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Assessment of the Perception of Community Members Regarding Street Dumping of Waste and Its Health Impact in Ilorin Metropolis

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ABSTRACT

Background: Street dumping of waste remains a major environmental and public health concern in urban areas of developing countries, particularly in Nigeria.

Main objective: This study assessed the perception of community members regarding street dumping of waste and its health impacts in Ilorin Metropolis, Kwara State.

Methods: Using a multistage sampling technique, 204 residents from the three Local Government Areas (Ilorin West, Ilorin East, and Ilorin South) participated in a descriptive cross-sectional survey. Structured questionnaires were used to gather data, and binary logistic regression, Chi-square tests, and descriptive statistics were used for analysis.

Results: Findings revealed that over 90% respondents were aware of the negative consequences of street dumping on public health and the environment. Age, education, marital status, and occupation showed significant associations with awareness ($p < 0.05$). The major factors influencing street dumping includes lack of access to waste bins (AOR=14.27, C.I=3.89, $p < 0.001$), convenience(AOR=0.79, C.I=2.27, P<0.001) and absence of municipal waste collection services (AOR=5.55, C.I=1.01, $p = 0.048$).

Conclusion: Despite high awareness of health and environmental risks, street dumping persists due to infrastructural limitations and weak enforcement mechanisms in Ilorin metropolis.

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Introduction

As urbanization accelerates, the issues surrounding waste disposal and its management have gained increasing attention, especially in metropolitan areas like Ilorin, the capital city of Kwara State (Ologele *et al.*, 2023). Ilorin is a fast-growing metropolis that has witnessed rapid population growth over the last few decades, accompanied by rising waste generation. Street dumping not only poses environmental hazards, but it also creates conditions conducive to the spread of infectious diseases, including cholera, malaria, and respiratory infections. In the case of malaria, Nigeria accounts for 27% of global malaria cases and 32% of global malaria deaths, with over 200,000 malaria-

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related deaths annually, making it the highest in the world (WHO, 2023)]. Understanding the perception of Ilorin's community members regarding street dumping and its health impacts is vital for improving waste management strategies and formulating more effective public health interventions (Ologele *et al.*, 2023). The main objective of this research is to assess the perceptions of community members regarding street dumping of waste and its associated health impacts in Ilorin Metropolis.

Specific Objectives

1. To determine the awareness of Ilorin residents regarding the consequences of street dumping on public health and the environment.
2. To investigate the factors influencing street dumping practices among Ilorin residents.
3. To assess the attitudes toward policies and strategies for improvements.

Methodology

Study Design

This study adopts a descriptive survey research design, which is commonly used to collect quantitative data on people's attitudes, behaviours, opinions, and characteristics. The primary aim of the descriptive design in this context is to gather detailed information on the community's perceptions and attitudes toward street dumping, as well as to identify any patterns or trends associated with waste disposal behaviours and health outcomes.

Study Area and Population

The capital of Kwara State, Nigeria, Ilorin, was the site of this study. Three local government areas make up the Ilorin metropolis: Ilorin South, Ilorin East, and Ilorin West. The target population for this study are residents aged 18 years and above population also include both men and women, from various socio-economic backgrounds, education levels, and employment statuses.

Sample Size and Sampling Techniques

A sample size of 204 was used for this study which was determined using Taro Yamane formula with margin error of 0.07(because the study was perception-based, exploratory and community focused).

This study adopted a multi-stage sampling technique to ensure representation across the three Local Government Areas.

Method of Data Collection

Data for this study was collected primarily through questionnaire. To make sure that participants understood the questions and gave accurate answers, the questionnaire was given out in person. The questionnaire had a closed-ended format and it was divided into several sections the socio demographic characteristics, awareness of street dumping consequences, factors influencing street dumping practices and attitudes towards policy and strategies for improvements. Responses were categorical and dichotomous.

Validity and Reliability

The questionnaire was subjected to a pre-test to ensure validity and reliability. 10% of the sample size which equals to 20 respondents was selected from Ganmo, Ifelodun Local Government, Kwara State to test the questionnaire. Reliability was tested using Cronbach's Alpha, which yielded a coefficient of 0.74, indicating a high level of internal consistency of the questionnaire items.

Data analysis

The data collected from the surveys was analysed using quantitative analysis techniques. The analysis was conducted using statistical software SPSS. The following technique was used: Descriptive Statistics (demographic characteristics), Chi-Square Tests and Binary Logistics Regression. Statistical significance was set at $P < 0.05$ (5%) with confidence interval 95%.

Ethical Consideration

This study adhered to ethical standards in the collection and handling of data. Ethical approval was sought from the ethics committee at the Kwara State Ministry of Health with approval I.D: ERC/MOH/2025/09/526 before data collection begins. Participation was voluntary, consent was obtained and confidentiality was ensured.

