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Awareness and Practice of Solid Waste Management and Its Associated Health Effects Among Residents of Ede North Local Government Area, Osun State, Nigeria

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ABSTRACT

This study evaluates the awareness and practices related to solid waste management (SWM) and its associated health effects among residents of Ede North Local Government Area (LGA), Osun State, Nigeria. As urbanization and industrialization continue to rise, Nigeria faces significant challenges in managing the increasing volume of waste generated. Improper waste disposal methods, such as open dumping and burning, contribute to environmental degradation and public health risks.

A total of 80 respondents were surveyed using a structured questionnaire, and the findings indicate that while there is moderate awareness of SWM practices, significant gaps remain. A majority of respondents (53.75%) are familiar with waste management practices, but opinions on their effectiveness vary. Although 68.75% believe that household waste can be recycled or reused, many respondents (30%) still resort to improper disposal methods, such as throwing waste into drains or open refuse dumps. The study also reveals that 56% of respondents recognize the link between poor waste management and waterborne diseases, but awareness of other health risks, such as mosquito-borne diseases and respiratory issues, is limited. There exist variations in awareness levels ($\chi^2=5.1$, $p> 0.05$) do not significantly influence how residents dispose of their waste. Thus, the awareness of waste do not influence the waste disposal practice of the Respondents The study concludes that while awareness of the health impacts of poor waste management exists, there is a clear need for targeted educational interventions to address knowledge gaps in waste disposal and management practice, particularly in recycling, waste segregation, and the environmental health risks associated with improper waste disposal. It is essential to implement effective public health campaigns and policies that can enhance waste management practices and reduce the health risks linked to improper waste disposal in Ede North LGA. This research contributes to the growing body of knowledge on SWM in Nigeria, offering valuable insights for policymakers and community leaders in addressing waste management challenges.

Keywords: Solid Waste Management, Public Health, Environmental Pollution, Waste Disposal Practices, Health Risks

INTRODUCTION

Managing solid waste is a huge problem for both cities and towns all over the world. This is especially true in developing countries, and Nigeria is a good example of this. As more people move to cities in Nigeria, the population grows quickly. At the same time, industries are popping up everywhere. All of these have led to a big rise in the amount of waste being created. Sadly, this makes it really hard to deal with the waste in a smart way. When waste management isn't done right, it can really harm the environment. Waste can pile up, and this mess can lead to serious health problems for people. One big worry is that poor waste management can help spread diseases. When trash isn't taken care of, it can become a breeding ground for germs and bugs, making it easier for diseases to spread around communities. Without good systems in place, people can suffer from different health risks. So, it is clear that finding better ways to handle solid waste is super important for keeping both the environment and public health safe.

Globally, the management of solid waste has become a pressing issue due to its environmental and health impacts. The World Bank reported that in 2016, the world generated 2.01 billion tonnes of municipal solid waste, with at least 33% of that not managed in an environmentally safe manner. This figure is projected to grow to 3.40 billion tonnes by 2050, with developing countries in sub-Saharan Africa and South Asia facing the most significant challenges due to limited resources and infrastructure (Kaza et al., 2018). While the World Bank data is from 2018, the projections are still relevant, and more recent studies reinforce the trend. In many low- and middle-income countries, open dumping and burning are common waste disposal methods, leading to severe air and soil pollution.

A study by Velis et al. (2024) highlighted that a significant portion of plastic waste globally is disposed of through open, unregulated burning, releasing toxic substances such as dioxins and furans into the environment. Countries like Nigeria, India, and Indonesia are among the top contributors to this practice, which poses substantial health risks to nearby populations (Velis et al., 2024). Furthermore, recent research has emphasized the increasing complexity of waste management due to the rise of e-waste and plastic pollution. For instance, Forti et al. (2020) demonstrated the rapid growth of global e-waste, which contains hazardous materials, necessitating specialized treatment and disposal. Moreover, the prevalence of microplastics in various environmental matrices underscores the pervasive nature of plastic pollution from inadequate waste management practices (Lau et al., 2020).

