

## Waste Disposal and Waste Management in Ado-Ekiti, Nigeria

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**Abstract:** One of the consequences of population growth is waste management. It therefore becomes a serious problem that needs attention from the government or agencies responsible for this. This same issue applies to Ekiti state that was carved out of old Ondo state exactly ten years ago. The state continues to witness population growth while waste management is becoming an issue of concern. This study therefore examines waste disposal and waste management in the state capital, Ado Ekiti. Questionnaires were distributed to six hundred and thirty seven respondents across the state capital on issues relating to the focus of the study. This was also complemented by in depth interviews. Findings revealed that fundamental issues about waste management and disposal are not well addressed by the parties concerned. Also, majority of the waste managers and the public understand the health implications of improper waste disposal while their attitudes negate their understanding. The hypotheses tested showed significant relationship among the variables. Equally, the study suggests ways by which waste could be properly managed in ways that will match up with population growth and keep the city from outbreak of epidemics.

**Key words:** Waste disposal, waste management, population, health implications, epidemics

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### INTRODUCTION

Waste could be explained to mean leftovers, used products whether liquid or solid having no economic value or demand and which must be disposed or thrown away (Oluwande, 2002; Bartone, 2000; Buckle and Smith, 2000).

The issue of waste disposal and management were not problems to early man, due to the fact that there were not population explosion and technological advancement at that time. However with the growing population at alarming rate coupled with technological advancement overtime waste disposal and management began to constitute a serious problem to human race.

In 1996, the federal government of Nigeria created some states; Ekiti State was one of them. It was carved out of the formal Ondo State. This development marked the movement of people from all walks of life to this new state especially the state capital Ado-Ekiti. Equally technology in its entire ramification became increasingly developed in this area. On the other side, wastes from these population growth and technological developments gradually constituted problems to the state. This is because the need to control and manage these wastes became an issue that both the people at the helms of government and the citizen must tackle seriously.

Thus government rose up to this challenge by setting up a board to handle waste matters. We need to assert

that the board established to meet this challenge has been up and doing in ensuring that these wastes are properly managed in order to keep the city clean. However, the approaches of the board in managing these wastes are issues of concern. Without mincing words, there is an organization established by the government to manage this waste. One therefore asks whether the organization handling waste is competent to undertake the task effectively? Solid waste management include all the activities that seek to minimize the health, environmental and aesthetic impacts of solid wastes (Buckle and Smith, 2000). Aside this, one needs to understand whether the personnel involved in this business understand this principles and techniques of waste management. This is because, most times, while the personnel of the organization are carrying the waste to its destination a large proportion of this waste drops along the road thereby constituting nuisance to the city. Aside this, the trucks used by these organization are usually open carriage trucks which are not supposed to be used for disposing waste. The personnel also appear to be at risk, as they do not follow the ethics of waste disposal. All these therefore make it important to appraise the board responsible for disposing waste in the city.

Based on these developments it is necessary and important for one to be curious of how the people in government and the general populace are tackling the issue of waste management and disposal in the city.

The citizens also appear to be making the matter worse. Some of them still defecate or dump refuse on the road sides, some even dump it on nearby streams, while others park waste in cellophane bags and drop it at the middle of the highways. It is now a common phenomenon to see refuse being dumped along the major roads in the state, a behaviour turning the state to a refuse depot. This is an eye sore as these ugly mountains of wastes around the state may likely welcome any individual visiting the state.

Aside the aforementioned issues, the health implications of improper waste disposal are enormous and cannot be ignored. There are reports that wastes that are not properly managed can cause water pollution, which may breed diseases like cholera, typhoid and so on (Bartone, 2000; Buckle and Smith, 2000). Also, certain waste especially from chemicals if inhaled or touched can equally cause wide spread epidemics (Bartone, 2000; Klundert, 2000). All these are pointers to the fact that a proper understanding of the disposal and management of waste becomes imperative for this study.

The environmental, social and health implication of improper waste disposal in this country cannot be forgotten too soon. Cities like Ibadan and Lagos for example have experienced flood, deaths and properties destroyed due to these ugly incidences. Proper attention to this issue cannot be overlooked in this city. Therefore this study aims at examining waste management and disposal in the city. Based on these, the following constitutes the research questions for this study.