Limitations of the Study

Several limitations that affect the results of this study are; Sampling Bias, self-reporting bias and limited Scope (the study was confined to Ilorin Metropolis).

Data Analysis and Results

Awareness of Street Dumping Consequences

To test the research hypothesis on awareness of street dumping consequences, we performed a chi-square test based on research questions that relate to the awareness of street dumping

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Table 1: Awareness of Street Dumping Consequences by LGA

Awareness Item		Ilorin West (n=70)	Ilorin East (n=70)	Ilorin South (n=64)	Total (n=204)
Aware of consequences of street dumping	Yes	65 (34.6%)	65 (34.6%)	58 (30.9%)	188 (92.2%)
	No	5 (31.3%)	5 (31.3%)	6 (37.5%)	16 (7.8%)
Awareness that Street Dumping Causes Environmental Pollution	Yes	63 (34.1%)	66 (35.7%)	56 (30.3%)	185 (90.7%)
	No	7 (36.8%)	4 (21.1%)	8 (42.1%)	19 (9.3%)
Street dumping increases disease spread	Yes	65 (34.2%)	66 (34.7%)	59 (31.1%)	190 (93.1%)
	No	5 (35.7%)	4 (28.6%)	5 (35.7%)	14 (6.9%)
Received information on proper disposal	Yes	63 (33.7%)	64 (34.2%)	60 (32.1%)	187 (91.7%)
	No	7 (41.2%)	6 (35.3%)	4 (23.5%)	17 (8.3%)

Table 1 indicates that awareness of the consequences of street dumping is generally high across all LGAs. More than 90% of respondents acknowledged that street dumping contributes to environmental pollution and increases the spread of diseases. This high level of awareness was consistent across Ilorin West, Ilorin East, and Ilorin South, indicating widespread recognition of the public health and environmental implications of street dumping

Test of Hypothesis

Null Hypothesis (H_0): There is no significant association between socio-demographic characteristics and awareness of health risks related to street dumping.

Alternative Hypothesis (H_1): There is a significant association between at least one socio-demographic characteristic and awareness of health risks related to street dumping.

Test Statistic: $X^2 = \sum_{i=1}^{n}\sum_{j=1}^{n}\left[\frac{(ObservedFrequency_{ij}-ExpectedFrequency_{ij})^2}{ExpectedFrequncy_{ij}}\right] = \sum_{i=1}^{n}\sum_{j=1}^{n}\frac{(O-ij-E_{ij})^2}{E_{ij}}$

Decision Rule: Wherever the test p-value is smaller than the critical rejection region $\alpha = 0.05$, there is enough data evidence at a 95% significance level to reject the null hypothesis, otherwise, there is not enough data evidence to reject the null.

Table 2: Association between Demographic Characteristics and Awareness

Are you aware of the consequences of street dumping on public health and the environment				
	Yes (%)	No (%)	χ^2	Pvalue
Age group				
18–23 years	31(88.6)	4 (11.4)	9.806	0.020
24–30 years	62 (86.1)	10 (13.9)		
31–40 years	63 (100.0)	0 (0.0)		
40 years and above	32 (94.1)	2 (5.9)		
Education				
No formal education	26 (100.0)	0 (0.0)	4.669	0.198
Primary	33 (86.8)	5 (13.2)		
Secondary	40 (88.9)	5 (11.1)		
Tertiary	89 (93.7)	6 (6.3)		
Gender				
Male	94 (93.1)	7 (6.9)	0.230	0.631
Female	94 (91.3)	9 (8.7)		
Occupation				
Students	62 (92.5)	5 (7.5)	10.497	0.015
Employed	74 (92.5)	6 (7.5)		
Self Employed	36 (100.0)	0 (0.0)		
Unemployed	16 (76.2)	5 (23.8)		

Table 2 presents the association between respondents' demographic characteristics and their awareness of the consequences of street dumping on public health and the environment. The results show that age and occupation were significantly associated with awareness ($p < 0.05$), while education level and gender were not significantly associated ($p > 0.05$).

