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Effects of Poor Waste Disposal on the Health and Well-Being of People Living in Danjuma Community, Akure, Ondo State

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ABSTRACT

Improper waste management remains a major environmental and public health issue in developing nations, particularly in urban and peri-urban settlements. This study investigated the effects of poor waste disposal on the health and well-being of residents in Danjuma Community, Akure, Ondo State, Nigeria. A descriptive cross-sectional survey design was employed. Data were collected from 106 residents selected through simple random sampling using structured questionnaires and direct observation. Descriptive statistics such as frequencies and percentages were used for analysis. Findings revealed that 83% of respondents were aware of existing waste disposal regulations, yet exposure to uncollected waste was frequent. Malaria (33%), diarrhoea (20.8%), and typhoid fever (17%) were the most reported health conditions associated with poor waste disposal. A large proportion (86.8%) agreed that poor waste disposal reduces community aesthetics and pride, while 80.2% observed flooding or unpleasant odour due to indiscriminate dumping. Socio-economic factors such as low income, limited education, and inadequate government intervention were identified as major contributors to poor waste management practices. Poor waste disposal significantly undermines environmental quality and public health in Danjuma Community. Enhanced waste collection infrastructure, sustained public health education, and active community participation are essential for mitigating health risks and promoting environmental sustainability.

Keywords: Danjuma Community, Environmental health, Public health, Waste disposal.

1 INTRODUCTION

Solid waste management remains one of the most pressing environmental challenges confronting developing nations today. Nigeria, like many other low- and middle-income countries, generates a substantial volume of waste, estimated at over 32 million tonnes annually, without adequate infrastructure for its collection or disposal (Ayesha et al., 2022). Consequently, unregulated dumping, open burning, and poor waste segregation practices have become widespread, particularly in urban and peri-urban communities. These practices pose serious environmental and public health threats, including soil, water, and air pollution, as well as the proliferation of disease vectors (Oyedele & Adebola, 2022).

The environmental and health implications of poor waste disposal are multifaceted. Air pollution from open burning contributes to respiratory illnesses and exacerbates climate change (Adeola et al., 2021). Water pollution, resulting from leachate contamination, can lead to outbreaks of water-borne diseases such as cholera and diarrhoea (Ojo et al., 2022). Beyond health risks, indiscriminate waste dumping diminishes community aesthetics, reduces land values, and negatively affects residents' psychological well-being. The problem persists despite existing waste management policies, largely due to weak institutional capacity, low community

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participation, and poor enforcement of sanitation regulations (Bamidele et al., 2022; Bello & Omotayo, 2023).

Several studies have established a strong link between poor waste management and increased incidence of communicable diseases. In a review by Giovanni et al. (2021), communities living near open dumpsites experienced higher rates of respiratory and vector-borne illnesses than those in cleaner environments. Similarly, Kanhai (2021) reported that poor refuse disposal in low-income settlements contributes to malaria, cholera, and diarrhoea outbreaks. These findings are consistent with the study by Mamady (2020), who noted that unsafe waste practices in Guinea were influenced by limited environmental awareness, poor waste infrastructure, and low household income.

In the Nigerian context, waste management challenges are compounded by rapid urbanisation and population growth. Akure, the capital of Ondo State, has experienced significant demographic expansion in recent years, leading to increased waste generation and strain on municipal services (Schenelle et al., 2022). Informal settlements such as Danjuma Community are particularly affected, as they often lack adequate waste collection facilities and depend on open dumping and burning as disposal methods. These practices not only endanger human health but also degrade environmental quality, contributing to flooding and drainage blockages during the rainy season.

The health consequences of poor waste disposal are well documented. Jaya (2024) found that uncollected refuse and open dumps are major sources of infectious diseases such as typhoid, diarrhoea, and malaria, as well as chronic respiratory illnesses due to prolonged exposure to airborne pollutants. Oyedele and Adebola (2022) observed that burning waste releases toxic substances, including carbon monoxide and particulate matter, which can cause long-term respiratory complications. Jerumeh et al. (2022) similarly reported high prevalence rates of malaria (31.3%), diarrhoea (20.2%), and typhoid fever (14.2%) among residents living close to dumpsites in Akure, highlighting the health burden of ineffective waste management.

