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# Impact on the Environmental and Health Effects of Solid Waste Management in the Federal Capital Territory, Abuja Nigeria

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**ABSTRACT:** *This paper investigated impact on the environmental and health effects of solid waste management in the federal capital territory: a case study of Abaji area council, it revealed that the data collected from nearby dumpsite household residents were less than 30 m and far away household residents greater than 30 m through interviews and personal observations were used to collect some of the data. This paper adopted descriptive statistics tool of tables, figures and graphs to present the data. The educational level of respondents of Nearby Residents (NBR) ranges from 30.00 to 115.00 with total of 145 and Far Away Residents (FAR) are between 53.00 and 110.00 with total of 233.00. The disposal methods used by respondents' ranges from 35.00 to 128.00 with percentage between 9.00 to 32.00 for NBR and 23.00 to 85.00 with 10.00% to 36.00% for FAR. The findings indicate that because the dumpsite was located closer to NBR and FAR's communities, both groups experienced linked illnesses such cholera, diarrhea, and malaria. This paper therefore recommended that urgent attention should be given to environmental education for the people in the study area.*

**KEYWORD:** environmental, health effect, solid waste management, T-test, Chi-square test

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## INTRODUCTION

Solid wastes management (SWM) is an increasing public health concern globally. It is an issue of great concern because certain factors are impediments to effective SWM in nations, especially in the developing nations. Hence, there is need for optimized strategies for overcoming those impediments as poor SWM issues are critical among communities of nations. United States Department of Agriculture Rural Information Center-USDARIC (2015) reported that solid waste disposal is a major concern in rural areas.

Poor SWM is a critical issue with far reaching health and environmental consequences. Thus, effective SWM is imperative. Tay (2011) pointed out that without an effective and efficient SWM programme, waste generated from various human activities, both industrial and domestic, can result in health hazards and have negative impacts on the environment. The health hazards posed by solid waste include high prevalence of communicable and non-communicable diseases such as malaria, cholera, typhoid, diarrhea, acute respiratory infections, and tuberculosis and helminthes infections that which is responsible high level of morbidity and mortality among the people (Sani, 2012).

However, Federal Capital Territory is not the only State in Nigeria that has commercial cities. State such as Lagos has commercial cities like Alaba and Koka, yet, it is not known for poor sanitary condition regarding solid waste management.

## LITERATURE REVIEW

Numerous researchers have expressed great worry about the idea of waste. This is due to the fact that while many things can be considered garbage, what is waste for one person might not be waste for another. Wastes are materials that might be beneficial, but they are in unnecessary places. A "zobo" vendor can find use for an empty beer bottle or an empty bottle of water. These empty containers may be useful to someone else even though their owners threw them away since they were ineffective. This has led to many authors' conceptualizations of waste. Adewumi (2001) described trash as a resource that is not where it should be.

Desa, Kadir and Yusooff (2012) classified solid wastes into three groups: (i) any materials that can be recycled or accumulated, stored, or treated before recycling, (ii) materials used in a manner that constitutes disposal, burned for energy recovery, reclaimed, and accumulated speculatively, and (iii) a discarded material that is abandoned, recycled, and inherently waste-like. These classifications of waste show the general view of characteristics of wastes as wastes can be in liquid or solid forms depending on the state of matter that make up the waste. Wastes in solid form are characterized by a great mixture of substances including fine dust, cinder, metal, glass, paper and cardboard, textiles, putrescible vegetable materials and plastics (Simmens, 2000).

Solid waste is inherently inevitable since practically all human activities result in the production of garbage in the form of solid materials (Sani, 2011). Solid waste is produced as a result of human activity in houses, hospitals, commercial spaces like marketplaces, and parking lots for cars. As a result, garbage produced at home is classified as household waste, whereas waste produced at medical institutions is classified as medical waste.

Waste generated from market places, vehicles' parks and other waste from economic activities are commercial waste. Those generated from factories are industrial wastes which include chemicals in solid forms.

