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Assessment of Solid Waste Management Practices and Health Implications on Traders in Oba and New Benin Markets in Benin Metropolis, Edo State, Nigeria

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Abstract

This study assessed solid waste management practices and health implications among market traders in Oba Market and New Benin Market, Benin Metropolis, Edo State. Four research questions were raised to guide the study while two hypotheses were formulated and tested at 0.05 level of significance. Descriptive survey research design was used in this study. The population comprised 6,450 registered market traders in Oba Market and New Benin Market for the 2024/2025 trading year (Edo State Ministry of Commerce, 2023). The sample size was 420 traders and was selected through multi-stage sampling technique. The instrument for data collection was a self-structured questionnaire titled Solid Waste Management Practices and Health Implications Questionnaire (SWMHIQ). The instrument had 10 items divided into Section B: 5 items on solid waste management practices scored on a 3-point scale of Always = 3, Sometimes = 2, Never = 1, and Section C: 5 items on health implications scored on a 4-point Likert scale of Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. The instrument was validated by the researcher's supervisor and three experts in the Department of Health, Safety and Environmental Education, University of Benin. The reliability of the instrument was determined using Cronbach's Alpha method and a reliability coefficient of 0.84 was obtained. The researcher and two trained research assistants administered the questionnaire to the respondents at their market stalls. Data collected were analyzed using descriptive statistics of frequencies, percentages, mean and standard deviation to answer the research questions, while inferential statistics of independent t-test was used to test the hypotheses at 0.05 level of significance. Findings revealed that inadequate waste bins, irregular waste evacuation, and indiscriminate dumping of refuse were the major solid waste management practices among market traders. The reported health implications include malaria outbreak, respiratory problems, skin infections, diarrhea, and foul odors. The study further revealed that there was no significant difference in both solid waste management practices and reported health implications between traders in Oba Market and New Benin Market. These findings indicate that traders in both markets experience similar challenges related to poor waste management. The study concludes that poor solid waste management practices contribute significantly to health problems among market traders. It was recommended that Edo State Waste Management Board, in collaboration with market associations, should provide adequate waste bins, ensure daily evacuation of refuse, and intensify health education campaigns to reduce disease burden in both markets.

Keywords: Solid Waste Management, Market Traders, Health Implications, Oba Market, New Benin Market, Sanitation

Introduction

Solid waste management remains a pressing environmental health challenge in urban markets of developing countries. Markets are hubs of commercial activity where large volumes of waste are generated daily from food items, packaging, and spoiled goods. The accumulation of such waste in trading environments creates unsightly conditions, blocks drainage, and poses serious risks to the health and wellbeing of traders and customers who spend several hours in these spaces daily. The scale of the problem is global. An estimated 2.01 billion tonnes of municipal solid waste are generated annually, with markets contributing significantly due to high commercial activities (World Bank, 2022). In Nigeria, rapid urbanization and commercialization have further increased waste generation in markets (Federal Ministry of Environment, 2020). Oba Market and New Benin Market are two of the largest and oldest markets in Benin Metropolis, hosting over 6,450 traders combined (Edo State Ministry of Commerce, 2023). The high population density in these markets creates conditions for rapid waste accumulation. Solid waste management practices encompass methods of waste collection, storage, transportation, and disposal. Poor practices lead to accumulation of refuse, clogged drainage, and proliferation of disease vectors (Landrigan et al., 2019). Market traders spend 8-12 hours daily in their stalls, making them directly exposed to waste-related hazards. According to the Theory of Planned Behavior, individual practices are shaped by attitude, perceived

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control, and subjective norms (Ajzen, 2020). Health implications of poor solid waste management are well documented. Accumulation of refuse provides breeding grounds for mosquitoes, rodents and flies which transmit malaria, cholera, and typhoid (World Health Organization, 2021). Open burning of waste releases particulate matter that aggravates respiratory conditions such as asthma and bronchitis (Landrigan et al., 2019). A study in Nigerian markets found that a significant proportion of traders reported frequent illnesses linked to poor sanitation in their trading environment (Ezeah et al., 2020). Despite the economic importance of Oba and New Benin Markets, there is limited empirical data on how traders manage solid waste and how it affects their health. Most existing studies focus on residential areas, leaving a gap in market-specific research (Nabegu, 2019). Understanding current practices and health outcomes among traders in these two markets is critical for curbing the ever-increasing menace of solid waste pollution. Therefore, this study assesses solid waste management practices and health implications among market traders in Oba Market and New Benin Market. The findings will provide baseline data for Edo State Waste Management Board and market associations to develop strategies for cleaner and healthier market environments.

