive noise pollution.	SA	95	31.0	4.07	1.063
	A	170	55.6		
	N	18	5.9		
	D	13	4.2		
	SD	10	3.3		
	Total	306	100.0		
3. The media has increased my awareness of noise-pollution regulations.	SA	12	3.9	2.97	1.012
	A	107	35.0		
	N	61	19.9		
	D	113	36.9		
	SD	13	4.2		
	Total	306	100.0		
4. I can identify sources of noise pollution in my environment.	SA	114	37.3	4.18	0.885
	A	160	52.3		
	N	15	4.9		
	D	10	3.3		
	SD	7	2.3		
	Total	306	100.0		
5. The media provides sufficient education on how to report noise violations.	SA	11	3.6	2.52	1.030
	A	59	19.3		
	N	37	12.1		
	D	169	55.2		
	SD	30	9.8		
	Total	306	100.0		

Table 2 provides insights into respondents' awareness of noise pollution laws, their understanding of related health risks, their ability to recognise noise sources, and perceptions of media education on noise pollution in Lagos State. The mean score of 3.31 and standard deviation of 1.011 indicate moderate awareness with some variation in understanding. The mean score of 4.07 with a standard deviation of 1.063 shows a high level of agreement and awareness of the health risks linked to excessive noise pollution. The respondents were mostly neutral, with notable variation in perceptions on whether the media has increased their awareness of noise pollution regulations, evidenced by a mean score of 2.97 and a standard deviation of 1.012. A high mean score of 4.18, coupled with a relatively low standard deviation of 0.885, reflects a strong consensus among respondents regarding their ability to identify sources of noise pollution in their environments. Conversely, the mean score of 2.52 and standard deviation of 1.030 suggest disagreement and highlight a communication gap in media public education on how to report noise violations.

Table 3: Perception of Noise Pollution Policies

Variable	Category	Freq	%	Mean	SD
1. The government is taking adequate action to regulate noise pollution.	SA	10	3.3	2.74	1.014
	A	76	24.8		
	N	62	20.3		
	D	142	46.4		
	SD	16	5.2		
	Total	306	100		
2. Media coverage of noise pollution policies is sufficient to inform the public.	SA	14	4.6	2.49	1.071
	A	51	16.7		
	N	37	12.1		
	D	175	57.2		
	SD	29	9.5		
	Total	306	100		
3. The enforcement of noise pollution policies is effective.	SA	9	2.9	2.80	1.016
	A	78	25.5		
	N	83	27.1		
	D	117	38.2		
	SD	19	6.2		
	Total	306	100		
4. I believe noise pollution is a serious environmental issue in Lagos State.	SA	92	30.1	3.98	0.932
	A	144	47.1		
	N	46	15.0		
	D	20	6.5		
	SD	4	1.3		
	Total	306	100		
5. Media reports on noise pollution policies influence my opinion on their importance.	SA	11	3.6	2.88	1.013
	A	87	28.4		
	N	55	18.0		
	D	146	47.7		
	SD	7	2.3		
	Total	306	100		

Field Survey, 2025

Table 3 presents data on public perceptions of noise pollution policies in Lagos State. Respondents exhibited a low level of confidence in government efforts to regulate noise pollution, with a mean score of 2.74. Many disagreed that the media provides adequate coverage of noise pollution policies, resulting in a low mean of 2.49 and indicating widespread dissatisfaction with current media engagement. The mean score of 2.80 shows ambivalence or slight pessimism regarding the enforcement mechanisms of noise pollution laws in the state. Interestingly, the perception of noise pollution as a serious environmental issue in Lagos State was notably high, supported by a high mean of 3.98, reflecting strong awareness of its environmental impact. The mean score of 2.88 suggests a moderate influence of media messages on the importance the public assigns to these policies.