Because the efficacy of management is largely dependent on how resources are organized, it can be either proper or incorrect. Gomezmejia, Balkin, and Cardy provide a more thorough definition of management (2008). They contend that the act of organizing people's efforts to achieve desired

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goals and objectives while making effective and efficient use of the resources at hand is management in all commercial and organizational activities. They define management as the process of organizing, staffing, leading, controlling, and organizing an organization (a group of one or more individuals or entities) or effort in order to achieve a particular goal; on the other hand, resourcing refers to the use and management of natural, financial, technological, and human resources.

They went further to state that since organizations can be viewed as systems and that management can also be defined as human action, including design to facilitate the production of useful outcomes from a system. Hornby (2006) defined management as the act or skill of dealing with people or situations in a successful way.

## **METHODOLOGY**

In this paper, research work centered impact on the environmental and health effects of solid waste management in the federal capital territory, Abuja Nigeria using a secondary research format such as published data set in federal capital territory, Abuja.

### **Population of the Study**

Nigeria's capital and eighth-most populated city is Abuja. situated in the Federal Capital Territory (FCT), which is in the middle of the nation. The Abaji Area Council, which consists of eight wards. They are, Abaji Central, Abaji North East, Abaji South East, Agyana/Pandagi, Rimba Ebagi, Jiwa, Nuku, Alu Mamagi, Yaba.

### **Sampling Technique**

The population for the study consisted of one hundred and fifty (150) SWM workers using simple random sampling. A total of one hundred and fifty (150) questionnaires were issued to the respondents. Of the questionnaires, twelve (12) were distributed to the senior employees of the Abuja Environmental Protection Board (AEPB), and eighteen (18) were distributed to the junior employees (AEPB). The remaining one hundred and twenty (120) were then distributed to non-AEPB employees, such as traders, homes, and commercial establishments. Since the size of this group is manageable, no sampling was done. This is consistent with Nworgu's (1991) assertion that the entire population can be used for the study when the population size is reasonable.

### **Data Collection Procedure**

The instrument's reliability was assessed using the split-half method of reliability testing. Because they have traits in common with the study area, Solid Waste Management employees at Abuja Area Council were used for a pre-test in order to accomplish this. Using this method, the respondents were given the instrument once, numbered it, and then it was divided into odd and even numbers for correlation. To gain access to and cooperation from the respondents, the researcher obtained a letter of introduction from the Head, Department of Public Health, University of Abuja. One hundred and fifty (150) copies of the questionnaire were administered on the respondents with the help of an assistant and collected on the spot after their completion. This

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### Method of Data Analysis

The two secondary data will be analyzed using descriptive statistics as well as t-test and Chi-square test. Quantitative data were analyzed using SPSS software package. Descriptive statistics was used to identify the impact on the environmental and health effects of solid waste management. The hypothesis was tested based on the optimization strategies for the SWM. The three objectives were analyzed based the optimization strategies for SWM.

### Data Analysis and Interpretation

Presentation of result derived from disposal methods used by respondents

#### Disposal methods used

by respondents	Nearby residents		Far away residents	
	Frequency	%	Frequency	%
Street bins	5.00	3.45	23.00	10.00
Dumpsite	59.00	40.69	85.00	36.00
Bury & burn in pits	11.00	7.59	30.00	13.00
In bags from Abaji	15.00	10.34	25.00	11.00
In drains & streets	55.00	37.93	70.00	30.00
<b>Total</b>	145.00	100.00	233.00	100.00

Source: Field Survey, November 2023

*Disposal Methods Used by Residents:* The research area's residents' solid waste disposal techniques were incredibly inadequate. More educated people than uneducated people may want to use better garbage disposal practices.

