MITIGATING THE EFFECTS OF INDISCRIMINATE WASTE DISPOSAL IN SELECTED URBAN AND RURAL COMMUNITIES IN ONDO STATE, NIGERIA

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Abstract

This study examined domestic waste disposal practices in selected urban and rural communities of Ondo East and Ondo West Local Government Areas of Ondo State, Nigeria. A descriptive survey research design was employed, utilizing a structured questionnaire administered to 105 randomly selected respondents. Data were analyzed using mean scores, standard deviation, and t-test. Findings revealed that 71.4% of respondents disposed of waste at designated dump sites, while 46.7% engaged in open burning due to financial constraints. Only 22% used sanitary bags for waste collection, and 25.7% practiced recycling. The study also identified key environmental and health hazards associated with indiscriminate waste disposal, including air pollution (Mean = 3.67), frequent malaria cases (Mean = 3.17), offensive odors (Mean = 3.41), rodent infestations (Mean = 3.00), and flooding (Mean = 3.65). To mitigate these challenges, respondents recommended increased public enlightenment (Mean = 3.56), recruitment of more sanitary personnel (Mean = 3.40), establishment of recycling plants (Mean = 3.38), and commercialization of waste disposal (Mean = 3.18). The study underscores the urgent need for government intervention in waste management policies, enhanced infrastructure, and community participation to promote sustainable and hygienic waste disposal practices.

Keywords: Mitigation, Indiscriminate Wastze Disposal, Urban and Rural Communities.

Introduction

Waste generation is an inevitable byproduct of human activities, spanning from production to consumption. In developing countries, improper waste management poses significant environmental and public health risks due to inefficiencies in waste collection, disposal infrastructure, and policy implementation (Adeolu, Enesi, & Adeolu, 2018). The high rate of waste generation, coupled with inadequate disposal facilities and poor funding, exacerbates sanitation challenges, leading to environmental degradation and increased disease outbreaks.

Solid waste, which includes organic and inorganic materials, is commonly discarded from domestic, agricultural, commercial, and industrial sources. When improperly managed, it becomes a breeding ground for disease vectors such as mosquitoes (malaria), flies (diarrhea), and rodents (Kassim & Ali, 2016). The failure to establish an efficient waste management system has contributed to pollution, flooding, and poor public health outcomes, particularly in urban areas where population density and consumption patterns are higher (Mahar, Malik, & Qadri, 2017).

This study examines domestic waste disposal practices in urban and rural communities of Ondo East and Ondo West Local Government Areas of Ondo State, Nigeria. It explores common disposal

methods, the effects of indiscriminate waste disposal, and potential mitigation strategies to improve environmental sustainability and public health.

Picture taken at Dumpsite in Ondo
Source: Researchers Field Report (October, 2024)

The Concept of Waste

Waste is broadly defined as any material that has lost its value to the producer and is discarded as unwanted (World Bank, 2010). It exists in solid, liquid, and gaseous forms, each posing distinct environmental challenges. Solid waste, which is the focus of this study, includes refuse generated from households, agriculture, and industries, comprising materials such as food scraps, plastics, glass, metals, and textiles (Kassim & Ali, 2016).

Household waste, also referred to as domestic waste, contributes significantly to municipal solid waste and, if improperly managed, leads to environmental hazards. The lack of adequate waste disposal infrastructure in developing nations results in uncontrolled dumping, open burning, and landfill overuse (Mahar, Malik, & Qadri, 2017). This not only affects aesthetic values but also introduces toxins into air, soil, and water bodies, endangering human and animal health.

Proper waste management is crucial for minimizing environmental degradation and public health risks. Sustainable practices such as recycling, composting, and efficient waste collection systems can significantly reduce the negative impacts of waste accumulation (McMacon, 2024). However, many communities in Nigeria struggle with waste management due to limited awareness, inadequate resources, and weak policy enforcement.

