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ASSESSMENT OF SOLID WASTE DISPOSAL SYSTEM IN JIMETA, ADAMAWA STATE, NIGERIA

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ABSTRACT: *Solid wastes are generally generated through domestic, commercial and industrial activities, among others. For proper environmental sanitation and good health of the people, solid wastes need to be disposed properly. The aim of the paper is to assess solid wastes disposal in Jimeta. Data for the study were generated from both the primary and Secondary Sources using the questionnaire administration. For detailed field data gathering, 270 samples were selected form 7 ward of the Local Government Area. The paper has identified several methods of solid wastes disposal of which the open dumping method predominates, followed by the open container method of waste disposal. The waste was often disposed of either on the frequency of once per day, forthrightly or once per week. However, majority of the people believe that the current methods of solid waste disposal are not satisfactory it is therefore concluded that public enlightenment should be carried out to change the attitude of the public towards maintaining good sanitary conditions through proper disposal of solid wastes in addition to the introduction of solid wastes recycling.*

KEYWORDS*:* Solid Waste, Disposal, Facility,Sanitary.

INTRODUCTION

Human activities for satisfying needs such as food, shelter, clothing, mobility as well as aesthetic quality of life invariably lead to wastes being generated. These wastes generated need to be disposed off ultimately in such a way that it would not cause nuisance or any environmental pollution. As cities grow in size, with a rise in population, the amount of waste generated is increasingly becoming unmanageable.

Wastes are any discarded materials, which can be solid, liquid, semi-solid or containerized gaseous materials (Achi, 2000). Solid waste is defined as discarded material which has no consumer value to the person abandoning it (Achi, 2000). This can be generated by either domestic commercial, industrial healthcare agricultural mineral places, etc. The words "garbage" "trash", "refuses" and "rubbish" is used to refer to some forms of solid waste. The solid waste being generated in Jimeta, from each household is approximately 1 ton of domestic waste per year (ASME, 2011). The incidence of much garbage lying uncollected in the streets, dustbins, causing inconvenience and environmental pollution, and being a risk for public health in the study area is the main thrust of this study. Although, government authorities are trying to control this, hence the piles of wastes only seem to grow from day to day. The average per capital waste generation is 0.8kg per person per day (ASME, 2011). The problem is likely to intensify unless alternate approaches are developed.

The private sector is seen as a key participant in full range of waste management activities, including collection, transportation, treatment, processing, separation, recycling, composting and disposal of waste. In some countries, Cameroon and Zimbabwe for example, community neighborhood association, small and informal enterprises are increasingly involving themselves 15.2%, 4.4%, 1.2% respectively. The income level of individual can affect the level of solid wastes generated by such individual as their income determines their purchasing power and purchasing power determines wastes generation.