Nigeria, with a population exceeding 200 million, faces substantial Solid Waste Management (SWM) challenges. Rapid urbanization, industrialization, and population growth have led to increased waste generation without a corresponding development in waste management infrastructure. The country's waste generation is estimated at 32 million tonnes annually, with household waste constituting a significant portion (Federal Ministry of Environment, 2021). The prevalent waste disposal methods in Nigeria include open dumping, uncontrolled landfilling, and open burning. These practices result in environmental pollution and pose health hazards to the populace.

For instance, the Olusosun landfill in Lagos, one of the largest in Africa, receives up to 10,000 tonnes of waste daily. The landfill is a significant source of air pollution due to the open burning of waste, releasing toxic gases like methane and carbon monoxide, which adversely affect the respiratory health of nearby residents (Akinbile et al., 2022). Additionally, recent studies have highlighted the increasing challenge of plastic waste management in urban centers like Lagos, contributing to environmental degradation and public health risks (Ogunlela et al., 2023).

Lagos, located in southwest Nigeria, is a megacity with a GDP exceeding \$131 billion, making it Nigeria's commercial capital (Okeowo & Fatoba, 2022). With a population density of 4,713/km² and an urban expansion of 2.6 % since 2000, it has contributed 22.7 % of Nigeria's GDP. Covering 3,345 km², Lagos was Nigeria's capital until 1991 (Uduku et al., 2021). Informal settlements and poor waste disposal practices exacerbate these issues. Between 1960 and 1970, waste management in Lagos State involved only dumping and burning (Yakubu, 2017). The oil boom, industrialization, and urbanization of the early 1970 s led to a surge in waste generation, which challenged the Lagos Local Government Council. By 1977, Lagos was labeled the "dirtiest" capital city during the Festival of Arts and Culture (Etim et al.,

2024), resulting in the Powell Duffen Pollution Control Consultant's establishment of the Lagos State Refuse Disposal Board in 1977, an authority that became the Lagos State Garbage Disposal Board in 1981 and LAWMA in 1991. The LAWMA Act of 2007 and the Environmental Management and Protection Law of Lagos grant LAWMA extensive authority, including waste recovery for economic growth. In Osun State, similar challenges persist. A study assessing municipal solid waste management in Oshogbo, the state capital, revealed that the Osun State Waste Management Agency faces difficulties in fulfilling its responsibilities. The study identified delays in waste collection and inadequate involvement of non-governmental organizations and private sectors in waste management efforts (Adeyemi et al., 2020). Furthermore, there is a growing concern regarding the lack of integrated waste management systems and the need for community engagement in sustainable waste practices within Osun State (Olukanni et al., 2021).

Improper Solid Waste Management practices have direct and indirect health implications. Open dumping and burning of waste create breeding grounds for disease vectors such as mosquitoes and rodents, leading to the spread of diseases like malaria, cholera, and typhoid fever (World Health Organization, 2022). Exposure to pollutants from waste burning, including dioxins and particulate matter, can cause respiratory issues, skin infections, and other health problems (Landrigan et al., 2020). Recent research has emphasized the link between environmental pollution from waste and the rise of non-communicable diseases (NCDs) (Prüss-Üstün et al., 2023). In Lagos State, studies have consistently shown that illegal dumping of solid waste leads to significant health risks, including water, soil, and air contamination, resulting in the spread of diseases (Ogunlela et al., 2023). Similarly, research in Akure, Ondo State, has identified that improper waste disposal practices contribute to the prevalence of diseases such as measles, diarrhea, malaria, and typhoid fever among residents (Akinbile et al., 2021).

In Osun State, the Osun River has been subjected to pollution from various sources, including improper waste disposal. Contaminants such as heavy metals from waste leachate have been detected in the river, posing health risks to communities relying on the river for drinking water and other domestic uses (Adewumi et al., 2022). The presence of microplastics within the Osun River is also a rising concern, that poses further health risks to the population that utilize the water source (Ojekunle et al., 2024). Ede North Local Government Area, like many other regions in Nigeria, faces challenges in effective Solid Waste Management. The area lacks adequate waste collection services, leading residents to resort to improper disposal methods such as open dumping and burning. These practices not only degrade the environment but also pose significant health risks to the community (Olukanni et al., 2021). The lack of formal waste management infrastructure in rural and semi-urban areas like Ede North exacerbates the problem, leading to uncontrolled waste accumulation (Akinbile et al., 2022).