Common Waste Disposal Methods

Waste disposal methods vary across regions, influenced by economic factors, infrastructure, and environmental awareness. In many Nigerian communities, dump sites are the most common disposal method, where refuse is discarded in designated or unauthorized locations. However, poor management of these sites often results in water and soil contamination, posing significant health risks. Another widely used method is open burning, which is preferred by residents who cannot afford monthly sanitary dues. While burning may seem like an immediate solution, it releases harmful pollutants into the atmosphere, contributing to respiratory diseases and environmental degradation (Ikelegbe, 2017).

Some households opt for sanitary waste collection, using bags collected by waste management agencies. However, inconsistencies in collection services discourage widespread adoption, leading some residents to seek alternative disposal methods. Recycling and composting remain less common but offer a sustainable approach to waste management. Some households recycle plastics, paper, and metal scraps, while organic waste is repurposed for composting. Expanding these environmentally friendly practices could significantly reduce the volume of waste accumulating in landfills and open spaces (Ikelegbe, 2017). Despite the availability of these waste disposal methods, the absence of structured policies, inadequate funding, and weak enforcement mechanisms have led to widespread indiscriminate dumping, exacerbating pollution and public health concerns.

Statement of the Problem

Indiscriminate waste disposal remains a critical environmental and public health challenge in many Nigerian communities. Inadequate waste collection services and a lack of disposal facilities have led to uncontrolled dumping in residential areas, roadsides, and water bodies, causing pollution and increased disease outbreaks (Momodu, 2011). The study area, Ondo East and Ondo West Local Government Areas, reflects these challenges, as many households resort to open dumping and burning due to inconsistent waste collection and financial constraints.

The consequences of improper waste disposal are severe, including air pollution, flooding due to blocked drainages, increased cases of malaria and respiratory diseases, and rodent infestations (Kaseva & Mbuligwe, 2013). Furthermore, the rapid urbanization and population growth in these areas have exacerbated waste management challenges, overwhelming the capacity of existing waste disposal infrastructure (Hester & Harrison, 2013).

Addressing these issues requires a multi-faceted approach, including improved waste management policies, community education, investment in sanitation infrastructure, and the promotion of recycling and sustainable disposal methods. Without urgent intervention, the environmental and health risks associated with indiscriminate waste disposal will continue to escalate, posing long-term challenges to public health and sustainable development.

Purpose of the Study

To examine the domestic waste disposal practices among the respondents in order to:

i. Ascertain the common waste disposal methods used in the study area.
ii. Examine the effects of indiscriminate waste disposal practices.
iii. Proffer possible mitigations towards and make appropriate recommendations.

Research Questions

1. What are the common waste disposal methods used and their effects on the population?
2. What are the effects of indiscriminate waste disposal practices?
3. How can positive changes be effected against indiscriminate waste disposal?

Methodology

This study employed a descriptive survey research design, which is appropriate for gathering information, identifying problems, making comparisons, and systematically evaluating data from a representative sample. The study was conducted in Ondo East and Ondo West Local Government Areas of Ondo State, Nigeria. Ondo West covers approximately 970 km² with a population of 288,868, while Ondo East spans 896 km² with 76,092 residents, according to the 2012 census.

The study population comprised male and female residents of both local government areas. A simple random sampling technique was used to select 105 respondents, with 21 participants randomly drawn from each of the five selected communities. A structured questionnaire served as the data collection instrument, divided into five sections:

- **Section A**: Demographic information of respondents.
- **Section B**: Waste disposal methods used.

- **Section C**: Cases of indiscriminate waste disposal.
- **Section D**: Effects of improper waste disposal.
- **Section E**: Possible strategies for mitigating waste disposal issues.

The questionnaire was **validated for face and content validity** by experts in the field, ensuring clarity and relevance. Data were analyzed using **mean scores, standard deviation, and t-test statistics**. A four-point Likert scale was used to interpret responses: **Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1)**. A cutoff mean of **2.50** was established, with values **≥2.50** considered as agreement and values **<2.50** as disagreement. This analytical approach provided insight into prevalent waste disposal practices, their effects, and potential mitigation strategies.