**Research questions:** Are there enough deposit and efficient waste collection system on ground.

- If they are on ground, are the people aware of it?
- Are they utilizing it properly?
- What are the roles of government in waste disposal and management?
- Are they also playing their roles effectively?
- Are there other bodies or groups involved in waste management?
- Are the personnel aware of the risks involved in improper waste management?

**Study objectives:** Based on the question posed for this research the following are the objectives of disposal.

The general objective of this study is to understand waste disposal and waste management in Ado-Ekiti. The specific objectives are to:-

- Examine the existing waste depots and collection system.

- Understand the roles of individuals within the city in waste disposal.
- Assess whether the agency understand the social and health implications of waste management.
- Examine the role of other players apart from the citizen and government in waste management.
- Suggest based on the research findings, how wastes can be properly managed in the state.

**Hypotheses:** The following are the hypotheses formulated for this study.

- H<sub>0</sub>: There is no significant relationship between refuse depot system and health conditions of the people.
- H<sub>1</sub>: There is a significant relationship between refuse depot system and health conditions of the people.
- H<sub>0</sub>: Privatization of waste collection will not improve the efficiency of waste management.
- H<sub>1</sub>: Privatization of waste collection will improve the effective management of waste.
- H<sub>0</sub>: Refuse deposit system has positive impact on the effective management of waste.
- H<sub>1</sub>: Refuse depot system does not have any positive impact on the effective management of waste.

## MATERIALS AND METHODS

The study area, Ado-Ekiti is the state capital of Ekiti State, which was carved out of the old Ondo State in 1966, the city before this time has served as the administrative head of Ekiti division right from the colonial era. The city houses several higher institutions of learning like university of Ado Ekiti and the Federal Polytechnic. The Provisional (1991) census gave the population Figure of Ado Ekiti as 273,560 but it is evident that presently the population has far exceeded that. The study is important due to the status of the city as the state capital, which has now become a cosmopolitan city.

In order to elicit the required information for this study, questionnaire (open and closed ended) of about eight hundred were given out to the respondents. This was done through stratified random sampling techniques. The city was divided into four strata out of which eight hundred respondents were randomly selected. Questions asked bothered on their socio-economic background and effects of wastes disposal and management. In depth interview was also conducted to back up the quantitative data collected. Three hypotheses were also formulated for the study to further test the relationships among the variables. The data (637 returned questionnaire) were analysed using the simple percentage distribution and chi-square methods of analysis.

**RESULTS AND DISCUSSION**

Table 1 shows the findings on the age of the respondents revealed that 20.8% of the respondents fall below 20 and 25 years, 7.6% fall between 26-30 years, 6.0% fall between 30-35 years while the remaining 50% falls within 36-50 years age range. This breakdown reveals that virtually all the age group that should be aware of the relevance of waste disposal is well represented in this study. Under aged children and aged respondents are not included. This is because most of them are living as dependants on the age groups discussed above and they may only be sent to dispose waste and they are less concerned with decisions regarding waste disposal. Thus, major decision regarding waste disposal are not taken by these underage.

On the educational status of the respondents, the distribution reveals that virtually all the respondents have the minimum educational qualifications 29.7% the respondents have secondary school certificate, another 20.9% of the respondents also possess Ordinary National Diploma and Higher National Diploma, while 49.4% of the remaining respondents possess university and other higher diplomas. This reveals that the population is a literate one. The implication of this is that virtually all the respondents will be aware of the health and environmental implications of improper waste disposal.

Table 1: Socio-economic background of respondents

Variables	Frequency	(%)
<b>Age</b>		
20-25	133	20.8
26-30	122	17.6
31-35	42	6.6
36-40	126	19.8
41-45	98	15.4
46-50	126	19.8
<b>Sex</b>		
Male	287	53.8
Female	343	1.1
No Response	7	
<b>Marita status</b>		
Single	182	28.5
Married	245	38.5
Divorced	105	16.5
Widowed	105	16.5
<b>Educational qualification</b>		
WAEC/GCE	18.9	29.7
OND/HND	133	20.9
B.SC	133	20.9
Others	182	28.5
<b>Years of residence</b>		
1-10	350	55
11-20	20	140
21-30	10	70
31-40	10	70
41-50	1	7

The distribution on years of residence of the respondents in the area they live presently reveals that 55% of the respondents have lived in the area for maximum of ten years. Another 22% of the respondents also claimed they have lived in the area for close to twenty years while the remaining respondents 23% claimed they have been living in the area for the past thirty years. This distribution supports the age distribution of the respondents. The respondents are matured adults who know the right thing to do especially on the issue of waste disposal. Equally, this shows that they must have some means of disposing their wastes in all these years even before the influx of people into the city as a result of state creation.