Table 4: Behavioural Change Towards Noise Pollution

Variable	Category	Freq	%	Mean	SD
1. The media has influenced me to reduce my contribution to noise pollution.	SA	11	3.6	2.71	1.010
	A	70	22.9		
	N	54	17.6		
	D	161	52.6		
	SD	10	3.3		
	Total	306	100.0		
2. I take measures to minimise noise pollution in my daily activities.	SA	38	12.4	3.84	0.770
	A	198	64.7		
	N	54	17.6		
	D	13	4.2		
	SD	3	1.0		
	Total	306	100.0		
3. I have reported a noise pollution issue after learning about the policies through media.	SA	8	2.6	2.53	1.007
	A	54	17.6		
	N	55	18.0		
	D	166	54.2		
	SD	23	7.5		
	Total	306	100.0		
4. I encourage others to adhere to noise pollution regulations.	SA	34	11.1	3.61	0.918
	A	151	49.3		
	N	92	30.1		
	D	26	8.5		
	SD	3	1.0		
	Total	306	100.0		
5. I believe media campaigns can lead to long-term behavioural changes regarding noise pollution.	SA	124	40.5	4.21	0.891
	A	145	47.4		
	N	23	7.5		
	D	8	2.6		
	SD	6	2.0		
	Total	306	100.0		

Field Survey, 2025

Table 4 presents data on respondents' behavioural responses to noise pollution, including their actions, media influence, and beliefs about the long-term effects of media campaigns. A significant number of respondents disagreed that the media had influenced them to reduce their contribution to noise pollution. This is indicated by a mean score of 2.71 and a standard deviation of 1.010, showing a tendency towards disagreement, which suggests that media messages have not significantly motivated behavioural change in reducing noise among most respondents. However, the majority of respondents take measures to minimise noise pollution in their daily activities, as indicated by a high mean score of 3.84 and a low standard deviation of 0.770, reflecting a strong and consistent pattern of proactive personal behaviour towards noise reduction. The mean score of 2.53 and standard deviation of 1.007 suggest that, although individuals may be aware of policies, media exposure has not markedly translated into action, such as reporting violations. Nevertheless, most respondents encourage others to abide by noise pollution regulations. The mean score of 3.61 and a standard deviation of 0.918 indicate a moderate level of agreement with peer-driven behavioural reinforcement. A high level of consensus on the potential of media campaigns to effect long-term behavioural change is demonstrated by a mean score of 4.21 and a standard deviation of 0.891.

Discussion of Findings

This study examined media attention to noise pollution policies and their influence on Lagos State residents' awareness, perception, and behavioural change regarding it. Despite the limited media coverage of the state government's noise pollution policy, respondents exhibited moderate awareness of the policy. Confidence in the government's regulatory framework against noise pollution remains low, largely due to pessimism about enforcement. Although media coverage of the government's noise pollution policy has not significantly motivated behavioural change among residents, they make personal efforts to reduce noise in their daily activities. These findings indicate a failure of the media's role in influencing behaviour regarding noise pollution policy and align with the findings of John (2023) and Okeke (2018), who reported minimal coverage of noise pollution by Nigerian media. To be successful in any behaviour change communication activity, the media must be involved in practical sense, and must be used consistently in order to generate attention an issue, as well as intentional and deliberate exposure to the audience or public to the programmes (Ardèvol-Abreu 2015). Briscoe and Aboud (2012) argued that BCC strategies can be efficiently structured to relay information scale performance design practical suggestions for solving the problem and provide material and professional support for the campaign while dedicating every media resource to the successful coverage of noise pollution policy in Lagos State. Frequent reporting not only accomplishes this but also increases awareness and highlights the importance of the issue (John 2023). Consequently, the public relies on the media for their awareness of noise pollution policies in Lagos State.

Low reporting of noise pollution results in limited public exposure to the issue. (Fiveable 2024) defines media exposure as "the amount and type of media content that individuals are exposed to, including television, social media, radio, print, and online platforms." The "amount" is a key aspect of the definition, as is the placement of the content. Odiegwu-Enwerem, et al., (2024) argued that exposure occurs only when the audience "encounters" the content. Fiveable's (2024) definition suggests that the greater the media coverage of an issue, the higher the likelihood of the public being exposed to it. However, understanding what constitutes an encounter with content can be challenging when studying public exposure to media content. In this study, previous research supports the idea that exposure is as straightforward as publishing a story for the audience or public to see. Shuaib et al. (2025), John (2023), and Okeke (2018) reported low levels of noise pollution coverage in the media, which in turn led to low exposure and awareness.