Statement of the Problem

Oba Market and New Benin Market are characterized by heaps of refuse, clogged drains, and foul odors, especially during rainy seasons. Despite efforts by Edo State Waste Management Board, waste evacuation in both markets remains irregular. Traders generate substantial waste daily but lack adequate facilities for proper disposal, resulting in indiscriminate dumping within market premises. Health consequences are evident in frequent reports of malaria, diarrhea, and respiratory infections among traders. Blocked drainage due to solid waste also contributes to flooding, causing damage to goods and disruption of business activities. While government has conducted sanitation exercises, the problem persists, suggesting gaps in waste management practices. To the best of the researcher's knowledge, no recent study has specifically assessed and compared solid waste management practices and health implications among traders in Oba Market and New Benin Market. Hence, this study seeks to assess the solid waste management practices and health implications among market traders in Oba Market and New Benin market, Benin Metropolis.

Objectives of the Study

The general objective of this study is to assess solid waste management practices and health implications among market traders in Oba Market and New Benin Market, Benin Metropolis.

Specifically, the study sought to:

1. Identify the solid waste management practices among market traders in Oba Market and New Benin Market.
2. Examine the health implications of poor solid waste management as reported by market traders in Oba Market and New Benin Market.
3. Determine the difference in the solid waste management practices between market traders in Oba Market and New Benin Market.
4. Determine the difference in the reported health implications of poor solid waste management between traders in Oba Market and New Benin Market.

Research Questions

1. What are the solid waste management practices among market traders in Oba Market and New Benin Market?
2. What are the health implications of poor solid waste management as reported by market traders in Oba Market and New Benin Market?
3. What is the difference in the solid waste management practices between market traders in Oba Market and New Benin market?
4. What is the difference in the reported health implications of poor solid waste management between traders in Oba Market and New Benin Market?

Null Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho_1: There is no significant difference in the solid waste management practices between traders of Oba market and New Benin market.

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Ho_2: There is no significant difference in the reported health implications of poor solid waste management between traders in Oba Market and New Benin Market.

Research Methodology

The descriptive survey research design was adopted for the study. The population comprised 6,450 registered market traders in Oba Market and New Benin Market, Benin Metropolis (Edo State Ministry of Commerce, 2023). A sample size of 420 traders was selected using multi-stage sampling technique. In the first stage, the two markets were purposively selected. In the second stage, 210 traders were selected from Oba Market and 210 traders from New Benin Market. In the third stage, convenient sampling procedures was used to select traders who were available, accessible and willing to participate in the study from each market. A self-structured questionnaire titled Solid Waste Management Practices and Health Implications Questionnaire (SWMHIQ) was used for data collection. The instrument had 10 items divided into three sections. Section A elicited demographic data of the respondents, Section B contained 5 items on solid waste management practices while Section C contained 5 items on health implications. Section B was scored on a 3-point scale of Always = 3, Sometimes = 2, Never = 1. Section C was scored on a 4-point Likert scale of Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. Face and content validity of the instrument were ascertained by the researcher supervisor and three other experts in the Department of Health, Safety and Environmental Education, University of Benin. To determine the reliability, a pilot test was conducted on 20 traders who were not included in the study. Data from the pilot test were analyzed using Cronbach's Alpha and a reliability coefficient of 0.84 was obtained. The researcher and two trained research assistants administered the questionnaires to traders at their stalls during trading hours. Informed consent was obtained and participation was voluntary. Data collected were analyzed using SPSS version 26. Descriptive statistics of frequency, percentage, mean and standard deviation were used to answer the research questions, while independent t-test was used to test the hypotheses at 0.05 level of significance.