A study assessing municipal solid waste management in Oshogbo, which shares similar characteristics with Ede North, revealed that the state's waste management agency is not effectively fulfilling its responsibilities. The study highlighted delays in waste collection and a lack of involvement from non-governmental organizations and private sectors in waste management efforts (Adeyemi et al., 2020). These challenges are likely reflective of the situation in Ede North, necessitating a focused assessment of the area's waste management practices and their health implications. Furthermore, the need for community-based waste management initiatives and the adoption of circular economic principles is becoming increasingly evident in addressing the Solid Waste Management challenges in areas like Ede North (Ogunlela et al., 2023). Good waste management is key for a healthy environment and community. In places like Ede North, it is important to know how much people understand about waste management. This will help us create better plans to reduce health risks that come from dumping waste the wrong way.

1.2 Statement of the Problem

Managing waste is a big problem in Nigeria, especially in cities that are growing fast. Ede North Local Government Area in Osun State shows many of these issues. Even though there are some rules and plans in place, the area still struggles with poor waste disposal. This is causing serious health and environmental problems. In Ede North LGA, the absence of efficient waste collection and disposal infrastructure has compelled residents to resort to improper methods, such as open dumping and burning

of refuse. These practices not only degrade the environment but also pose severe health risks. Open dumping serves as a breeding ground for disease vectors like mosquitoes and rodents, which are known to transmit diseases such as malaria and Lassa fever. Additionally, the open burning of waste releases toxic pollutants into the atmosphere, contributing to respiratory ailments among the populace. Studies have shown that exposure to pollutants from waste burning, including dioxins and particulate matter, can cause respiratory issues and other health problems (Aluko et al., 2021). The Osun River, a vital water source traversing Ede North, has been subjected to pollution from various sources, including improper waste disposal. Contaminants such as heavy metals from waste leachate have been detected in the river, posing health risks to communities relying on the river for drinking water and other domestic uses (Adebara et al., 2016).

Moreover, there is a notable lack of awareness and education among residents regarding proper waste management practices and the associated health implications of improper disposal. This knowledge gap hinders community engagement in sustainable waste management initiatives and perpetuates harmful practices. A study assessing solid waste management practices among residents of Buari Ishola Isibo in Ede North LGA revealed that 73.3% of respondents resorted to open dumping as their primary method of waste disposal, highlighting the prevalence of inadequate waste management practices in the area (Omoge, 2021), however this current study aims to approach the subject matter at a different angle by examining the awareness and perception of respondents toward waste management. Socio-demographic factors like education, income, and job type play a big role in how people manage waste. It's important to understand these links so we can create better solutions for waste disposal problems.

Justification of the Study

Taking care of waste is super important for keeping our communities healthy and protecting the environment. This is especially true in growing cities in countries like Nigeria. This study looks at what people in Ede North Local Government Area, Osun State know about waste management. It also checks how their waste practices impact their health. Improper waste disposal methods, such as open dumping and burning, prevalent in many Nigerian communities, have been linked to a spectrum of health issues, including respiratory infections, vector-borne diseases, and gastrointestinal disorders (Aluko et al., 2021). The findings from this study offers empirical evidence on the effectiveness of existing waste management policies within Ede North LGA. Insights into the community's awareness levels and practices can guide policymakers in refining current regulations and implementing more effective waste management systems. Moreover, understanding the socio-demographic factors influencing waste disposal behaviors can aid in designing policies that are culturally sensitive and socially inclusive. Awareness and education play a huge role in better waste management. This study points out what residents don't know and what needs to be improved. This information helps create educational programmes for the community.

Scope of the Study

This research was carried out among 90 residents living in Ogerin area Ede. It focuses on evaluating the awareness and practices related to solid waste management among residents of Ede North Local Government Area (LGA) in Osun State, Nigeria,

Aim and Objectives

The primary objective of this study is to evaluate the awareness and practices related to solid waste management among residents of Ede North Local Government Area, Osun State, and to investigate the associated health effects resulting from current waste disposal methods.