Although, awareness alone might not suffice, as seen in the findings of Chernov, et al. (2011); Matthes (2006), that people depend on multiple exposure. Quality of communication and the need to align the message with audience needs are very necessary to influence people's behaviour and get them to accept an idea. Awareness serves as a foundation for behavioural change, as knowledge and understanding of a phenomenon influence the response to it. White and Muturi (2023) stated that

communication, whether through media, inter-personal channels, or digital platforms, is an essential tool for not only raising awareness of issues that directly impact people, but also persuading changes in attitudes, behaviours, policies, and other decision-making processes at all levels (p1.)

The aim of setting the public agenda on issues of interest is to raise awareness and encourage behavioural change among the public. Noise pollution is a concern for public health, and most respondents recognised this. To promote public behavioural change, the media must take a leading role. Oztay (2021) observed that the media is central to the communication process linking awareness and behavioural change. The author found that awareness of online events facilitated behavioural shifts. The degree to which the media has fulfilled these roles is reflected in the results of this study, which showed that the majority (52.6%) of respondents stated they were not influenced by the media to reduce noise pollution (Table 4). Nonetheless, most residents undertake personal measures to reduce noise in their daily lives, indicating intrinsic motivation rather than media-driven behaviour. They also encourage others to follow suit.

Most respondents (87.9%) recognise that media campaigns can lead to long-term behavioural change, demonstrating a strong belief in the media's potential, even if their actual impact has been limited so far. This belief stems from respondents' perception of noise pollution as a public health hazard, despite a larger number disagreeing that the media educates the public on how to report noise violations. This aligns with findings from Mbaegbu et al. (2021); Maton et al. (2021); Idoko et al. (2022); Eludoyin (2016), who, in their respective studies, found that most participants are aware of the health risks linked to noise pollution. These findings highlight the importance of social behavioural change communication, which assumes that the media can influence and foster change within society. SBCC operates on the belief that the media, as a social institution, can shape factors that influence behaviours and attitudes. Therefore, residents of Lagos state can be positively influenced by the media to adopt actions that will reduce noise pollution in the state.

Fiveable (2024) also noted that exposure can significantly influence perception because the more exposure there is, the more the "reality" of the message is created in people's minds (Sadaf 2011). Perception is crucial in public response to government policies, especially in political environments where the masses hardly trust the government. If the public lacks confidence in the government's enforcement of its own policies, public commitment to those policies will be poor. Perception is usually based on exposure to media messages (McLeod et al. 2017). The fact that most respondents indicated that media coverage of noise pollution policies in Lagos is insufficient signifies low exposure to noise pollution content in the media, which influences decisions made at individual and community levels about the issue. Nkangi, et al. (2024, p.527) added that perception is "a mindset and the corresponding actions people are likely to undertake as stimulated by the nature of the mass media content they are exposed to". It follows, therefore, that negative perception of a government policy will lead to negative or no public action.

Furthermore, respondents disagreed that the government is taking adequate action to regulate noise pollution. These negative perceptions of government efforts to reduce noise pollution in the state might explain public indifference in reporting noise pollution offences. The government needs to build public

confidence in its noise pollution policies because they believe the government is not doing enough to enforce the laws. The public perception of the government's inertia in enforcing noise pollution laws in the state supports the findings of Quang et al. (2025), who argued that limited enforcement capacity is a key factor weakening the effectiveness of noise pollution control. The poor enforcement of laws is mainly due to a lack of staffing and resources at community and district levels. The researchers found that public education and information dissemination about environmental regulations in Nigeria are very low, which may significantly affect residents' compliance with noise pollution laws. Quang et al. (2025) and Abotutu (2015) have recommended education, public enlightenment, and awareness campaigns through the media to improve compliance with noise regulations and reduce noise pollution.

The media is expected to collaborate with relevant government agencies to achieve the objectives of the noise pollution policy through public education that will encourage action (Senam et al. 2022). The gap in public knowledge about the health risks of noise pollution and the media's attention to the environmental issue, as shown in this study, calls for the media to provide more coverage on noise pollution, promote compliance with noise reduction laws, and raise awareness among Lagos residents about noise pollution. Additionally, respondents believe that media campaigns can lead to long-term behavioural changes towards noise pollution.