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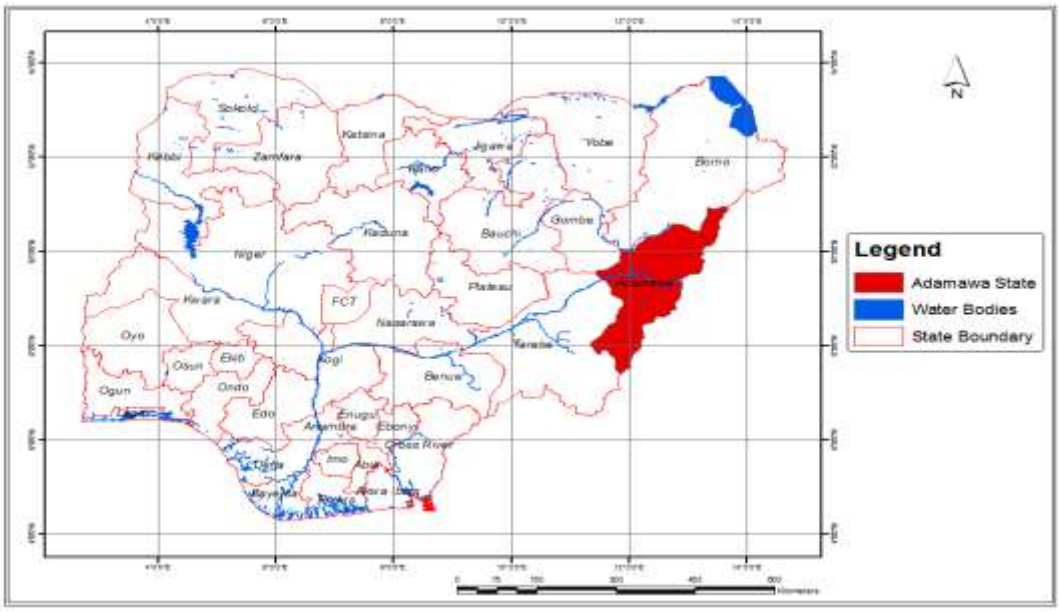
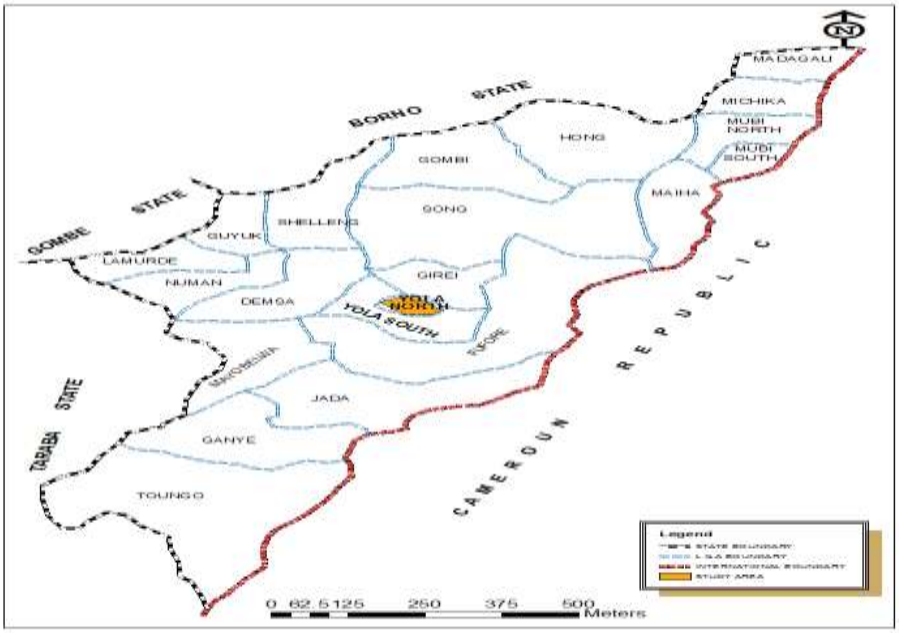
The study area

Jimeta is located at the central middle of Adamawa State with Yola being the state capital. The town is surrounded by Geirei and Fufore Local Governments. Jimeta is basically administrative, commercial and social centre noted for their commercial activities. Furthermore, Jimeta is geographically on Latitude 11055'N and longitude 11011'.





Map of Adamawa State Showing Yola North
Source: Adamawa Geographic Information System (ADGIS)

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Population

The population of the study area was randomly selected and sampled based on wards as shown in the table below and out of which 250 respondents were interviewed.

Table 1: Population of the area

S/N	Name of ward	Population	% of population
1	Jambutu	8,368	34
2	Doubali	14,464	58
3	Nasarawo	7,396	30
4	Alkalawa	10,725	42
5	Bako	5015	20
6	Yolde pate	8320	33
7	Makama A	8108	33
	Total	62,396	250

Source: INEC, 2016

METHODOLOGY

The sources used for gathering data for the paper involved two main sources, primary and secondary. The primary data were collected using a well structured questionnaire that contained variables such as types of solid wastes, frequency of collection and distance of households to evaluation points, among others.
The secondary sources of data include official records from INEC, Adamawa State Ministry of Works, information reliably material such as journals, magazine etc

RESULTS AND DISCUSSIONS

The paper shows that there are about 8 types of wastes generated from different sources which need to be disposed of in order to achieve a healthy environment (Table 2)
Table 2:Types of solid wastes