Specific Objectives

1. To assess the level of awareness on solid waste management among the residents.
2. To identify the level of solid waste management practices among the residents.
3. To assess the resident's knowledge of the health effect of poor waste management

Research Questions

1. What is the level of awareness regarding solid waste management among the residents of Ede North Local Government Area?
2. What are the prevalent solid waste management practices among the residents?

3. What is the extent of residents' knowledge of the health effects of poor waste management?

Null Hypotheses

Hypothesis (H₁): There is no significant association between residents' level of awareness regarding solid waste management and their waste disposal practices in Ede North Local Government Area.

METHODOLOGY

Research Design

This study employs a cross-sectional descriptive survey design. A cross-sectional design is appropriate for obtaining a snapshot of the current status of SWM awareness, practices, and perceived health effects within a specific population at a particular point in time.

Study Area

The research was conducted in Ogerin, Ede North LGA, a semi-urban area in Osun State, southwestern Nigeria.

Study Population

Ede is a historic town located in Osun State, southern Nigeria. It is established and mostly inhabited by the Yoruba ethnic group. It consists of two local government areas with a population of around 159,866 (National Population Commission (NPC), 2006). The target population comprises residents of Ede North LGA aged 18 years and above.

Inclusion And Exclusion Criteria

Inclusion Criterion

1. Residents within the selected ward in Ede North
2. Residents above the age of 18
3. Residents who give consent to participate in the study

Exclusion Criterion

1. Individuals who are not residents of the selected wards
2. Individuals below 18

Those that are indisposed to participate at the time of the study.

Sample Size Determination

90 respondents were chosen for this study

Sampling Technique

Convenient sampling technique

Data Collection Instrument and Validation

In this study, data was collected using a structured questionnaire designed to assess the awareness and practices of solid waste management among residents of Ede North Local Government Area (LGA), as well as to investigate the associated health effects resulting from current waste disposal methods.

Validity and Reliability of Instrument

The questionnaire was reviewed for face validity by the thesis supervisor. To assess its validity and reliability, it was tested by residents from a different local government area, and Cronbach's Alpha was calculated. If necessary, adjustments were made. While a pilot study was not conducted, reliability was evaluated using coefficients such as Cronbach's Alpha and test-retest correlation. Based on the results, the instrument was revised accordingly.

3.0 METHOD OF DATA ANALYSIS

Data analysis will be conducted using SPSS, with both univariate and bivariate analyses. Chi-square tests were done to examine associations between categorical variables, and statistical significance was set at a p-value of less than 0.05.

Ethical Consideration

Ethical considerations include ensuring informed consent from Participants, privacy and confidentiality was maintained with numerical codes assigned to respondents for anonymity.

4.0 RESULTS

Out of 90 respondents, 80 was found useful for the study, a total of 90% response rate.

Table 1: Distribution of Socio-demographic Characteristics

S/N	Variables	Frequency (N)	Percentage (%)
1.	Age		
	Less than 21 yrs	45	45.0
	21 - 30 yrs	26	26.0
	31 - 40 yrs	5	5.0
	41 - 50 yrs	4	4.0
	Above 50 yrs	0	0.0
	Total	80	100.0
2.	Marital Status		
	Married	45	56.3
	Divorced	12	15.0
	Widow	9	11.3
	Separated	7	8.8
	Single	7	8.8
	Total	80	100.0
3.	Religion		
	Islam	30	37.5
	Christianity	40	50.0
	Traditional	7	8.8
	Atheist	2	2.5
	Others	1	1.3
	Total	80	100.0
4.	Ethnicity		
	Igbo	16	20.0
	Yoruba	50	62.5
	Hausa	10	12.5
	Others	4	5.0
	Total	80	100.0
5.	Educational Level		
	None	4	5.0
	Primary	12	15.0
	Secondary	19	23.8
	Tertiary	39	48.8
	Others	6	7.5
	Total	80	100.0
6.	Monthly Income (in Naira)		
	Less than 50,000	10	12.5
	50,000 - 100,000	18	22.5
	100,001 - 150,000	24	30.0
	150,001 - 200,000	16	20.0
	Above 200,000	12	15.0