Conclusion

This study has provided clear and detailed evidence reflecting the true state of noise pollution, its enforcement, official intervention, residents' awareness, and the media's influence on public attitudes towards compliance with noise pollution and control policies in Lagos State. The survey data indicate that public have low exposure and awareness about policy communication, leading to low perception of media coverage of noise pollution is low showing that significant work is needed in the identified areas, and to promote positive behaviour that ensures full compliance and reduction of noise pollution, all stakeholders and individuals must consistently access and share accurate information.

The study also sought to analyse the role of media coverage in shaping public knowledge of government noise reduction policies. The survey results indicate that media has performed poorly in this case, and not much has been done by the media to improve local knowledge of government policies on noise pollution in Lagos State. As a metropolitan state, Lagos will continue to face pollution and other environmental hazards. This study has demonstrated the far-reaching effects of noise pollution and how many residents perceive the noise pollution policy. A notable finding is that many residents are unaware of current media efforts regarding the government's policies and law enforcement related to noise pollution; however, residents are optimistic about the media's capacity to spread adequate information on this issue. This highlights the importance of designing and deploying suitable media platforms and utilising all available channels to disseminate information about Lagos State's noise pollution policies, aiming to restore some order in the state.

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Competing Interest

The authors have no competing interests to declare that are relevant to the content of this article.

References

- Abbas T (2023) Importance of behavior change communication. <https://changemanagementinsight.com/importance-of-behavior-change-communication/>.
- Abotutu AA (2015) Urban noise pollution in Nigerian cities: Imperatives for abatement. *British Journal of Applied Science & Technology*, vol.10(6), pp: 1-9
- Adebayo MA, Omobowale O (2021) Media reporting and environmental governance in Nigeria: The case of noise pollution. *Journal of Environmental Communication in Africa*, vol. 5(1), pp: 45–60. <https://doi.org/10.1080/17524032.2021.1844567>
- Adejumo AO, Akinola AO (2021) Public perception of noise pollution and control in Ibadan, Nigeria. *African Journal of Environmental Science and Technology*, vol. 15(4), pp:142–150. <https://doi.org/10.5897/AJEST2021.3011>
- Adeniyi SK (2023) Media silence and public apathy: Evaluating press coverage of environmental health in Nigeria. *Nigerian Journal of Mass Communication*, vol. 14(2), pp:79–94.
- Aderemi K (2025) Lagos: Noise pollution worsens despite regulations. <https://thesun.ng/lagos-noise-pollution-worsens-despite-regulations/>.
- Ajanaku L (2024) Nigeria has 10th largest WhatsApp’s global users, The Nation newspaper, <https://thenationonlineng.net/nigeria-has-10th-largest-whatsapps-global-users/>.
- Akinyemi PA, Ojo TO (2016) Awareness and self-perceived effect of noise pollution among students of tertiary institutions in Ilesa, South-Western Nigeria. *South American Journal of Public Health*, Special Edition 1–7.
- Akoni O (2024) Noise pollution: Lagos seals over 352 facilities, including churches, mosques in 1yr. <https://www.vanguardngr.com/2024/10/noise-pollution-lagos-seals-over-352-facilities-including-churches-mosques-in-1yr/>.
- Alabi B, Osasona A (2023) Noise pollution and the law: A review of regulatory challenges in Lagos State. *Nigerian Law and Urban Studies Review*, vol. 6(1), pp:23–38.
- Albalawi Y, Sixsmith J (2023) Agenda Setting for Health Promotion: Exploring an Adapted Model for the Social Media Era. *JMIR Public Health Surveill*, 1(2):e21. <https://doi:10.2196/publichealth.5014>
- Ardèvol-Abreu A (2015) Framing theory in communication research in Spain. Origins, development and current situation. *Revista Latina de Comunicación Social*, 70, 423–450. <https://doi.org/10.4185/RLCS-2015-1053en>
- Basch CH, Kollia B, Park E, Yousaf H (2023) Investigation of the content offered to the public regarding noise pollution in online news. *Noise & Health: A Bi-Monthly Interdisciplinary Journal*, 26(123), 571–576. https://doi: 10.4103/nah.nah_118_23
- Basner M, McGuire S (2022) WHO environmental noise guidelines and their relevance to global urban planning. *Noise & Health*, 24(112), 1–9. https://doi.org/10.4103/nah.nah_9_22
- Bentley M. E., Wasser H.M., & Creed-Kanashiro H. M. (2011). Responsive feeding and child undernutrition in low- and middle-income countries. *The Journal of Nutrition*, 141(3), 502-507. <https://doi.org/10.3945/jn.110.130005>
- Berg RE (2025) Noise. <https://www.britannica.com/science/sound-physics/Noise>.
- Briscoe, C. & Aboud, F. (2012). Behaviour change communication targeting four health behaviours in developing countries: A review of change techniques. *Social Science & Medicine*, 74(4), 612-621. <https://doi.org/10.1016/j.socscimed.2012.03.016>
- Casey JA, James P, Cushing L, Jesdale BM, Morello-Frosch R (2017) Race, ethnicity, income concentration and 10-year change in urban greenness in the United States. *International Journal of Environmental Research and Public Health*, 14(12), 1546. <https://doi.org/10.3390/ijerph14121546>