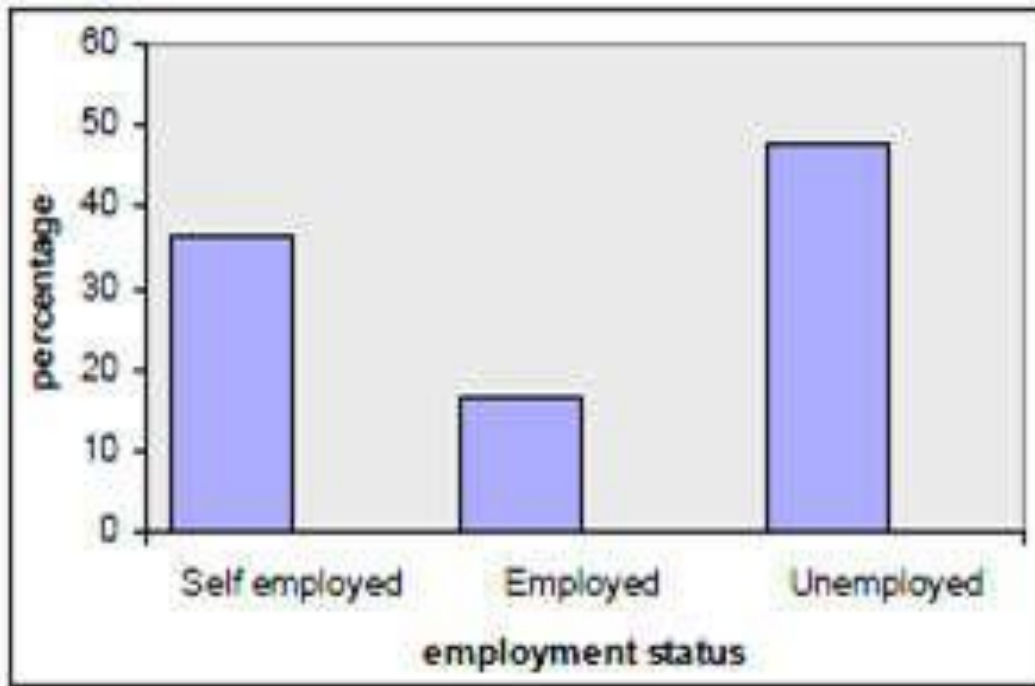
### Research Question one:

The Association between Respondents' Socioeconomic Features and the Environmental and Health Effects of Solid Waste Disposal

Research was done on the work position and educational attainment of the respondents, two socioeconomic factors included in this research. This is presumably because a person's ability to find work and make money may be influenced by their education.

i). Employment status of respondents:

Equally, a small percentage (16.8%) indicated that they attained higher education. The scenario here is that majority of the respondents became scavengers in order to make a living from the collection of wastes. To sell and support themselves, they gather cans, metal items, plastics, and other goods. Scavengers are at greater risk of infection when solid waste is handled directly, particularly when health care waste is combined with household refuse.



ii). Educational levels of respondents.

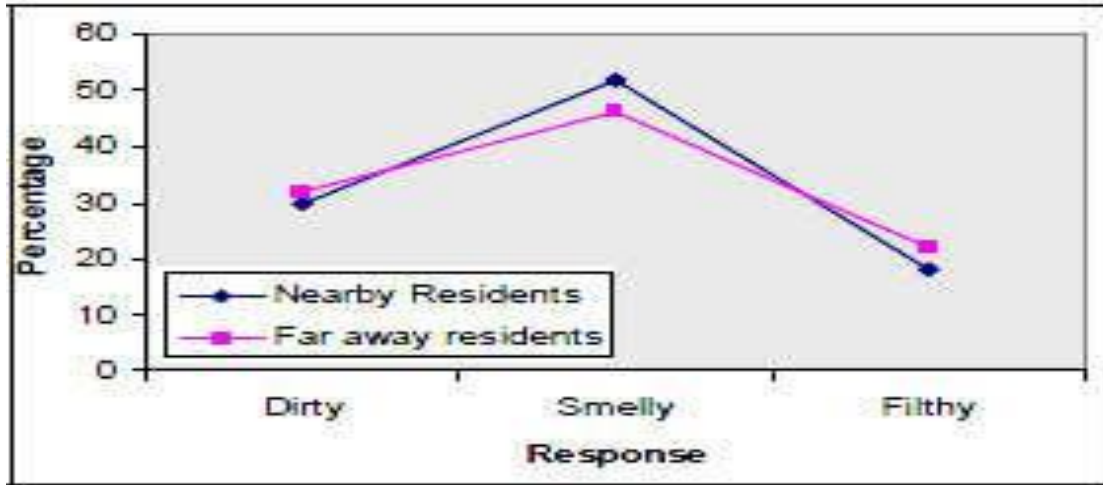
Educational Level	Frequency		Total	Percentage
	Nearby Residents	Far away Residents		
Primary level	35.00	24.14	250.00	39.00
Higher education	15.00	10.34	106.00	16.80
Not education	95.00	65.52	275.00	43.60
<b>Total</b>	145.00	100.00	631.00	100.00