In addition, socio-economic factors play a major role in shaping waste disposal practices. According to Afolabi et al. (2022), households with lower incomes are less likely to pay for formal waste collection services, leading to increased open dumping and burning. Omodehin et al. (2021) also found that lack of environmental education and limited access to disposal facilities promote indiscriminate waste practices in Akure. Similarly, Omekwe et al. (2023) demonstrated that economic hardship, weak governance, and poor infrastructure remain structural barriers to effective waste management in many Nigerian cities. Hope et al. (2023) further emphasised that the absence of investment in recycling technologies and community-level interventions exacerbates the growing sanitation crisis in developing countries.

The theoretical foundation of this study rests on the Environmental Health Theory (Ajani & Fakunle, 2021), which asserts that environmental conditions, such as air quality, water safety, and sanitation, are fundamental determinants of health. The theory explains that poor environmental hygiene promotes the proliferation of disease vectors and exposure to harmful substances, leading to elevated morbidity and mortality rates. This framework is particularly relevant to the situation in Danjuma Community, where inadequate waste disposal practices have direct implications for residents' health and well-being.

Despite the existence of environmental sanitation laws and agencies such as the Ondo State Waste Management Authority, challenges persist in waste collection, transportation, and disposal. Many residents lack access to standardised waste bins, rely on irregular waste contractors, or dump refuse in nearby bushes and gutters. These behaviours not only undermine environmental sustainability but also impose substantial health and economic costs on the community (Bamidele et al., 2022; Bello & Omotayo, 2023).

Given these gaps, it becomes crucial to investigate the effects of poor waste disposal on the health and well-being of people living in Danjuma Community, Akure. Understanding the scope of these effects will inform practical recommendations for improving waste management systems, strengthening community participation, and promoting sustainable public health outcomes.

The specific objectives of this study are therefore to: determine the effects of poor waste disposal on the health and well-being of residents in Danjuma, Akure; identify common diseases associated with poor waste disposal in the community; and examine the socio-economic factors influencing poor waste disposal practices.

2 LITERATURE REVIEW / RELATED WORK

Poor waste management remains a major environmental and public health concern in low- and middle-income countries, particularly in rapidly urbanising communities where waste generation has outpaced collection and disposal systems. Nigeria produces over 32 million tonnes of waste annually, much of which is poorly handled due to infrastructural deficits, weak regulations, and low community participation (Ayesha et al., 2022). As a result, indiscriminate dumping, open burning, and lack of waste segregation have become widespread practices, exposing populations to multiple environmental hazards (Oyedele & Adebola, 2022).

Existing research consistently demonstrates the link between poor waste disposal and increased disease burden. Air pollution from open burning contributes to respiratory illnesses and exacerbates climate-related risks (Adeola et al.,

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2021), while water pollution caused by leachate contamination is associated with outbreaks of diarrhoea, cholera, and typhoid fever (Ojo et al., 2022). Communities located near dumpsites or with irregular waste collection show significantly higher rates of malaria, diarrhoea, and typhoid compared to cleaner settlements (Jerumeh et al., 2022; Jaya, 2024; Kanhai, 2021). These findings align with the Environmental Health Theory, which posits that environmental conditions are foundational determinants of human health (Ajani & Fakunle, 2021)

In addition to health outcomes, poor waste management has socio-economic and psychosocial implications. Indiscriminate dumping undermines community aesthetics, contributes to flooding, and reduces land value, thereby affecting residents' quality of life (Bamidele et al., 2022; Bello & Omotayo, 2023). Socio-economic factors such as low income, unemployment, and limited education strongly shape waste disposal behaviours. Households with constrained resources are less able to pay for waste services and more likely to engage in open dumping or burning (Afolabi et al., 2022). Similarly, inadequate environmental education and limited access to disposal facilities exacerbate improper waste practices (Omodehin et al., 2021). Structural challenges, including weak governance, insufficient infrastructure, and poor enforcement of sanitation laws, further hinder effective waste management across Nigerian cities (Omekwe et al., 2023; Bello & Omotayo, 2023).