Results

Research Question 1: What are the common disposal methods used and their effects on the population?

Table 1: Mean Ratings of Waste Disposal Methods used by the Respondents

SN	ITEMS	SA 4	A 3	D 2	SD 1	MEAN (X)	REMARKS
1	Residents use dump sites for waste disposal	75	21	7	2	3.64	Agreed
2	Residents use burning method because they cannot afford monthly sanitary dues	44	54	5	2	3.34	Agreed
3	Residents prefer to use sanitary bags to be collected by waste management Outfits	23	43	22	17	2.68	Agreed
4	Residents dump wastes in any available open space in the community	24	28	24	29	2.44	Disagreed
5	Some residents recycle wastes instead of dumping in bins	27	36	21	21	2.65	Agreed

Source: Field Survey, 2024

The findings indicate that the majority of residents in the study area dispose of waste at designated dump sites (Mean = 3.64). Burning waste is also a common practice (Mean = 3.34), largely due to the inability of some residents to afford monthly sanitary dues. While a significant portion of the population uses sanitary bags collected by waste management services (Mean = 2.68), open dumping in public spaces was generally disagreed upon (Mean = 2.44). Recycling was observed among some respondents (Mean = 2.65), suggesting an awareness of sustainable waste management practices. These results highlight the need for improved and more affordable waste collection services to discourage open dumping and burning, which can contribute to environmental pollution.

Research Question 2: What are the effects of indiscriminate waste disposal practices?

Table 2: Mean ratings of Effects of Indiscriminate Waste Disposal Practices

SN	ITEMS	SA 4	A 3	D 2	SD 1	MEAN (X)	REMARKS
1	Air pollution in the community	80	19	3	3	3.67	Agreed
2	Frequent occurrence of malaria in the community	51	32	11	11	3.17	Agreed
3	Production of offensive odor with health of implications	59	35	7	4	3.41	Agreed
4	Infestation of Rodents in the area	49	22	20	14	3.00	Agreed
5	Flood in drainages within the community	85	11	2	7	3.65	Agreed

Source: Field Survey, 2024

The results show that the adverse effects of indiscriminate waste disposal are prevalent in the study area. Air pollution (Mean = 3.67) and the production of offensive odors (Mean = 3.41) are major concerns. Malaria cases were also reported frequently (Mean = 3.17), likely due to mosquito breeding in waste-filled drainages. The presence of rodents (Mean = 3.00) and flooding (Mean = 3.65) further emphasize the health and environmental hazards of poor waste management. These findings suggest that immediate intervention is needed to curb the negative consequences of improper waste disposal.

Research Question 3: How can positive changes be effected against indiscriminate waste disposal?

Table 3: Mean rating of Ways to Mitigate Indiscriminate Waste Disposal

SN	ITEMS	SA 4	A 3	D 2	SD 1	MEAN (X)	REMARKS
1	Government to engage in public enlightenment to change people's attitude	74	21	5	5	3.56	Agreed
2	Engagement of more sanitary personnel to monitor sanitation and control waste disposal	55	40	8	2	3.40	Agreed
3	Establishment of waste recycling plant for non-biodegradable waste	62	29	6	8	3.38	Agreed
4	Adequately commercialization of Waste Disposal	50	33	13	9	3.18	Agreed

Source: Field Survey, 2024

The responses suggest that public enlightenment on proper waste disposal (Mean = 3.56) and the engagement of more sanitary personnel (Mean = 3.40) are widely supported solutions. Additionally, respondents strongly agreed that the establishment of waste recycling plants (Mean = 3.38) and commercialization of waste disposal (Mean = 3.18) could help address the problem. These findings highlight the importance of government and community collaboration in promoting sustainable waste management practices.

Discussion of Findings

The findings of this study provide critical insights into domestic waste disposal practices, the associated environmental and health hazards, and potential mitigation strategies in Ondo East and Ondo West Local Government Areas. The results align with existing literature on the challenges of waste management in developing countries, where rapid urbanization, inadequate infrastructure, and weak policy implementation exacerbate indiscriminate waste disposal (Hester & Harrison, 2013; Mahar, Malik, & Qadri, 2017).