Source: Field Survey, November 2023

*Residents' Views on the Location of the Dumpsite and Their Surroundings:*

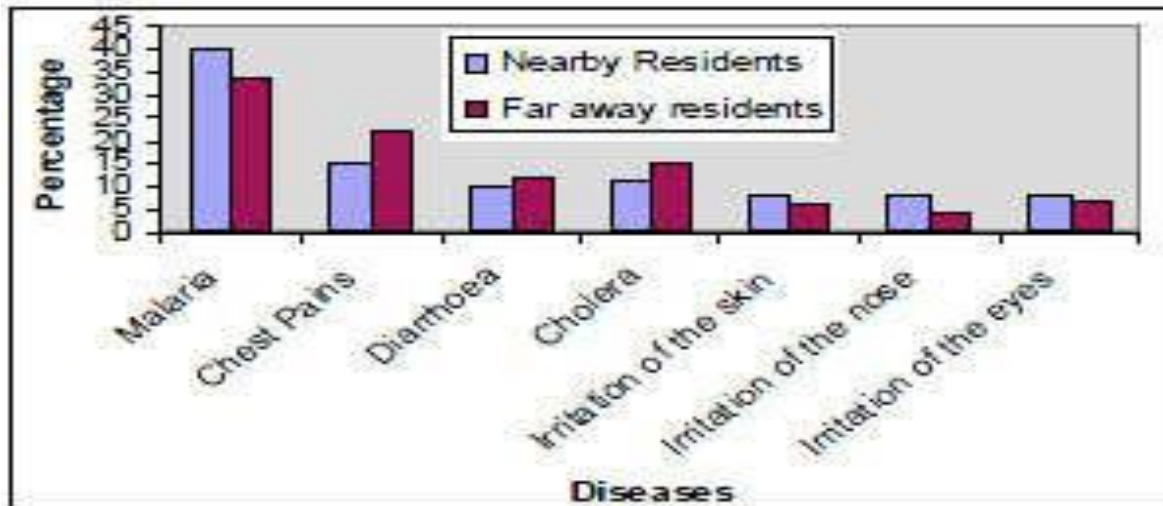
The dumpsite's location in their neighborhood is unpopular with household residents, especially those who live closer to it. They stated that they were getting a lot sicker since the dumpsite was

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 too close to their homes. Furthermore, they argued that their surroundings are smelly and filthy (Fig. 8) and some of the wastes from the dumpsite overlap their houses causing pollution in the environment.



*Impact of Having a Dumpsite in a Nearby Community:*

According to the study's responders, the surrounding community's dumpsite has a variety of effects. The majority of locals and people from a distance said that the dumpsite spreads disease, serves as a breeding ground for disease vectors, and is unclean. However, the dumpsite's location has significantly increased the number of diseases that the locals suffer from, with malaria being the most common (Fig. 9)