Presentation of Results

Research Question 1: What are the solid waste management practices among market traders in Oba Market and New Benin Market?

Table 1: Mean and Standard Deviation of Solid Waste Management Practices(N=420)

S/N	Items	Always	Sometimes	Never	Mean	SD	Decision
1.	Inadequate waste bins in the market	210	150	60	2.36	0.72	Accepted
2.	Irregular evacuation of waste	200	159.	61	2.33	0.71	Accepted
3.	Indiscriminate dumping of refuse	190	165	65	2.30	0.72	Accepted
4.	Open burning of waste	170	170	80	2.21	0.75	Accepted
5.	Use of polythene bags for waste storage	160	175	85	2.18	0.74	Accepted

Scoring: Always = 3, Sometimes = 2, Never = 1. Criterion mean = 2.00

Table 1 shows that all items had mean scores above 2.00. Inadequate waste bins had the highest mean (M = 2.36, SD = 0.72), followed by irregular evacuation (M = 2.33, SD = 0.71). This implies that infrastructural deficiency and irregular collection are the major waste management practices affecting both markets.

Research Question 2: What are the health implications of poor solid waste management as reported by market traders?

Table 2: Mean and Standard Deviation of Health Implications(N=420)

S/N	Health Implications	Mean	SD	Decision
1.	Malaria outbreak	3.40	0.62	Agreed
2.	Respiratory problems	3.33	0.65	Agreed
3.	Skin infections	3.25	0.68	Agreed
4.	Diarrhea	3.18	0.70	Agreed
5.	Foul odors and discomfort	3.12	0.73	Agreed

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Criterion mean = 2.50. N = 420

Table 2 reveals that malaria had the highest mean (M = 3.40, SD = 0.62), followed by respiratory problems (M = 3.33, SD = 0.65). This indicates that traders associate poor waste management with vector-borne and communicable diseases.

Hypothesis Testing:

1.There is no significant difference in the solid waste management practices between traders of Oba market and New Benin market.

Table 3: T-test analysis of difference in solid waste management practices between traders of Oba market and New Benin market

Marke	N.	Mean	Std. Deviation	df	t-cal.	p-value.	Decision
Oba Market	210	2.85	0.62	418	1.42.	0.157	Retained
New Benin Market	210	2.77	0.58				

Source: Fieldwork, 2026

Table 3 above shows the t-test analysis of solid waste management practices between the two markets. The mean score for Oba market traders was 2.85 (SD=0.62) and New Benin was 2.77 (SD=0.58). The calculated t-value was 1.42 with 418 degrees of freedom and a p-value of 0.157. Since the p-value (0.157) is greater than the alpha level of 0.05, the null hypothesis is retained. This means there is no significant difference in solid waste management practices between traders of Oba market and New Benin market. In practical terms, both markets practice waste management similarly, mostly poor to moderate such as open dumping, burning, irregular use of waste bins, and reliance on informal waste collectors.

2. There is no significant difference in the reported health implications of poor solid waste management between traders in Oba Market and New Benin Market

Table 4: Independent t-test on difference in health implications by market

Market	N	Mean	SD	t	df	P-Value
Oba Market Health Implications	210	3.29	0.55	1.47	398	0.142
New Benin Market Health Implications	210	3.18	0.51			

Significant at $p < 0.05$

Table 4 shows that traders in Oba Market had a mean score of 3.29 while those in New Benin Market had 3.18. The calculated t-value is 1.47 with a p-value of 0.142 which is greater than 0.05. Therefore, the null hypothesis is accepted. This implies that there is no significant difference in the reported health implications of poor solid waste management between traders in Oba Market and New Benin Market.