On whether refuse depots are available 41.8% of the respondents said it was available while 58.2%, a larger percentage said it was not available. Table 2 shows that refuse deposits have not been placed in all the strategic places within the city. From observation, the places where these waste depots were placed are the central business areas where there are markets. This accounts for 41.8% of the respondents who argued that it was available. Further still a question was asked on the providers of these depots but it is surprising

Table 2: Waste disposal and management

<b>Who provides waste bin</b>		
Tenants	140	21.9
Landlords	196	30.8
Governments	189	29.7
None	112	17.6
<b>Availability of refuse depot</b>		
Yes	266	41.8
No	371	58.2
<b>Knowledge of health</b>		
<b>Initiation about reform dumping</b>		
Yes	301	47.3
No	336	52.7
<b>Problem facing refuse collection</b>		
Inadequate facilities	441	69.3
Lack of enlightenment	154	24.2
No Response	42	6.6
<b>Whether waste collection system is well organized or not in the area</b>		
Yes	147	23.1
No	490	76.6
<b>Whether NGO/Private should be involved</b>		
Yes	560	88
No	77	12
<b>Whether waste management board should be privatized or not</b>		
Yes		
No	497	77
Respondents knowledge of the	147	23
<b>Effects of careless waste disposal</b>		
Pollution	350	55
Disease	245	35.5
Others (Bad road, accurate)	42	6.5

that most of (52.7%) of these bins were provided by the individuals residing in the area they are mainly the landlords and the tenants while 29.7% of the respondents attributed the provision to the governments. This reveals that the available refuse depots (41.8%) discussed above are majorly the handwork of individuals residing in the areas. This was corroborated by one of the interviewed respondents thus:

- Since we do not have enough facilities, we have no option than to drop it in a convenient place for the agencies to see. After all, they are supposed to take care of the masses.
- What I do is that I dump it in the bush because I know that it will not affect anybody, as it will decompose. Most times, I drop the refuse on my way to the farm.

To know whether the respondents know the health implications of improper refuse dumping all the respondents claim knowledge of the effects 55% of the respondents attributed it to air pollution, while about 40% also attributed the effects to diseases and infections. The remaining respondents highlighted other causes like road accidents destruction of roads etc. This is not surprising considering the educational status of the respondents. However, the distribution revealed that the understanding of the health implication of improper waste disposal prompted the few landlord and tenants (52.7%) that provided their personal waste bus.

On the problems facing refuse collection in the area close to two-third of the respondents (69.2%) attributed the cause to inadequate facilities, while about 24% of the respondents also attributed it to lack of enlightenment. To buttress this is the question on whether waste collection system is well organized or not. Findings reveal that it is not well organized. Close to 80% of the respondents claimed that the system is not properly organized.

In order to know probable solution to the problem, over 80% of the respondents want waste collection system including the Board in Ado-Ekiti to be privatized.

- I think the government should know by now that this waste disposal system should be privatized. Our people are usually lazy and lack initiative when it comes to government jobs. If they allow private hands to come into it they will see action and efficiency.

The personnels of the board were also interviewed and their responses were revealing. Majority of the respondents interviewed know the implications of waste

disposal environmentally and health wise. They claimed that government or the board has not been supportive enough in terms of funding. A respondent comment:

- We have not been supplied with adequate safety gadgets for our staff. Some of them have to collect waste without putting on any safety appliances and since there is high rate of unemployment, they are forced to remain in the job.

On why they have not supplied the waste depots to all the areas, they argued that they usually put a large bin at the central areas, where the people in the area can easily drop their refuse:

- It is not our duty to supply waste bins at every street. What we do is to put waste containers in major central areas within reach for the people in the neighborhoods. The residents in such neighborhoods are expected to get their personal waste bins.