**Research Question two:**

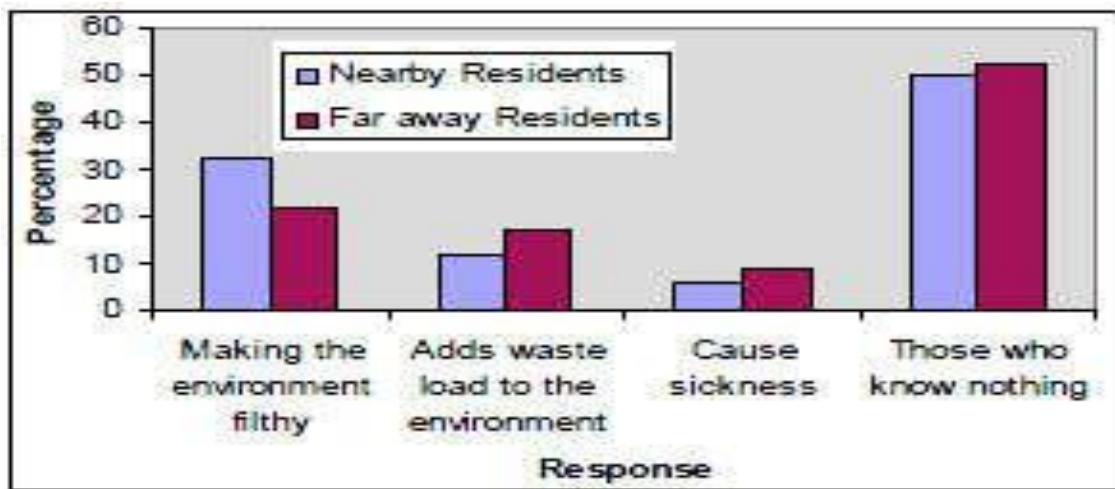
*Measures Employed to Protect Household Residents from the Effects of the Dumpsite:*

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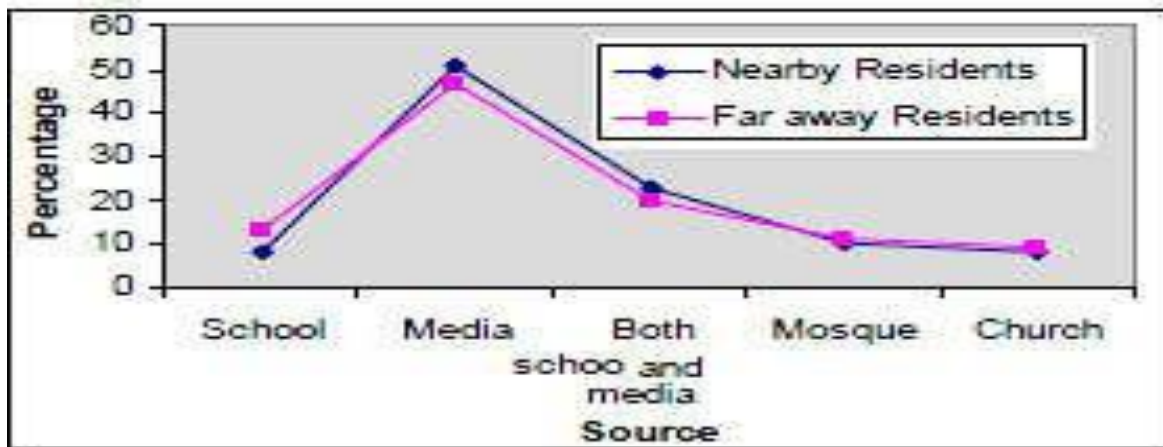
Every respondent stated that no steps are made to guarantee the community's overall safety from the dumpsite. The worst part of not being protected from dumpsite-related impacts did not know enough about pollution (Foday et al., 2013). The majority of people living close and those living faraway said they had no knowledge of pollution (Fig. 10). Only a small portion of them said that illness is caused by pollution. As a result, the locals recommended that, among many other ideas, the dumpsite be moved in the interim (Fig. 11).

This is because the only source of information on pollution available to them is the media (Fig. 12) with its characteristic short comings such as affordability, frequent blackouts to name a few.