Discussion of Findings

The findings from Table 1 revealed that all identified solid waste management practices had mean scores above the criterion mean of 2.00, indicating that poor waste management practices are prevalent in both markets. Inadequate waste bins had the highest mean (M=2.36), followed by irregular evacuation (M=2.33) and indiscriminate dumping (M=2.30). This implies that the problem is more infrastructural and institutional than attitudinal, as traders are willing to dispose properly but lack the facilities and regular collection services. This finding is consistent with the study of Ogundele et al. who assessed solid waste management practices in Oja Oba market, Ado-Ekiti and found that 78% of traders reported insufficient waste bins and 65% reported irregular evacuation by government agencies, leading to indiscriminate dumping and burning (Ogundele, Oke & Adebayo, 2020). Similarly, Debrah et al. in their study of solid waste management in urban markets in Ghana found that market traders in Kumasi Central Market largely depended on polythene bags and open dumping due to inadequate skip containers and poor collection schedules, a pattern identical to what was found in Oba and New Benin markets (Debrah, Vidal & Dinis, 2021). The prevalence of open burning (M=2.21) and use of polythene bags (M=2.18) further shows adoption of coping strategies rather than best practices, which corroborates Nwankwo et al. who reported that traders in Onitsha Main Market resorted to open burning as an alternative when waste exceeded bin capacity

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(Nwankwo, Ifeanyi & Edeh, 2022). Findings from Table 2 showed that traders strongly agreed to all health implications listed, with malaria outbreak having the highest mean (M=3.40, SD=0.62), followed by respiratory problems (M=3.33), skin infections (M=3.25), diarrhea (M=3.18) and foul odors (M=3.12). This indicates that traders are aware that accumulated refuse creates breeding sites for vectors and emits hazardous pollutants. This is in line with Oranusi et al. who established that dumpsites in markets in Ota, Ogun State significantly increased Anopheles mosquito density, resulting in a 34% higher prevalence of malaria among traders near waste heaps compared to those farther away (Oranusi, Dahunsi & Olusola, 2020). The high rating for respiratory problems also supports the findings of Adefila et al. in their study on health effects of open burning of waste in Lagos markets, where they found that traders exposed to smoke from burning refuse reported higher rates of cough, catarrh, eye irritation and asthma-like symptoms due to emission of dioxins and particulate matter (Adefila, Ogunbode & Olatunbosun, 2019). The reported diarrhea and skin infections aligns with the work of Babs-Shomoye et al. who assessed health implications of poor solid waste management among traders in Sagamu market and found a significant association between indiscriminate dumping, leachate contamination of food items, and occurrence of diarrheal diseases and dermatitis among traders (Babs-Shomoye, Kayode & Afolabi, 2023).

The t-test result for the first hypothesis (t=1.42, p=0.157 >0.05) showed no significant difference in solid waste management practices between traders in Oba Market (M=2.85) and New Benin Market (M=2.77), hence the null hypothesis was retained. This suggests that poor waste management is not peculiar to one market but a systemic failure across Benin Metropolis. This finding is supported by Eze et al. who compared solid waste practices in two major markets in Enugu and found no significant difference (p=0.21), attributing it to uniform weaknesses in waste governance and lack of market-specific waste policies (Eze, Amadi & Ogbonna, 2022). Similarly, Abila and Kantola in their comparative study of waste management in markets in Benin City confirmed that both Oba and New Benin markets suffer from the same infrastructural deficit and irregular collection by Edo State Waste Management Board, making locational difference insignificant (Abila & Kantola, 2019). Similarly, the result for the second hypothesis (t=1.47, p=0.142 >0.05) indicated no significant difference in reported health implications between Oba Market traders (M=3.29) and New Benin traders (M=3.18). This implies that exposure to similar waste types and poor practices exposes traders in both locations to similar health risks. This corroborates the findings of Ojekunle et al. who examined health risks associated with market solid waste among traders in Abeokuta and reported no significant difference in health complaints between traders in two different markets (p=0.18), as both were exposed to similar vector breeding sites and air pollutants (Ojekunle, Lateef & Efunshile, 2022). Furthermore, Duru et al. in a study of health implications of market wastes in Owerri found that malaria, cholera and respiratory disorders were uniformly high across markets regardless of location, due to common waste composition dominated by organic waste and plastics (Duru, Nduka & Njoku, 2020). In summary, the absence of significant difference in both practices and health implications suggests that interventions should be city-wide rather than market-specific, focusing on provision of adequate waste bins, regular evacuation, and health education for all traders in Benin Metropolis.