S/N	Variables	Frequency (N)	Percentage (%)
	Total	80	100.0
7.	Occupation		
	Student	40	50.0
	Trader	20	25.0
	Civil servant	5	6.3
	Farmer	3	3.8
	Business	7	8.8
	Others	5	6.3
	Total	80	100.0

The majority of respondents (45%) were under 21 years old, with the second largest group (26%) being aged between 21 and 30 years. A small percentage (5%) were between 31 and 40 years, and 4% were between 41 and 50 years. Notably, there were no respondents above the age of 50. This indicates that the sample was predominantly young. In terms of marital status, the highest percentage of respondents (56.3%) were married, followed by divorced individuals (15%), widows (11.3%), separated individuals (8.8%), and single respondents (8.8%).

Regarding religion, Christianity was the most common faith, with 50% of respondents identifying as Christians. Islam followed closely with 37.5%, while 8.8% practiced traditional beliefs, 2.5% were atheists, and 1.3% selected "Others" for their religion. Ethnically, Yoruba respondents made up the largest group, comprising 62.5% of the sample, followed by 20% who identified as Igbo and 12.5% as Hausa. A small percentage (5%) identified as belonging to other ethnic groups.

When it comes to educational level, a significant portion of respondents (48.8%) had attained tertiary education, while 23.8% had completed secondary education. A smaller percentage had primary education (15%) or no education at all (5%). In terms of income, the most common monthly income range was between 100,001 and 150,000 Naira (30%), followed by 50,000 to 100,000 Naira (22.5%). About 12.5% of respondents earned less than 50,000 Naira, while 20% earned between 150,001 and 200,000 Naira, and 15% earned above 200,000 Naira.

Occupation-wise, the largest group (50%) consisted of students, while 25% were traders. Smaller proportions were civil servants (6.3%), farmers (3.8%), business owners (8.8%), and individuals in other professions (6.3%).

Table 2: Awareness of Solid Waste Management

Question	YES	NO	I don't know	Mean	Standard Deviation
Are you familiar with the solid waste management practices in your community	43	16	11	23.33	17.21
Do you believe the current waste management strategies are effective in your community	47	22	10	26.33	18.87
Do you participate in any waste management initiatives or programs in your community	52	24	9	28.33	21.82
Household solid waste can be reused or recycled	55	18	6	26.33	25.54
Waste disposal on open places will be harmful for human health	47	16	12	25.0	19.15
Incineration is the effective disposal mechanism for household solid waste management	36	22	9	22.33	13.50
				Avg Mean= 25.28	

Source:

Table 2 reveals moderate awareness of solid waste management practices among respondents, with significant variation in opinions. A majority (53.75%) are familiar with community waste management practices, and 58.75% believe the current waste management strategies are effective. However, there is a notable difference in opinions on these strategies' effectiveness, as shown by a wide spread in responses. Over 65% of respondents have participated in waste management initiatives, but the level of participation varies. A large portion (68.75%) believes household waste can be recycled or reused, though opinions on recycling vary widely. Most respondents (58.75%) recognize the harm of open waste disposal to human health, while opinions on incineration as an effective method are more divided (45% agreement). The average mean score of 25.28 indicates general awareness, but with considerable variation in responses, particularly regarding the effectiveness of strategies and specific techniques like recycling and incineration. Overall, while awareness exists, further consensus and education are needed on the effectiveness and feasibility of different waste management practices.

Table 3: Practice on Solid Waste Management

Question	YES	NO	I don't know	Mean	Standard Deviation
I throw waste into drainages for water to wash it away.	17	20	43	1.4625	1.090
I throw waste into an open refuse dump.	14	16	50	1.425	1.003
I throw waste into a bush.	24	22	34	1.55	1.189
I use to burn my waste.	22	20	38	1.55	1.146
I put waste in a container with a cover.	0	39	41	0.5125	0.502
I put waste in a container without a cover.	0	47	33	0.4125	0.495
I put waste in a nylon/ plastic bag.	0	41	39	0.4875	0.502
I separate the waste into different types before throwing it.	0	37	43	0.5375	0.503
Avg Mean=				0.9921875	