- Chernov, G., Valenzuela, S., & McCombs, M. (2011). An experimental comparison of two perspectives on the concept of need for orientation in agenda-setting theory. *Journalism & Mass Communication Quarterly*, 88, 142–155.
- Chukwu MO, Emole, MA (2023) Media framing of environmental pollution in selected Nigerian newspapers. *Journal of Communication and Media Research*, 15(1), 25–38.
- CCOHS (2025). Noise. https://www.ccohs.ca/oshanswers/phys_agents/noise/noise_basic.html.
- Drew C (2023) Agenda setting theory (definition, examples, & criticisms). <https://helpfulprofessor.com/agenda-setting-theory/>.
- Dutchen S (2022) Noise and health. <https://magazine.hms.harvard.edu/articles/noise-and-health>.
- Emakpor OA, Adeyemi-Suenu AA, Emakpor RO (2024) Environmental health issues and challenges in Lagos State, Nigeria. *NIU Journal of Social Sciences*, 10(3), 237–245.
- Eludoyin OM (2016) Perceptions on noise pollution among the residents of a medium-size settlement in Southwestern Nigeria – A preliminary study. *Journal of Pollution Effects and Control*, 4, 160
- Entman RM (1993) Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51–58. <https://doi.org/10.1111/j.1460-2466.1993.tb01304.x>
- Environmental Protection Agency (2025) Clean Air Act Title IV - Noise pollution. <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution>.
- European Environment Agency. (2020) Environmental noise in Europe—2020. EEA Report No. 22/2019. <https://www.eea.europa.eu/publications/environmental-noise-in-europe>.
- European Environment Agency (2021). Noise. www.eea.europa.eu.
- Fiveable. (2024) media exposure – Intro to Cognitive Science. <https://library.fiveable.me/key-terms/introduction-cognitive-science/media-exposure>.
- Folarin S (2021). 70% of noise pollution in lagos state caused by churches, mosques-LASEPA GM, Fasawe. <https://punchng.com/70-of-noise-pollution-in-lagos-state-caused-by-churches-mosques-lasepa-gm-fasawe/>
- Garg N, Kumar A, Maji S (2020) A review of noise pollution and its impact on human health in India. *International Journal of Environmental Science and Technology*, 17, 1345–1360. <https://doi.org/10.1007/s13762-019-02599-4>
- Gile, K. J., & Handcock, M. S. (2010). Respondent-driven sampling: An assessment of current methodology. *Sociological methodology*, 40(1), 285–327. <https://doi.org/10.1111/j.1467-9531.2010.01223.x>
- Gonah, L., & Nomatshila, S. C. (2024). Social and Behavioural change communication challenges, opportunities and lessons from past public health emergencies and disease outbreaks: a scoping review. *Annals of Global Health*, 90(1), 62.
- Hahad O, Kuntic M, Al-Kindi S et al (2024) Noise and mental health: evidence, mechanisms, and consequences. *Journal of Exposure Science & Environmental Epidemiology*, 35, 16–23. <https://doi.org/10.1038/s41370-024-00642-5>
- Haider A (2003) Explained: Agenda setting theory and its relevance today. <https://www.indiatimes.com/explainers/news/explained-agenda-setting-theory-and-its-relevance-today-608500.html>.
- Heckathorn, D. (2008). Respondent-driven sampling (rds). In *Encyclopedia of survey research methods* (Vol. 0, pp. 741-742). Sage Publications, Inc., <https://doi.org/10.4135/9781412963947.n479>
- Hurley, K.M., Cross, M.B., & Hughes, S.O. (2011) A systematic review of responsive feeding and child obesity in high-income countries. *The Journal of Nutrition*, 141(3), 495-501. <https://doi.org/10.3945/jn.110.130047>
- Idoko A, Igboro B, Sani B, Umar A, Stephen J (2022) Public perception on environmental noise pollution: A case study in Zaria city, Kaduna state, Nigeria. *Environmental Health Engineering Management*, 9(2), 135-145