On the test of hypotheses, it was revealed that significant relationship exists between depot system and health conditions of the people. Meaning that presently the issue of waste disposal and management in Ado-Ekiti has been affecting the health of the citizen. This reveals that, urgent action needs to be taken to ensure that the issue of waste disposal does not degenerate into such level (Table 3).

The second hypothesis also reveals that the privatization of waste management will improve the efficiency of the management of waste in the city. This shows that it is becoming important to include private hands in the management of waste in Ekiti State. As it is being practiced in some cities within the country. This will further improve the efficiency of the management of waste in the state.

The third hypotheses also reveals that refuse deposit system has positive impact on the effective management of waste. This brings to fore that proper organization of refuse deposit within the city will ensure the effectiveness on the part of the managers of waste. The strategic placement of deposit containers in strategic places for proper disposal by the refuse managers will ensure their effectiveness. People having recognized such deposit centers would go to such places to dump their refuse. On the long run it will make the impact of refuse collectors be felt within the city unlike a situation whereby few selected areas have those deposit containers.

Table 3: Test of hypotheses

Variables	Yes	No	Total
<b>Hypothesis I</b>			
<b>Frequency observed table</b>			
Waste Depot	266	371	637
Health Implications	301	336	637
Total	567	707	1274
<b>Frequency expected table</b>			
Waste Depot	283.5	353.5	
Health Implication	283.5	353.5	
	$X^2 = 3.89307$		
	Critical value 3.84		
	Level of Significance 1 at 0.05		
<b>Hypotheses II</b>			
<b>Frequency observed table</b>			
Privatisation of waste collection	147	490	637
Efficiency in waste management	266	371	637
Total	413	861	1274
<b>Frequency expected table</b>			
Privatisation of waste collection	206.5	403	
Efficiency in waste management	206.5	403.5	
	$X^2 = 50.73529$		
	Critical value = 3.84		
	Level of significance-1 at 0.05		
<b>Hypothesis III</b>			
<b>Frequency observed table</b>			
Refuse deposit style	490	147	637
Efficient Waste Management	560	77	637
Total	1050	224	1274
<b>Frequency expected table</b>			
Refuse deposit style	525	112	
Efficient Waste Management	525	112	
	$X^2 = 26.5416$		
	Critical value = 3.84		
	Level of significance at 0.05		

### CONCLUSION

In this study, efforts have been made to understand the waste disposal method and management in Ado-Ekiti it was discovered that the issue of waste disposal system and maintenance are not well addressed. These reasons are, there are no waste depots in strategic places within the metropolis, which makes the management of these wastes very improper by the organization concerned. Though the state has established the parastatal responsible for monitoring and managing waste disposal their effort cannot match up with the waste being disposed by the people. Also, the attitude of the people in waste disposal is not encouraging. Most of them know the implications of improper waste disposal yet; they have not taken the issue seriously. These problems we need to assert are common in major cities in developing countries like Nigeria.

Having studied the waste disposal and management in the state capital and based on the findings that the issue relating to waste disposal and management need to be handled in a more serious and efficient ways, we hereby make the following suggestions.

- Individuals in each household must be encouraged to learn how to manage their waste products. They should be encouraged to look for bags or bins where they could keep their waste, which would be collected by the designated authorities.
- In this present days government alone cannot efficiently handle waste management. It is suggested that waste management should be contracted to private firms as it is being practiced in some cities in Nigeria.
- The waste management Board will only act as regulatory body to monitor the activities of these firms. These private bodies will charge the public token fees while the government also subsidizes on the fees paid by the people.
- It is also suggested that there should be legislative both at the local and state levels regarding the disposal of waste by the people in the city. Offenders should be punished accordingly. This will deter the people from disposing their wastes carelessly around the city.
- Efforts should also be made to recycle some of these waste products. This is being practiced in some states within Nigeria. This will serve as source of revenue for the government and also generate employment for the people of Ekiti State.
- Finally the Waste Management Board staff should be made to undergo training on modern ways of managing waste. This could be within and outside Nigeria. This will solve a lot of problems as they will also come back to educate the entire citizenry

If the above recommendations are looked into, it is believed that the issue of waste disposal and management in Ado-Ekiti will become easy tasks and the city will be void of waste even when the population increase beyond this level.

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