Despite extensive documentation of these issues, gaps persist within the existing literature. Most studies adopt cross-sectional designs, enabling associations to be reported but preventing causal inferences regarding the relationship between waste disposal and health (Giovanni et al., 2021). Heavy reliance on self-reported morbidities introduces potential recall and reporting bias. Additionally, objective measures such as water, soil, or air quality assessments are rarely incorporated, limiting the ability to verify environmental contamination pathways. Geographic coverage is also narrow, with many studies focusing on a single community, which restricts the generalisability of findings (Mamady, 2020). Furthermore, socio-cultural factors, such as traditional norms, gender dynamics, and behavioural practices influencing waste disposal, are seldom explored (Onu & Chukwu, 2021). Finally, emerging technological solutions such as waste-to-energy systems, digital tracking, and recycling incentives remain under-investigated in low-resource contexts, despite their potential for sustainable waste management (Hope et al., 2023).

The present study builds on this literature by providing community-specific evidence from Danjuma Community in Akure, a peri-urban settlement that reflects many of the challenges observed nationally. By integrating questionnaire data with direct field observations, the study offers a more holistic understanding of waste practices and their health implications. Findings such as the prevalence of malaria (33%), diarrhoea (20.8%), and typhoid fever (17%) among residents mirror national patterns yet provide localised insight into the environmental health burden faced by underserved communities (Oyedele & Adebola, 2022; Jerumeh et al., 2022). The study also underscores the role of socio-economic constraints, such as poverty and limited waste collection services, in perpetuating improper disposal behaviours, echoing findings from broader Nigerian studies (Afolabi et al., 2022). Nonetheless, this study shares some methodological limitations common in the literature, including its cross-sectional design, reliance on self-reported data, and focus on a single community. Addressing these gaps through longitudinal studies, environmental sampling, and multi-site comparative research will strengthen future understanding of waste-related health risks and support the development of targeted, sustainable interventions tailored to local contexts.

3 METHODOLOGY

3.1 STUDY DESIGN

A descriptive cross-sectional survey design was employed to examine the relationship between poor waste disposal and health outcomes among residents of Danjuma Community, Akure, Ondo State, Nigeria.

3.2 STUDY AREA

Danjuma Community is a densely populated settlement within Akure South Local Government Area, Ondo State, Nigeria. The area faces challenges typical of rapidly urbanising communities, limited waste collection services, irregular drainage maintenance, and overcrowding. The community also houses a primary health facility, Danjuma Health Centre, and has basic utilities such as electricity and mobile network coverage.

3.3 STUDY POPULATION

The study population comprised adult residents of Danjuma Community, Akure, Ondo State.

3.4 SAMPLE SIZE

A sample size of 110 respondents was selected for this study in Danjuma, Akure. The sampling frame included adult residents aged 18 years and above who had lived in the community for at least six months, ensuring that participants were familiar with the local waste management practices and health conditions.

3.5 SAMPLING TECHNIQUE

Simple random sampling was employed for the study. This approach ensured fairness and representation across different age groups, educational levels, and occupations.

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3.6 Study Instrument, Data Collection, And Analysis

A structured questionnaire served as the main instrument for data collection. It was designed in line with the study objectives and divided into sections covering respondents' demographic characteristics, awareness of waste disposal practices, perceived health effects, and socio-economic factors influencing disposal behaviour. The instrument was validated by experts in public health and tested through a pilot study in a nearby community to ensure reliability and clarity.

Data were collected through face-to-face administration of the questionnaire to selected residents using simple random sampling. Direct observation of environmental conditions complemented the responses to provide a clearer picture of sanitation practices in the community. Participation was voluntary, and informed consent was obtained from all respondents, with confidentiality assured.

Completed questionnaires were checked for accuracy, coded, and analysed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics such as frequency distributions and percentages were employed to summarise the data and present results in tables for easy interpretation. This approach was appropriate for the study's descriptive design and allowed for identifying patterns between waste disposal practices and health outcomes among residents.

3.7 Ethical Approval

Participation was voluntary, and respondents were informed of the purpose of the study. Verbal and written consent were obtained before data collection. Anonymity and confidentiality were maintained, and participants were assured that their responses would be used solely for academic purposes.

4 Results and Discussion

Out of the 110 questionnaires distributed, 106 were retrieved, giving a response rate of 96% as seen in Table I.