- Integral World (2024). Behavior change communication: Development strategies. <https://integralworld.org/blog/behavior-change-communication-development-strategies/>.
- Javed, B. (2024) What's noise pollution? Types, causes, and prevention. <https://www.hseblog.com/noise-pollution/>.
- John, S.G. (2023) Evaluating the role of Nigerian print media in raising public awareness of the health effects of noise pollution. *Applied Environmental Education & Communication*, 22(3), 1-15. <https://10.1080/1533015X.2023.2235358>
- Journalism.University(2023,December5). Coreprinciplesofsocialandbehaviourchangecommunication. <https://journalism.university/media-and-society/core-principles-social-behavior-change-communication/>
- Kim K Y, Lee JS, Park J (2021) Long-term exposure to road traffic noise and the risk of depression: A population-based cohort study in South Korea. *Science of the Total Environment*, 761, 143236. <https://doi.org/10.1016/j.scitotenv.2020.143236>
- Kollia, B., Basch, C. H., Park, E., Yousaf, H. (2025) Social media depictions of the impact of noise pollution on communication and mental and physical health. *Journal of Community Health*, <https://doi.org/10.1007/s10900-025-01457-7>
- Lagos State Government. (n.d.). Lagos State Environmental Protection Agency Law. <http://laws.lagosstate.gov.ng>
- LASEPA (2024). Environmental law and regulatory services. <https://lasepa.gov.ng/laws-and-services/>
- Maskey, A. (2020). Social and behavior change communication approach in public health. <https://www.slideshare.net/slideshow/social-and-behavior-change-communication-approach-in-public-health/242584997>
- Maton, S.M. Nesla, R.A., Dod, J.D., Binbol, N.L., Labiru, A.M., Lemut, I.T., Baklit, G., Matur, B.M (2021) Public perception about the environmental effects of urban noise pollution in Jos metropolis, Nigeria. *Journal of Environmental pollution Management*, 3(1), 1-9
- Matsaganis, M. D., Payne JG (2005) Agenda setting in a culture of fear the lasting effects of september 11 on american politics and journalism. *American Behavioral Scientist*, 49(3), 379-392.
- Matthes, J. (2006). The need for orientation. Revising and validating a classic concept. *International Journal of Public Opinion Research*, 18, 422–444
- Mbaegbu, N.O., Ede, A., Oparaocha, R., Orji, S., Opara, E., Chinedu, A., Ugochinyere, I., Ilo, C., Nwankwo, C., Aronu, C. (2021) Assessment of noise pollution and its perceived health risks on residents of Owerri Metropolis, Imo State, Nigeria. *World Journal of Advanced Research and Reviews*, 10(02), 146–156
- McCombs, M.E., Shaw, D.L., Weaver, D.H., (2014) New Directions in agenda-setting theory and research. *Mass Communication and Society*, 17(6), 781-802.
- McLeod DM, Wise D, Perryman M (2017) Thinking about the media: A review of theory and research on media perceptions, media effects perceptions, and their consequences. *Review of Communication Research*, 5, 35-83. <https://doi.org/10.12840/issn.22554165.2017.05.01.013>
- Media Theory (2023) Agenda-setting theory: Media's role in shaping public opinion. <https://mediatheory.net/agenda-setting-theory>
- Nancy, S., Dongre A.R. (2021). Behavior change communication: Past, present, and future. *Indian Journal of Community Medicine*. 46(2), 186-190. https://10.4103/ijcm.IJCM_441_20.
- Nathanson, J.A., Berge, R.E., (2025) Noise pollution. <https://www.britannica.com/science/noise-pollution/Noise-regulation-and-mitigation>.
- NeuroLaunch(2024). Socialcognitivetheory: Acomprehensiveexplorationofitspsychologicalfoundations. https://neurolaunch.com/social-cognitive-theory-psychology-definition/#google_vignette