Table 3 showed the analysis of respondents' solid waste management practices reveals limited engagement in proper disposal methods. Most respondents were uncertain or unaware of recommended practices. For waste disposal in drainage, 21.25% admitted to the practice, while 53.75% were unsure. The use of open refuse dumps was reported by 17.5%, with 62.5% uncertain. A significant portion (30%) disposed of waste in the bush, and 27.5% burned their waste, but many were unsure of these methods. Regarding waste containers, none of the respondents used covered containers for disposal, and most (51.25%) were unsure. Similarly, no one used uncovered containers, and many were uncertain. For plastic bags, 51.25% did not use them, with many unsure. The practice of waste segregation was also lacking, with 46.25% not separating their waste, and 53.75% uncertain. The average mean score for all practices was 0.99, indicating a general lack of proper waste management practices and a significant amount of uncertainty. These findings highlight the need for educational programs to improve awareness and encourage the use of proper waste disposal methods and segregation.

Table 4: Knowledge on the Health Effect of Poor Waste Management

Question	YES	NO	I don't know	Mean	Standard Deviation
Poor waste management can lead to: Increased cases of waterborne diseases (cholera, typhoid)	45	35	0	0.56	0.499
Poor waste management can lead to: Spread of mosquito-borne diseases (malaria, dengue)	35	45	0	0.43	0.499
Poor waste management can lead to: Spread of diseases by rodents (Lassa Fever)	40	40	0	0.50	0.503
Poor waste management can lead to: Respiratory issues due to burning waste and air pollution	37	43	0	0.46	0.501
Poor waste management can lead to: Increased child health risks (diarrhea)	35	45	0	0.44	0.499
Poor waste management can lead to: Contamination of food and water supplies	42	38	0	0.53	0.502
Poor waste management can lead to: Limited access to clean environments affecting overall health	35	45	0	0.44	0.499
Avg Mean=				0.480	

Most respondents (56%) are aware that poor waste management leads to waterborne diseases like cholera and typhoid. However, only 43% recognize its connection to mosquito-borne diseases like malaria, and 50% are aware of diseases spread by rodents. Awareness of respiratory issues from burning waste is 46%, and only 44% believe waste contributes to child health risks, such as diarrhea. Over half (53%) understand the link between waste and food/water contamination. Overall, the average awareness score is 0.4804, indicating a moderate understanding but highlighting areas like mosquito-borne diseases, child health risks, and respiratory issues that require more attention in public education.

Chi-Square Test Results and Interpretation (with Association)

Hypothesis (H₁): There is no significant association between residents' level of awareness regarding solid waste management and their waste disposal practices in Ede North Local Government Area.

Awareness Level	Proper Disposal	Improper Disposal	Total
High	30	10	40
Medium	15	15	30
Low	5	5	10
Total	50	30	80

Calculate Expected Frequencies

Using the formula:

$$E = \frac{(\text{Row Total} \times \text{Column Total})}{\text{Grand Total}}$$

Calculating expected frequencies, we get:

Awareness Level	Proper Disposal (O)	Proper Disposal (E)	Improper Disposal (O)	Improper Disposal (E)
High	30	25	10	15
Medium	15	18.75	15	11.25
Low	5	6.25	5	3.75

$$\chi^2 = 1.0 + 1.6667 + 0.6 + 1.25 + 0.25 + 0.3333 = 5.1 \quad \chi^2 = 1.0 + 1.6667 + 0.6 + 1.25 + 0.25 + 0.3333 = 5.1$$

Degrees of Freedom

Using the formula:

$$df = (r-1)(c-1) = (3-1)(2-1) = 2 \quad df = (r-1)(c-1) = (3-1)(2-1) = 2$$

Using a Chi-square distribution table at $\alpha = 0.05$ and $df = 2$, the critical value is approximately 5.991.

- **Calculated Chi-square value:** 5.1
- **Critical value:** 5.991

Since the calculated Chi-square value (5.1) is less than the critical value (5.991), we **fail to reject the null hypothesis**.

The result suggests that while there appears to be a trend indicating a possible association between the residents' level of awareness regarding solid waste management and their waste disposal practices, it is not statistically significant at the 0.05 level.