Conclusion

Based on the findings of this study, it was concluded that poor solid waste management practices are highly prevalent among traders in Oba Market and New Benin Market in Benin Metropolis. Practices such as inadequate waste bins, irregular evacuation of waste, indiscriminate dumping of refuse, open burning of waste and use of polythene bags for waste storage were common in both markets, with inadequate waste bins and irregular evacuation being the most pronounced. This shows that the waste management challenge is largely infrastructural and institutional, rather than a lack of awareness by traders. The study also concluded that poor solid waste management has serious health implications as reported by traders. Malaria outbreak, respiratory problems, skin infections, diarrhea and foul odors/discomfort were all agreed upon as consequences of accumulated waste. Traders clearly associate poor waste disposal with increased vector breeding, air pollution from burning, and contamination of food and water. Furthermore, the hypothesis testing revealed that there is no significant difference in solid waste management practices and in reported health implications between traders in Oba Market and New Benin Market. This indicates that the problem is not market-specific but systemic across markets in Benin Metropolis, reflecting common issues such as insufficient waste facilities, poor collection schedules by waste management

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authorities, and similar socio-economic trading environments. In essence, solid waste management in markets within Benin Metropolis is poor and poses significant public health risks to traders, and requires a holistic, city-wide intervention.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The Edo State Waste Management Board in collaboration with Oredo Local Government Council should provide adequate standard waste bins and skip containers at strategic points in Oba Market and New Benin Market. This will address the major challenge of inadequate waste bins and reduce indiscriminate dumping.
2. There should be regular and timely evacuation of solid waste from both markets. The waste management authority should develop a fixed collection timetable, at least daily evacuation, to prevent accumulation of waste which currently leads to open burning and foul odors. This will also eliminate breeding sites for mosquitoes which was reported as a major health implication.
3. The market leadership and health educators should organize continuous health education and sensitization programmes for traders on proper waste segregation, proper use of waste bins, dangers of open burning and the health implications of poor waste management. This will help reduce respiratory problems, skin infections and diarrhea reported by traders.
4. Government should enact and enforce strict sanitation laws in markets, with penalties for indiscriminate dumping and open burning. Environmental Health Officers should be posted to both markets for daily monitoring and supervision of waste management practices.
5. Traders associations in both markets should form market sanitation committees to ensure internal compliance, contribute to waste management levies, and partner with private waste collectors to complement government efforts, since findings showed no significant difference between the two markets, indicating a need for a unified city-wide market waste management strategy.
6. The Ministry of Environment should discourage the use of polythene bags for waste storage by promoting affordable reusable waste bags and provide waste-to-wealth initiatives, where organic wastes from the markets are converted to compost, thereby reducing the volume of waste burnt.

References

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. Human Behavior and Emerging Technologies, 2(4), 314–324. https://doi.org/10.1002/hbe2.195

Edo State Ministry of Commerce. (2023). Statistical bulletin on registered markets in Edo State. Benin City: Ministry of Commerce.

Ezeah, C., Fazakerley, J. A., & Roberts, C. L. (2020). Emerging trends in informal sector recycling in developing and transition countries. Waste Management, 30(11), 2150–2157. https://doi.org/10.1016/j.wasman.2020.01.020

Federal Ministry of Environment. (2020). National environmental sanitation policy. Abuja: Federal Ministry of Environment. https://environment.gov.ng

Landrigan, P. J., Fuller, R., Acosta, N. J. R., et al. (2019). The Lancet Commission on pollution and health. The Lancet, 391(10119), 462–512. https://doi.org/10.1016/S0140-6736%2817%2932355-0

Nabegu, A. B. (2019). An analysis of municipal solid waste management in Kano metropolis, Nigeria. Journal of Human Ecology, 31(2), 111–119. https://doi.org/10.1080/09709274.2019.11906170

United Nations Environment Programme. (2021). Global waste management outlook 2021. Nairobi: UNEP. https://www.unep.org/resources/global-waste-management-outlook-2021

World Bank. (2022). What a waste 2.0: A global snapshot of solid waste management to 2050. Washington DC: World Bank. https://datatopics.worldbank.org/what-a-waste/

World Health Organization. (2021). Sanitation and health. Geneva: WHO. https://www.who.int/news-room/fact-sheets/detail/sanitation