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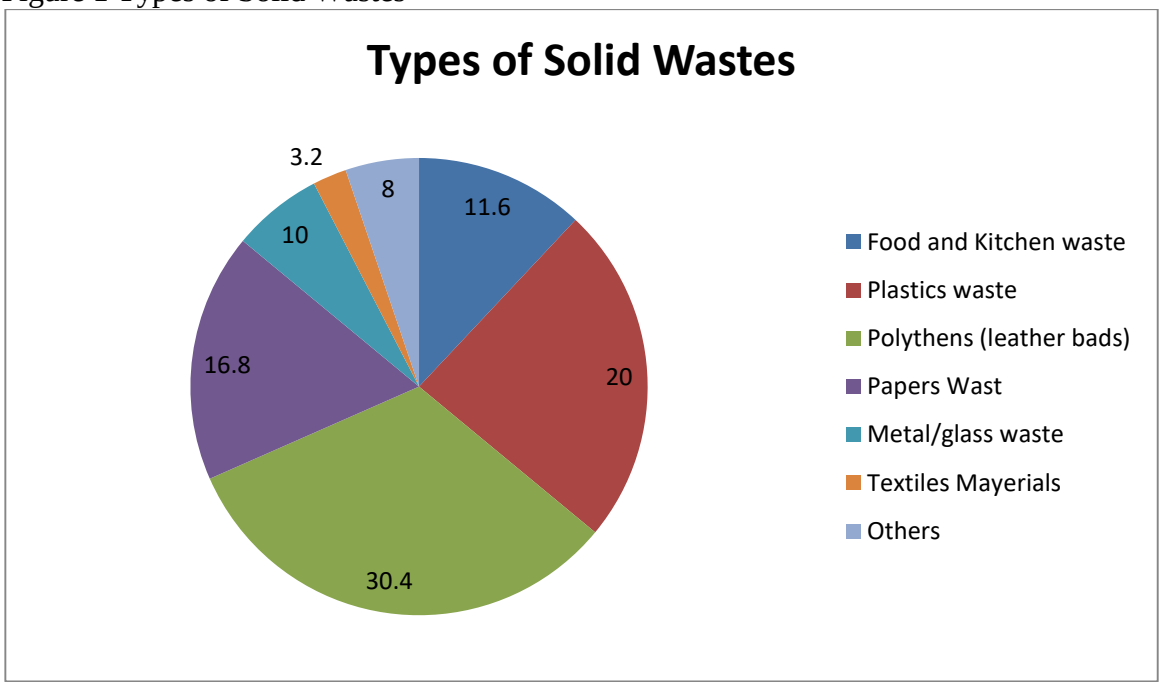
Types of waste generated	Frequency distribution	Percentage (%)
Food/Kitchen waste	29	11.6
Plastics wastes materials	50	20
Paper waste	42	16.8
Polythenes (leather/leather bags)	76	30.4
Metals/glass waste	25	10
Textiles Material	8	3.2
Others	20	8
Total	250	100

Source: Zarma, 2014

Figure 1 Types of Solid Wastes



Source: Zarma, 2014

Solid Waste Generation

The predominant type of solid wastes generated in Jimeta is polythene bags, commonly called leather bags.

Table 3 Solid waste generated

Types of waste generated	Frequency distribution	Percentage (%)
Food/Kitchen waste	12	12.0
Plastics wastes materials	50	24.0
Paper waste	42	17.6
Polythenes (leather/leather bags)	76	32.4
Metals/glass waste	25	6.4
Textiles Material	8	2.4
Others	20	5.2
Total	250	100

Source: Zarma, 2014

This constitutes 32.4% of the total identified waste generation in the study area. This may not be far from the fact that traders are more than any other occupation in the area and these traders sell their goods

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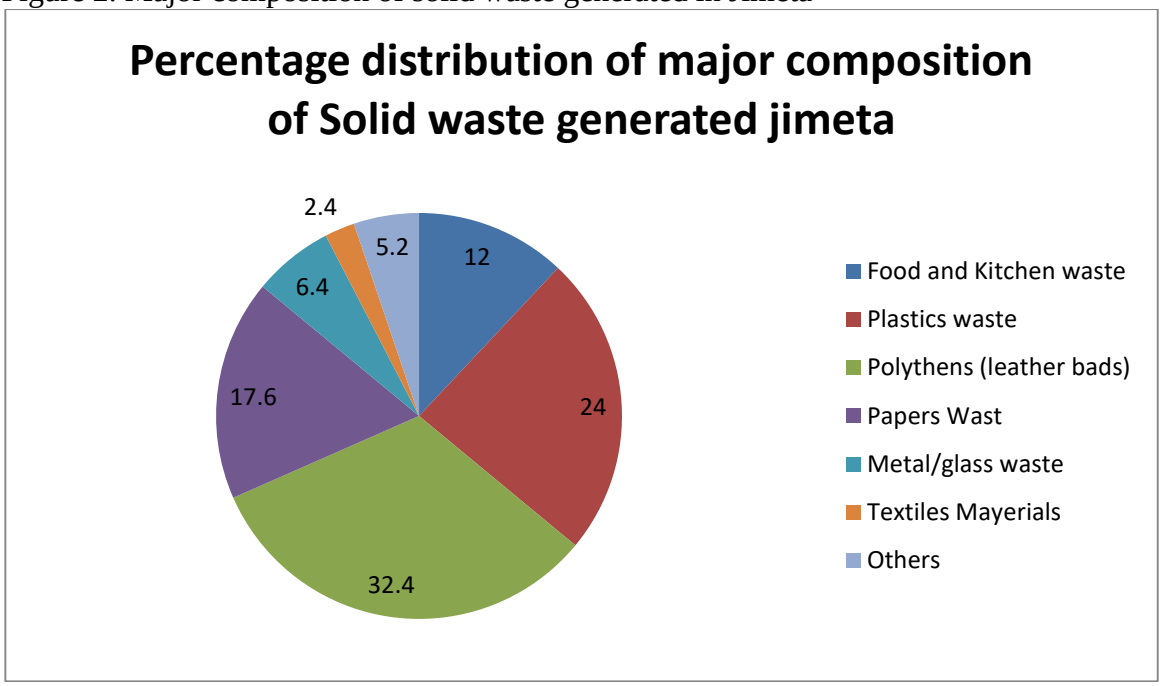
using polythene bags to wrap them. These predominant solid waste materials can be recycled if proper public enlightenment is done on reuse and recycling of waste materials. Other waste type identified include, food/kitchen waste 12.0%, plastic waste 24.0%, paper waste 17.6% metals/glass waste 6.4% textile waste 2.4% and miscellaneous waste 5.2%. These waste types when put together and dumped on the street present very unaesthetic picture of the town.