The study revealed that dump sites and open burning are the predominant waste disposal methods in the study area. A significant proportion of respondents (Mean = 3.64) indicated that they rely on dump sites, while a notable percentage (Mean = 3.34) resort to open burning due to financial constraints associated with formal waste collection services. These findings are consistent with Ikelegbe (2017), who noted that in many Nigerian communities, waste disposal often occurs in open spaces near residential areas, waterways, and drainage channels, leading to severe environmental degradation. The reliance on open burning is particularly concerning as it releases hazardous pollutants, exacerbating air pollution and respiratory illnesses, as also highlighted by Momodu (2011). While a portion of residents (Mean = 2.68) utilize sanitary waste collection services, the inconsistency of waste collection agencies poses a significant barrier to widespread adoption. Additionally, a small but noteworthy percentage of respondents (Mean = 2.65) practice recycling, suggesting an emerging awareness of sustainable waste management practices. However, the low engagement in recycling efforts aligns with previous studies indicating that limited infrastructure and lack of incentives hinder the adoption of sustainable waste disposal practices in Nigeria (Gladding, 2014).

The negative consequences of indiscriminate waste disposal in the study area are alarming. Findings indicate that air pollution (Mean = 3.67), frequent malaria outbreaks (Mean = 3.17), offensive odors (Mean = 3.41), rodent infestations (Mean = 3.00), and flooding due to blocked drainage systems (Mean = 3.65) are prevalent. These issues are consistent with the assertions of Kaseva and Mbuligwe (2013), who emphasized that unregulated waste disposal fosters the breeding of disease vectors, leading to heightened incidences of malaria, typhoid, and other infections. Similarly, Kassim and Ali (2016) reported that poor waste management contributes significantly to air and water pollution, adversely affecting public health and reducing the overall quality of life.

The study also examined potential strategies for mitigating indiscriminate waste disposal. Public enlightenment campaigns (Mean = 3.56) were identified as a crucial intervention, reinforcing Joseph's (2016) argument that low awareness levels significantly contribute to poor waste disposal habits. The engagement of more sanitary personnel (Mean = 3.40) and the establishment of recycling plants (Mean = 3.38) were also highly endorsed, highlighting the necessity for government intervention in strengthening waste management systems. Furthermore, commercializing waste disposal (Mean = 3.18) was suggested as a viable solution, which aligns with the findings of Adogu et al. (2015), who emphasized that incentivizing waste management could improve compliance and sustainability.

Overall, the findings underscore the urgent need for a multi-pronged approach to waste management, combining policy reform, infrastructural development, public education, and enforcement mechanisms. The persistent challenges of waste disposal in Nigeria require a collaborative effort among government agencies, private sector stakeholders, and community members to ensure effective waste management and environmental sustainability. Without timely interventions, the environmental and health risks associated with indiscriminate waste disposal will continue to escalate, impeding progress toward achieving a clean and healthy society.

Conclusion

The study examined domestic waste disposal practices in selected urban and rural communities of Ondo State, Nigeria, revealing that dump sites, burning, and sanitary bag collection were the most common disposal methods. However, the practice of open dumping, though present, was not widespread. Indiscriminate waste disposal has led to significant environmental and health challenges, including air pollution, increased malaria cases, offensive odors, rodent infestations, and flooding.

Recommendations

1. There should be provision of sanitary equipment and facilities in the community in order to manage waste among people
2. There should be proper health/environmental education on side effect of indiscriminate waste disposal in the community
3. Government should provide waste collection materials for people and employed sanitary inspector to monitor those materials
4. Government should work hand-in-hand with community leaders to preach against waste disposal in any available open place in the community
5. Government should establish recycling plant to take care of increase number of non-biodegradable waste in each local government
6. People should be educated to exchange their waste such as used tyres, clothes, and others for tangible and useful materials

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