- Ngigi S, Busolo D (2018) Behaviour Change communication in health promotion: Appropriate practices and promising approaches. *International Journal of Innovative Research and Development*, 7(9), 84-93. <https://10.24940/ijird/2018/v7/i9/SEP18027>
- Nkangi FN, Anyonje L, Kabaji E (2024) Influence of mass media messages on audience perception regarding patient rights among the residents of Mt. Elgon, Bungoma County, Kenya, *African Journal of Empirical Research*, 5 (3), 526-537.
- Odiegwu-Enwerem C, Ogbonna-Nwaogu I, Oyibo P (2024) Impact of media exposure on legislative output of the 10th National Assembly Members of South-West Nigeria Extraction, *International Journal of Sub-Saharan African Research (IJSSAR)* 2(2), 307-319,
- Ogunjuyigbe ASO, Adekoya LO (2012) Public attitude and awareness of noise pollution in urban environments: The case of Ibadan metropolis. *Journal of Environmental Protection*, vol. 3(9), 1204–1211. <https://doi.org/10.4236/jep.2012.39139>
- Olorunfemi B, Akinbobola T (2021) Mapping urban noise exposure in Lagos: A GIS-based analysis. *African Journal of Environmental Risk Management*, 3(2), 102–117.
- Okeke D (2018) Analysis of newspaper coverage of noise pollution in Nigeria. A Project Submitted to the Department of Mass Communication, Faculty of Management and Social Sciences, Godfrey Okoye University, Enugu.
- Okeke D (2017) Analysis of newspaper coverage of noise pollution in Nigeria. http://academia.edu/55523316/analysis_of_newspaper_coverage_of_noise_pollution_in_nigeria.
- Onyebuchi U (2025, May 11). LASEPA shuts down hotels, lounges, churches over noise pollution, environmental infractions. <https://thenationonlineng.net/lasepa-shuts-down-hotels-lounges-churches-over-noise-pollution-environmental-infractions/>
- Oyediran T (2024) Lagos enforces noise control with new permit policy. Punch Newspaper. <https://punchng.com/lagos-enforces-noise-control-with-new-permit-policy/>.
- Oztay E.T (2021) The relationship between awareness and behavioural change in the context of the issue of violence against women from the perspective of digital public relations and online events, *Journal of Education Culture and Society*, 2, 77-92, <https://doi: 10.15503.jecs2021.2.77.92>
- Powel M. (2024) Agenda setting in healthcare policies. <https://www.elgaronline.com/edcollchap/book/9781800887565/book-part-9781800887565-6.xml>.
- Quang CN, An T, Bao G, Duyen H (2025) Noise pollution in developing countries: Loopholes and recommendations for Vietnam law. *City and Environment Interactions*, 25, 100187. <https://doi.org/10.1016/j.cacint.2025.100187>
- Ross, A. (2025) What is noise? <https://www.newyorker.com/magazine/2024/04/22/what-is-noise>.
- Rotondi, M. & Rotondi, N. (2023). Respondent-driven sampling, methodological developments and applications to public health. *Population Medicine*, 5(Supplement), A1887. <https://doi.org/10.18332/popmed/165036>
- Sadaf A (2011) Public Perception and Media Role. *International Journal of Humanities and Social Science*, 1(5), 228- 236.
- Salau G (2025) Religious organisations account for 63% of noise pollution complaints, says Lagos govt. <https://guardian.ng/news/religious-organisations-account-for-63-of-noise-pollution-complaints-says-lagos-govt/>.
- Schwela D (2022) Review of environmental noise policies and economics in 2020–2022. *South Florida Journal of Health*, 2, 46–61.
- Shah G (2025) Noise. <https://www.vedantu.com/physics/noise>.
- Sanchez LG; Schifanella R, Aiello LM; Querci D, Asensio Arcas. G. (2020). Social media and open data to quantify the effects of noise on health. *Frontiers in Sustainable Cities*. 2(41), 1-14. <https://10.3389/frsc.2020.00041>