The solid waste generated have different compositions.

Figure 2. Major composition of solid waste generated in Jimeta



Source: Zarma, 2014

Method of Waste Disposal by Households

The Various methods employed by households in the area of study include open dumping which appears to be the dominant method (Figure 2) However, the official dump sites were utilized only by the 26.8 percent of the people. This was made possible by the closeness of their households to the official dump sites. The paper also shown that 12.4 percent of the people did not have any disposal. This implies that wastes could be disposed even on the main road or water bodies depending on their convenience.

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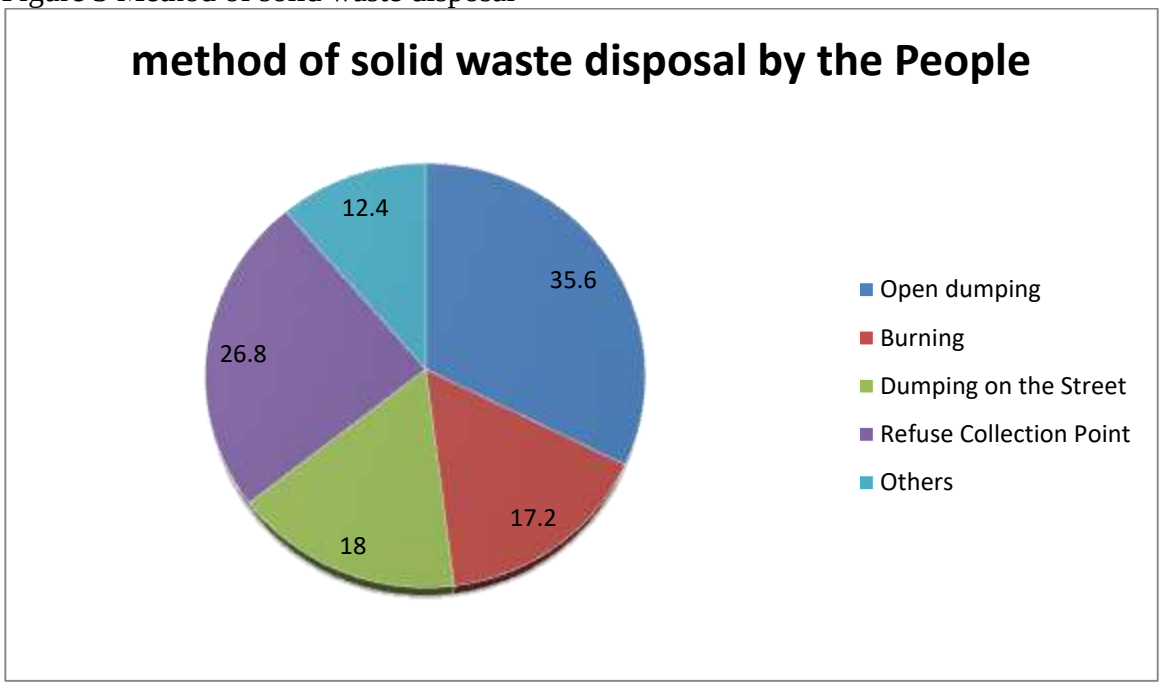
Figure 3 Method of solid waste disposal



Source: Zarma, 2014

Frequency of Waste Disposal

The paper shows that the majority of the people in the study area disposed their solid waste on daily basis while 25.2 percent of them disposed their waste formally (Table 4).