TABLE I: DEMOGRAPHICS OF RESPONDENTS

	AGE (YEARS)	FREQUENCY	PERCENTAGE
AGE (YEARS)	18-25	19	17.9%
	26-33	24	22.6%
	34-41	20	18.9%
	42-49	17	16.0%
	50-57	14	13.2%
	60 and above	12	11.3%
	Total	**106**	**100%**
GENDER	Male	46	43.4%
	Female	60	56.6%
EDUCATIONAL LEVEL	No formal education	16	15.1%
	Primary education	30	28.3%
	Secondary education	36	34.0%
	Tertiary education	24	22.6%
	Total	**106**	**100%**
OCCUPATIONAL STATUS	Civil servants	12	11.3%
	Farmer	8	7.5%
	Trader	34	32.2%
	Artisan	16	15.1%
	Self-employed	4	3.8%
	Not-employed	32	30.1%
	Total	**106**	**100%**

4.1 Demographic Characteristics

Table I provides a detailed overview of the demographic characteristics of the respondents. The findings revealed that 59.4% of respondents were aged between 18 and 41 years, indicating a predominantly youthful population. Females constituted 56.6%, while males made up 43.4%. In terms of education, 34% had completed secondary education, 28.3% had primary education, 22.6% possessed tertiary qualifications, and 15.1% had no formal education. Occupationally, traders represented the largest group (32.1%), followed by the unemployed (30.2%) and artisans (15.1%).

These demographic patterns suggest a community dominated by economically active individuals but with limited formal employment, which may influence participation in paid waste disposal services.

4.2 Awareness and Perceptions of Waste Disposal Practices

Most respondents (83%) were aware of waste disposal regulations, yet poor compliance remained prevalent. Approximately 76.4% observed health issues are linked to improper waste disposal. When asked about community aesthetics, 86.8% agreed that indiscriminate waste dumping reduced community pride, while 80.2% observed flooding or offensive odours resulting from waste accumulation.

4.3 Health Implications of Poor Waste Disposal

The most commonly reported diseases included malaria (33%), diarrhoea (20.8%), and typhoid fever (17%), followed by skin infections (14.2%), respiratory infections (9.4%), and cholera (5.6%). Similarly, 63.2% of respondents believed that poor waste disposal contributes "very much" to disease prevalence, and 49.1% reported occasional illness associated with exposure to uncollected refuse. These findings confirm

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the health risks of environmental neglect highlighted in earlier studies (Akinola et al., 2022; Giovanni et al., 2021).

4.4 Socio-Economic Factors Influencing Waste Disposal

A large proportion of respondents (63.2%) did not pay for waste disposal services. Among these, 43.3% cited the absence of collection services, 38.8% reported financial constraints, and 17.9% were unaware of payment requirements. Of those who did pay, 38.5% stated they could afford it, 33.9% paid to prevent disease, and 25.6% paid to avoid environmental degradation.

Furthermore, 78.3% believed the government was not doing enough to manage waste in the community. However, 85.8% believed waste could be reduced, and 83% expressed willingness to participate in community clean-up exercises, demonstrating strong communal potential for environmental improvement.

The findings of this study reveal a significant association between poor waste disposal and the health status of residents in Danjuma Community, Akure. Similar to earlier research in other parts of Nigeria and sub-Saharan Africa, the results highlight that uncollected refuse serves as a breeding ground for vectors and pathogens that transmit infectious diseases (Oyedele & Adebola, 2022; Kanhai, 2021).

The predominance of malaria, diarrhoea, and typhoid as reported illnesses aligns with the World Health Organization's (WHO) observations that poor sanitation and waste management contribute substantially to global morbidity from preventable infectious diseases (Ajani & Fakunle, 2021). These conditions arise from contamination of food and water sources by waste and from the proliferation of mosquitoes and rodents in unsanitary environments.

The demographic findings also indicate that education level influences environmental behaviour. Respondents with higher education were more likely to understand the importance of proper waste disposal, corroborating the assertion by Onu and Chukwu (2021) that education promotes environmental awareness. In contrast, low-income earners and those without formal education often resort to open dumping or burning due to cost barriers or lack of alternatives (Afolabi et al., 2022; Omodehin et al., 2021).