- Senam N, Joshua U, Christopher P (2022) Fundamental Issues in Mass Media Audience Research. *International Journal of Social Sciences Perspectives*, 11(2), 28-37.
- Shonibare O (2024) Noise & emissions control department. <https://lasepa.gov.ng/noise-emissions-control-department/>
- Shuaib KA, Rasaan K, Azeem O (2025) Knowledge, attitude and practice of residents towards the prevention of exposure to noise pollution in Egbejila community, Nigeria. *Innovations*, 80, 1855-1873
- Shwela, D. (2023) Guidelines for environmental noise management in developing countries. <https://www.intechopen.com/chapters/86132>
- Sierpe A, Yen RW, Stevens G, Van Citters AD, Elwyn G, Saunders CH (2024) Agenda-setting in the clinical encounter: A systematic review protocol. *PLoS ONE*, 19(10): e0312613. <https://doi.org/10.1371/journal.pone.0312613>
- Sotelo G (2023) Noise pollution: Environmental impact and what you can do. <https://www.treehugger.com/what-is-noise-pollution-definition-environmental-impact-5191271>
- Stanley M (n.d.). Noise pollution. <https://education.nationalgeographic.org/resource/noise-pollution/>
- The Guardian (2023). Noise pollution constitutes 81.8% environmental complaints yearly – LASG. <https://guardian.ng/news/noise-pollution-constitutes-81-8environmental-complaints-yearly-lasg/>
- This is Lagos (2025) LASEPA receives 1,616 noise pollution complaints in 18 months. <https://thisislagos.ng/lasepa-receives-1616-noise-pollution-complaints-in-18-months/>.
- United Nations (2023) World Urbanization Prospects: The 2022 revision. Department of Economic and Social Affairs, Population Division. <https://population.un.org/wup/>.
- Vishal (2023). Noise pollution, causes, effects, types and measures to control. <https://www.studyiq.com/articles/noise-pollution/>.
- Wells B (2025) Governments' strategies to combat noise pollution. <https://shunwaste.com/article/how-are-governments-preventing-noise-pollution>.
- White L. Muturi N (2023) Social and Behavior Change Communication, *The Palgrave Encyclopedia of Social Marketing*, 1-9, https://10.1007/978-3-030-14449-4_216-1
- Wokekoro E (2020). Public awareness of the impacts of noise pollution on human health. *World Journal of Research and Review*, 10(6), 27–32. https://www.wjrr.org/download_data/WJRR1006010.pdf
- World Population Review (2025). Lagos population. <https://worldpopulationreview.com/cities/nigeria/lagos>.
- World Health Organization. (2021a). Community noise guidelines: Updated recommendations for urban health. Geneva: <https://www.who.int/news-room/fact-sheets/detail/environmental-noise>.
- World Health Organization. (2021b). Environmental noise guidelines for the European Region. Copenhagen: WHO Regional Office for Europe. <https://www.euro.who.int/en/publications/abstracts/environmental-noise-guidelines-for-the-european-region-2018>
- World Medical Association (2025). WMA Declaration of Helsinki – Ethical principles for medical research involving human participants. <https://www.wma.net/policies-post/wma-declaration-of-helsinki/#:~:text=It%20is%20the%20duty%20of%20physicians%20who%20are%20involved%20in,though%20they%20have%20given%20consent>