Thus, we conclude that variations in awareness levels do not significantly influence how residents dispose of their waste. Further investigation may be warranted to identify other factors affecting waste disposal practices or to enhance awareness strategies to promote better waste management behaviors.

DISCUSSION

This study aimed to evaluate the awareness and practices related to solid waste management (SWM) among residents of Ede North Local Government Area (LGA), with a particular focus on understanding the relationship between waste management practices and public health. The findings highlight a moderate level of awareness about Solid Waste Management among respondents, but also reveal significant variation in the opinions regarding the effectiveness of existing strategies and the practical implementation of waste management techniques such as recycling and incineration.

A considerable proportion of respondents (53.75%) reported familiarity with the solid waste management practices in their community, with 58.75% acknowledging the effectiveness of current waste management strategies. These findings align with previous studies conducted in Nigeria, such as those by Adebara et al. (2016) and Adebayo et al. (2023), which highlight similar levels of awareness and perception of the effectiveness of waste management initiatives. However, the significant variation in responses concerning the effectiveness of these strategies suggests that while there is general awareness, the actual effectiveness of waste management programs remains uncertain and requires further scrutiny.

The study also revealed that 65% of respondents have participated in waste management initiatives, and 68.75% believe that household waste can be recycled or reused. These results mirror findings from Akinbile et al. (2021) and Adeyemi et al. (2020), who observed an increasing awareness of recycling and sustainable waste management practices among urban populations in Nigeria. Despite this, the study identified a notable variation in respondents' confidence and knowledge about the practicalities of recycling. This discrepancy highlights the need for more focused educational campaigns aimed at improving the understanding of recycling processes and encouraging active participation in such initiatives.

Regarding waste disposal practices, the study found that most respondents did not engage in best practices such as using covered containers or separating waste. A substantial number of respondents admitted to improper disposal methods, including discarding waste in drainage systems (21.25%) and burning waste (27.5%). These findings are consistent with the literature, including studies by Omole and Isiorho (2016) and Nwankwo and Offor (2020), which identify improper waste disposal as a persistent challenge in

many Nigerian urban centers. The lack of engagement with recommended disposal practices underscores the need for increased awareness and community-based education on the health and environmental consequences of improper waste management.

The study also assessed respondents' awareness of the health risks associated with poor waste management. While a majority of respondents (56%) recognized the link between poor waste management and waterborne diseases such as cholera and typhoid, only 43% acknowledged the connection to mosquito-borne diseases like malaria, and 44% linked waste management practices to child health risks such as diarrhea. These findings are consistent with those of Akinbile et al. (2021) and Onyekwelu et al. (2022), who observed similar knowledge gaps regarding the health implications of poor waste management in urban Nigerian communities. This suggests that, while there is some awareness of the health risks associated with waste mismanagement, there remains a critical need for targeted educational interventions to enhance public understanding of these dangers.

Furthermore, while over half of the respondents (53%) understood the potential for waste to contaminate food and water supplies, the overall awareness score of 0.4804 indicates that significant gaps remain in public knowledge. In particular, there is a need for further education on the broader health risks of poor waste management, including the impact of respiratory issues due to waste burning and the spread of diseases by rodents. These findings align with the work of Adetona et al. (2020) and Aluko et al. (2021), who have documented the health risks posed by improper waste management, including air pollution and the spread of vector-borne diseases. There exist variations in awareness levels ($\chi^2=5.1$, $p> 0.05$) do not significantly influence how residents dispose of their waste. Thus, the awareness of waste do not influence the waste disposal practice of the Respondents

CONCLUSION

In conclusion, while the study reveals a moderate level of awareness regarding solid waste management, it also highlights significant gaps in knowledge, particularly with regard to specific waste management practices such as recycling, incineration, and waste segregation. The findings underscore the necessity for more robust public education campaigns that not only raise awareness but also promote the practical application of best waste management practices. In doing so, communities can mitigate the health risks associated with poor waste management and foster a cleaner, healthier environment. As evidenced by global and local studies, improving the effectiveness of waste management strategies is not only essential for environmental sustainability but also crucial for public health. Therefore, there is an urgent need for policies and interventions aimed at addressing the gaps in knowledge and ensuring more sustainable waste management practices in Nigeria.

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