A notable insight from this study is the perceived inadequacy of governmental waste management efforts. The majority of respondents criticised the infrequency of waste collection and lack of enforcement of environmental regulations. This perception echoes findings by Bello and Omotayo (2023), who attributed inefficiency in Nigerian waste management systems to corruption, insufficient funding, and poor accountability mechanisms.

Nevertheless, the willingness of residents to participate in community clean-up efforts suggests that grassroots-driven solutions are viable. As argued by Ezeokoli and Abah (2024), community-led initiatives can supplement governmental interventions through collective action and local ownership.

The study's observations also reaffirm the Environmental Health Theory, which links environmental neglect to negative health outcomes. Poor waste disposal leads to air, water, and soil pollution, fostering conditions conducive to disease transmission and overall decline in well-being (Ajani & Fakunle, 2021). The model's applicability is evident in the Danjuma context, where environmental degradation has translated into measurable health burdens.

4.5 Suggestions for Future Research and Identified Gaps

While this study provides important insights into the relationship between poor waste disposal and the health and well-being of residents in Danjuma Community, several limitations and research gaps warrant further investigation.

Firstly, the study adopted a descriptive cross-sectional design, which limits the ability to establish causality between waste management practices and specific health outcomes. Future research should employ longitudinal or experimental designs to determine causal relationships and track health changes over time.

Secondly, data were collected primarily through self-reported questionnaires and observation. Although this approach provided valuable community-level insights, it may have been affected by recall bias or social desirability bias. Future studies could integrate environmental sampling methods, such as measuring air and water quality indices, to objectively assess contamination levels associated with waste dumping and burning.

Thirdly, this study focused on a single community (Danjuma), which limits the generalisability of the findings to other parts of Akure or Nigeria. Comparative or multi-site studies covering urban, peri-urban, and rural areas would provide a broader understanding of regional variations in waste management challenges and their public health impacts.

Furthermore, while this research examined socio-economic determinants such as income and education, it did not explore gender dynamics, cultural beliefs, or behavioural factors influencing waste disposal practices. Future investigations should consider these socio-cultural dimensions to develop more inclusive and context-specific waste management interventions.

Additionally, there is a need for policy-focused research to evaluate the effectiveness of existing waste management regulations and the performance of state agencies responsible for sanitation. Such studies could assess the implementation barriers of waste policies, the role of private waste

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contractors, and community-level compliance with environmental laws.

Finally, the potential role of technological innovations, including waste-to-energy systems, digital tracking of waste collection, and recycling incentives, remains underexplored within local contexts. Future research should examine how these innovations can be adapted for low-resource settings like Akure, to promote sustainable and cost-effective waste management systems.

By addressing these gaps, future studies can build on the current findings to develop comprehensive, evidence-based strategies that enhance environmental health and improve the well-being of communities across Nigeria.

5 CONCLUSION

This study demonstrates that poor waste disposal remains a significant threat to public health and environmental sustainability in Danjuma Community, Akure. The research established that uncollected refuse, indiscriminate dumping, and open burning contribute to the high incidence of communicable diseases such as malaria, diarrhoea, typhoid, and respiratory infections.

Socio-economic constraints, including poverty, unemployment, and low educational attainment, further exacerbate the situation. Governmental efforts at waste regulation and collection are insufficient, but community members express readiness to engage in local solutions.

Based on the study's findings, the following recommendations were proposed:

i. Government agencies should provide accessible and regular waste collection services. Adequate waste bins, central dumpsites, and proper collection schedules should be implemented to prevent indiscriminate dumping.

ii. Health authorities should intensify campaigns on environmental hygiene through schools, health centres, and media outlets to increase awareness of the health hazards of improper waste disposal.

iii. Formation of community-based sanitation committees should be promoted to coordinate local clean-up activities and foster collective responsibility.

iv. Relevant agencies should strictly implement existing sanitation laws, penalising offenders and rewarding compliant communities.

v. The government and private sector should explore recycling and composting initiatives to reduce waste volumes and create economic opportunities.

vi. Subsidised waste collection schemes should be introduced to assist low-income households while providing employment through local sanitation projects.

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