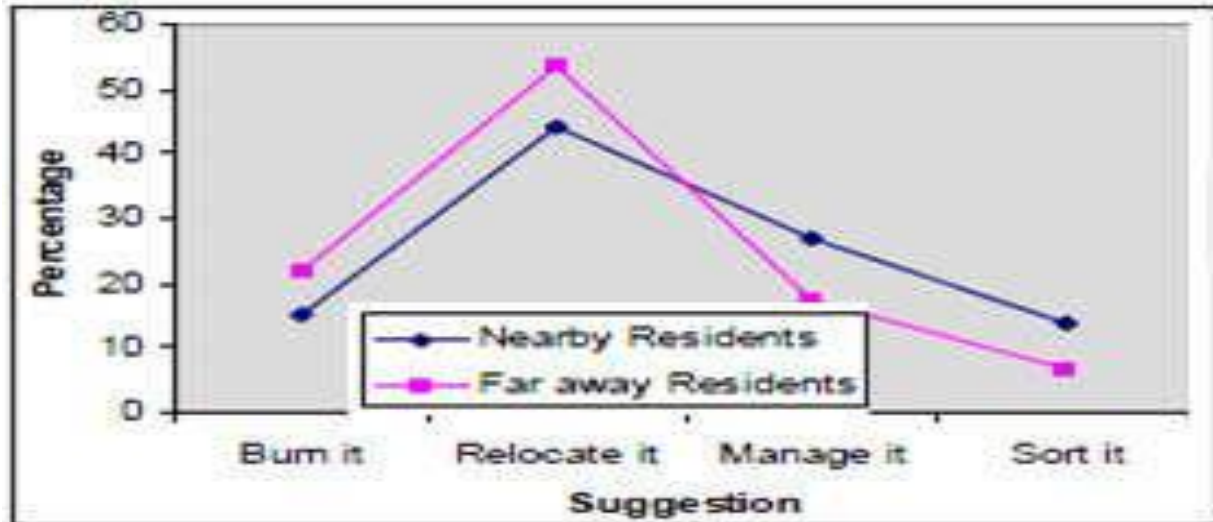
Household residents' knowledge on pollution.



Household suggestions on solid waste:



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Household residents' sources of information on solid waste management.



## DISCUSSION OF RESULTS

The purpose of the study was to determine how important solid waste management (SWM) may be in improving the current system, as well as the technological challenges affecting the performance of the relevant authorities and whether or not they possess the necessary funds, knowledge, and information to use SWM correctly in the Federal Capital Territory (FCT) and how these challenges are handled. Abaji Area Council is the subject of the study. The results are discussed in this part in the context of the hypothesis that was derived from the study's sub questions that sought to identify the study's target. The conversations focus on conclusions drawn from descriptive data gathered by going over written and printed items. Our original hypothesis sought to investigate if the effectiveness of AEPB is impacted by inadequate funding. When the applied mathematics testing and analysis of the analysis question posited for this hypothesis victimization the Chi-square technique, it absolutely was discovered that inadequate funding of AEPB affects its potency. So as to make sure that the result from the applied mathematics testing was correct, we have a tendency to compare the results with our findings from different sources of information assortment. The findings derived from official records, in-person interviews, and textbook materials indicate that the effectiveness of the AEPB is impacted by insufficient funding.

### Implication to Research and Practice

The findings indicated that insufficient financing for the AEPB tends to eliminate almost all of the intense programs that may inspire employees to perform better or carry out their jobs more efficiently. When employees receive little compensation, trash transportation vehicles become unusable, and the workplace becomes dull and unproductive. In these circumstances, AEPB



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employees are observed having group discussions or reading documents in offices and behind trees.

## **CONCLUSION**

This study therefore, concludes that the dumpsite should be properly located and managed to minimize its effects on the environment. For improved health status of the populace living less than 30 m away from the dumpsites, it is a matter of must for the FCT Urban Development Council to resettle such persons. In the long term, efforts to provide low cost houses situated in a clean environment is a priority that the City Council must pursue vigorously to enable the poor to live in affordable yet clean environment. Health advocates must inform people about the negative health effects of disposal sites.

## **Recommendations**

This paper recommend on the following areas; Poverty has been identified as the major problem of many developing countries such as Nigeria. The existing environmental laws and regulations should be reviewed and effective mechanism for the enforcement of the laws and regulations be put in place. Environmental law enforcement officer should be recruited at the Local Government levels and be empowered to enforce environmental laws at the grassroots levels. Enough funds should be made available for the government agencies in-charge of the environment for the effective management of human environment.

## **Future Research**

Future research could be on Environmental Impact Assessment: Conduct a comprehensive environmental impact assessment of the current waste management practices in the area. Also, further research can be done on to Assess the impacts on air, water, and soil quality, as well as biodiversity. Identify potential sources of pollution and their effects on the environment.

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