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Table 3: Binary Logistic Regression of Socio-Economic and Cultural Factors Associated with Street Dumping Practices in Ilorin Metropolis

Predictor Variable	β (Coef.)	SE	Wald χ^2	AOR	95% CI (Lower–Upper)
Intercept	2.06	0.79	6.72	7.82	1.65 – 37.02
Distance to nearest waste point (Ref: 50–200 m)					
< 50 m	-0.17	0.52	0.11	0.84	0.30 – 2.34
> 200 m	-0.02	0.54	0.00	0.98	0.34 – 2.84
Waste collection frequency (Ref: Less than once a week)					
> once/week	-0.17	0.59	0.08	0.84	0.27 – 2.67
Once a week	0.09	0.60	0.02	1.09	0.34 – 3.53
No service	1.71	0.87	3.91	5.55	1.01 – 30.31
Main reason for dumping (Ref: Other reasons)					
Household finds it convenient	1.96	0.58	11.38	7.09	2.27 – 22.10
No access to bins/collection points	2.66	0.66	16.06	14.27	3.89 – 52.37

Table 3 presents the results of a binary logistic regression analysis conducted to examine the socio-economic and cultural factors that influence household engagement in street dumping practices within Ilorin Metropolis. This indicates that proximity alone may not be a strong determinant of dumping behaviour also the absence of any waste collection service is a strong risk factor for street dumping. This also highlights that convenience and infrastructural gaps are major drivers of street dumping practices.

Table 4: Attitudes Toward Policies and Strategies for Improvement

	Attitude Toward Policies and Strategies		
Research Questions	Yes (%)	No (%)	Unsure (%)
Community-based strategies can improve waste management and reduce health risks from street dumping	177 (86.8)	11 (5.4)	16 (7.8)
Do you think the government is doing enough to address street dumping in Ilorin	157 (77.0)	47 (23.0)	0 (0.00)

Table 4 indicates a strong public belief in the potential effectiveness of community-driven approaches in tackling environmental health challenges.

However, when asked whether the government is doing enough to address street dumping in Ilorin, 77.0% of respondents answered "Yes," while, 23.0% expressed dissatisfaction.

Discussion

In this study over 90% acknowledged that street dumping contributes to environmental pollution and the spread of disease, and most had received some form of education on proper disposal. These findings contrast with Adekola et al. (2021), who observed limited awareness of the climate impacts of waste in Benin City. Street dumping in Ilorin was strongly linked to infrastructural and socio-economic constraints. Lack of access to bins and collection services increased the likelihood of dumping by more than fivefold, while convenience and the perception that dumping was socially acceptable also played major roles. These results are consistent with Olukanni et al. (2020) in Ogun State who found that income and availability of facilities significantly influenced disposal practices. In South Africa, Raphela, Manqele, and Erasmus (2024) observed knowledge gaps about health risks, showing that even where awareness exists, weak infrastructure and affordability remain binding constraints. Thus, Ilorin experience reflects a wider African challenge where waste practices are shaped less by individual choice than by structural limitations. In Ilorin, the relatively positive attitude to participation suggests potential for stronger community government partnerships. This aligns with Ndala and Ndala (2022) in Lilongwe, Malawi, who noted that community members recognized their role in waste disposal but showed low willingness to pay for services, preferring government responsibility.

The study showed that education influenced resident's preferred waste management strategies, with the better

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educated supporting structured interventions. Respondents strongly endorsed awareness campaigns and infrastructure provision as priorities. This echoes Okoji et al. (2023), who called for targeted enlightenment as a way to improve public attitudes.

Conclusion

This study revealed that community members in Ilorin Metropolis possess a high level of awareness regarding the environmental and health consequences of street dumping. However, persistent street dumping practices are driven by infrastructural inadequacies, weak enforcement of waste management regulations, and socio-behavioral factors. The findings underscore the need for integrated waste management strategies that combine improved infrastructure, sustained environmental education, and active community participation to achieve sustainable public health and environmental outcomes.

Recommendations

In line with the study findings, the governments are recommended to strengthen enforcement of existing environmental sanitation laws by ensuring consistent penalties for indiscriminate dumping and also expand waste collection infrastructure by providing more disposal points and ensuring regular evacuation of waste. The private sector and NGOs are recommended to invest in affordable waste collection services that can reach underserved communities. The community members are recommended to take collective responsibility by organizing local sanitation groups to monitor and report indiscriminate dumping.

Public Health Impact

There exists a notable gap in understanding how the beliefs, attitudes, and knowledge of residents contribute to the persistence of illegal dumping and poor waste practices. Without this understanding, government interventions and sanitation programs are likely to remain ineffective or unsustainable. In Ilorin metropolis, inadequate waste management has been linked to urban flooding, air pollution, and the contamination of water sources, all of which contribute to the degradation of the quality of life. This research help bridge the gap by offering practical, perception-based recommendations that can enhance the effectiveness of waste policies in Ilorin metropolis. The environmental consequences of street dumping in Ilorin Metropolis are extensive and far-reaching. To mitigate these impacts, it is crucial for local authorities and residents to adopt more effective waste management practices and to prioritize environmental education and awareness.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this manuscript.

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