Table 4: Frequency of Waste Disposal

Time	Frequency	Percentage (%)
Daily	117	46.8
Fortnightly (2 days)	63	25.2
Weekly	30	12
Once a while	40	16
Total	250	100

Source: Zarma, 2014

The need to keep the house surrounding clean daily is very important to most people sweep and collect waste that explains why they collect wastes on daily basis

Reasons of Waste Littering the Streets

The paper shows that there are various reasons explaining the littering of solid wastes on the streets of the study are (Table 2). Again 6.4% claimed that people around are not aware that waste is a problem and this explains their attitude towards improper disposal of waste

According to the respondents, the reasons why solid waste litters the street of Jimeta is because government does not collect them promptly thereby causing heaps of wastes. This is affirmed by 53.6% of the total respondents while 6.4% claimed that people around are not aware that waste is a problem.

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About 12% said that no one offer to collect wastes and 16% attributed the problem to lack of dumping places.

Source: Zarma, 2014

Reasons	Frequency	Percentage (%)
People around are not aware that waste is a problem	16	6.4
The government does not collect waste promptly	134	53.6
No one offers to collect waste	30	16
There are no dumping places	40	12
Others	30	12
Total	250	100

Perceived Best Disposal Method

As contained in Table 2, Most of the people opined that lack of government prompt action a collect wastes in office in disputed disposal sites is a major reason for the heaps of wastes seen on the street. Again the people of the study area have perception on best methods for combating the menace of solid wastes. These methods according to them range from reuse and recycling to control of burning of wastes (Table 4). A higher number of respondents (44.4%) see collecting, recycling, composting of organic waste and reuse of waste as the best method to control waste. A reasonable number (29.60%), said, to collect, store and transport waste to them is the best method to control waste, while. 3.2% of the household see reduction in the production of waste as the best method to control it. About 8%, 14% and 0.8% agreed that the best method to control waste is by dumping waste, burning waste and other methods respectively.

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Table 6. Perceived Best methods to control solid waste problem
Source: Zarma, 2014

Methods	Frequency	Percentage (%)
Reduce production of waste	8	3.2
Collect, store, and transport waste	74	29.60 .
Select collection, recycling, compositing of organic waste and reuse of waste	111	44.4
Controlled dumping waste (land filling)	20	8
Controlled burning of waste	35	14
Others	2	0.8
Total	250	100

Observed Cost of Waste Disposal (Before Perceived)
The Paper shows clearly that the people were responsible for the paying for disposal of waste as seen in Table 4
Table 7 : **Observed Cost of Solid Waste Disposal**

Amount (N)	Number of respondents	Percentage (%)
Less than 30	105	42
31-50	70	28
51-100	30	12
101-200	28	11.2
Others	17	6.8
Total	250	100

Source: Zarma, 2014

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Table 7 indicates that the inhabitants spend money in disposing their waste using private individual that use local truck to carry the waste. The amount paid depended on the quality of waste to be disposed. About 42% pay less than N 30.00 per disposal, 28% pays between 31-50.00, 12% pays disposed 51-100, 11.2 pays between N 101-200 while others pays 6.8%. This implies that people can take the advantage of the reverse case when recycling. i.e paying an individual for the amount of waste they bring to the collection point for recycling.

Problems of wastes disposal

Ignorance: Ignorance of appropriate collection points is one of the major problems of solid wastes littering in Jimeta. Some people claimed ignorance of appropriate wastes collection points and thereby dispose their solid wastes anyhow: This is quite obvious because most of the people cannot easily relate health problems to poor solid waste collection or even see solid waste as a source of wealth.

Inappropriate Mode of Transport: In areas where these wastes are collected at the appropriate points, the use of uncovered means of transport of waste leads to scattering of waste by winds especially those that are very light, in to the streets thereby leading to poor sanitary conditions of the study area.

Inaccessibility: Areas like Wuro Kuturu in Nassarawo ward lack proper accessibility for the movement of vehicles, while refuse bunkers provided filled without evacuation, the whole environment become unconducive. Also the people in this area are at risk because of their exposure to pollution.

CONCLUSION

It is very clear from the paper that effective solid waste management strategy, low income and lack of technology are the major problems of waste disposal in Jimeta, Adamawa State. This indicate that, the current situation of Jimeta in regards to solid waste management need attention from both government, Non Governmental Organization (NGO) operating in the state to sensitize the people on the value of clean and safe environment

It is concluded that the option of waste to wealth can be integrated into the general waste disposal strategy of the government especially for unemployed youths could be engaged in the business of waste to wealth as a way of solving unemployment rates while maintaining a clean environment. Similarly, government of Adamawa State can introduce Environmental Sanitation Mobile Courts to enforce the law dealing with proper waste disposal, as practiced elsewhere.

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