GARBAGE DISPOSAL PRACTICES AND PREVALENCE OF DISEASES IN RAFIN ATIKU DIVISION, BIRNIN KEBBI METROPOLIS, KEBBI STATE

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ABSTRACT

This paper reports on part of a survey of Garbage Disposal Practices and the Prevalence of Diseases in Kebbi State, Nigeria in particular various garbage disposal practices and the diseases related to garbage disposal practices. The findings were that Most of the garbage is disposed of along the roadsides, in the bushes, on the streets and in drainage channels. The findings of the study further revealed that that poor garbage disposal has a direct link to the widespread prevalence of diseases like malaria, dysentery, cholera and Tuberculosis. Therefore, there is need to sensitize people about proper garbage disposal practices in order to reduce the prevalence of associated diseases.

Keywords: Garbage Disposal, Diseases

Introduction

It is estimated that about 191 tons of garbage are generated per day in Birnin Kebbi, 53 tons in Fafin Atiku alone. The estimated daily per capita generation ranges between 0.5 kg and 0.68 kg, below the national average of 0.89 kg (Ekere, 2009). However, unlike cities in the industrialized countries, which mostly generate garbage with low organic material (Hoornweg, 1999); Birnin Kebbi metropolis, and Rafin Atiku in particular, generates garbage that is rich in vegetable matter or known as crop material. The biggest fraction of which is generated in the several markets as a result of the practice of selling food crops in their raw form (KUDA, 2012)

According to Ekere (2009), the garbage arising from this practice of selling crops in their raw form is chiefly of two types: the unwanted products or crop parts that are either rejected or cut off during the process of sorting, and the materials used for packaging when transporting crops to urban market centers. On reaching the markets, the sacks are opened and the wrapping materials dumped in the markets as garbage. Besides the markets, garbage in Rafin Atiku is also produced by households or residential areas, public areas and streets, as well as construction, agricultural, commercial, institutional and industrial activities.

On average the garbage collection levels in Birnin Kebbi Metropolis are estimated at only about 36% of the total generated (KUDA, 2012). As a result, the uncollected garbage is dumped indiscriminately on the streets, in or around garbage bins/skips, and in drains, so contributing to flooding, as well as causing inconvenience and serious environmental and health problems. Due to the increase in the population, there is an increased demand for food in Rafin Atiku. In view of the fact that most foodstuffs are marketed in their raw form, the implication is an increased magnitude of crop waste generation, both at the market and household levels. Additionally, the garbage in Rafin Atiku is not separated into fractions like biodegradable, paper, glass, plastic, metal, and so forth at the place where it is generated. This implies that garbage quantification and inventorying according to category is practically impossible.

Prevalence of diseases associated with poor garbage handling is high in Rafin Atiku, with diseases like malaria, typhoid, dysentery and Cholera among others. These diseases are common, mainly among children in households surrounding garbage dumps and other non-gazated garbage heaps. According to Kayode and Omole (2011), in 2014, the prevalence rate of malaria in Birnin Kebbi during the rainy season was 36%, almost double the national average. This can be attributed to the poor garbage disposal methods.

Research hypotheses

The study was guided by the following hypotheses:

1. Garbage disposal practices have no significant impact on the prevalence of diseases in Rafin Atiku division, Birnin Kebbi metropolis in Kebbi state, Nigeria.

2. Garbage disposal practices have a significant impact on the prevalence of diseases in Rafin Atiku division, Birnin Kebbi metropolis in Kebbi state, Nigeria.

Method

The study was conducted following quantitative approach in order to analyze how garbage is disposed of in the community, and the qualitative approach as way of gathering people's opinions about how garbage disposal is linked to prevalence of diseases. Data was administered through administering questionnaires to a sample of 70 respondents which included 50 households living near garbage heaps, and 20 respondents coming from garbage collection companies. The data collected was edited, coded and entered after which the summary statistics were generated and findings were concluded.

Findings

In this study, the first objective was to establish the various garbage disposal practices in Rafin Atiku division in Birnin Kebbi Metropolis, in Kebbi State, Nigeria.

The various garbage disposal practices

To achieve this objective, respondents were asked for their opinions about various issues related to garbage disposal practices, as follows:

Table 4.2.1: Shows the Sources of Garbage

Details (statements/questions)	Category/answers	Frequency	Percentage
The main sources of garbage in the community	Market	40	57
	Industrious products	10	14
	House hold materials	20	29
	Total	**70**	**100**

From the information presented in table 4.2.1 above, the study findings indicate that on the main sources of garbage in the community, 40 respondents (57%) said that garbage comes from the markets, 10 respondents (14%) said that garbage comes from industrial products and 20 respondents (29%) said that garbage comes from household materials. This implied that majority of the garbage generated in Rafin Atiku comes from the market places.

Table 4.2.2: Shows the Types of Garbage

Details (statements/questions)	Category/answers	Frequency	Percentage
Type of garbage generated in this community	Packaging leather	45	64
	Electronic waste	5	7
	Food waste/Organic waste	20	29
	Total	**70**	**100**

From the information presented in table 4.2.2 above, the findings of the study show that on the types of garbage generated, 45 respondents (64%) said that packaging leather is the most common type of garbage generated in their community. Also, 5 respondents (7%) said that garbage also comes from electronic waste materials, and 20 respondents (29%) said that the garbage comes from food items and organic material. This therefore implies that the most common type of garbage generated in Rafin Atiku is packaging leather material.

Table 4.2.3: Shows the Daily Volumes of Garbage Generated

Details (statements/questions)	Category/answers	Frequency	Percentage
How much garbage do households and businesses generate on a daily basis in this community?	Households	50	71
	Businesses	20	29
	Total	**70**	**100**

On how much garbage is generated by households and businesses on a daily basis in the community, as presented in table 4.2.3 above, the study findings show 50 respondents (71%) saying that household generate the most garbage, while 20 respondents (29%) said that businesses generate most garbage on a daily basis. This implied that majority of the respondents believe that most of the garbage generated in Rafin Atiku division comes from households.

Table 4.2.4: Shows Gazatted Garbage Disposal Points

Details (statements/questions)	Category/answers	Frequency	Percentage
Are there gazatted garbage disposal points where local government authorities collect the garbage?, if not, where do people dispose of their garbage?	Yes	13	19
	No	57	81
	Total	**70**	**100**
	If "No", Where?		
	Any hidden place e.g in the bush	30	53
	On the streets/roadside	27	47
	Total	**57**	**100**

The respondents were also asked whether there were gazatted garbage disposal points where local government authorities collect the garbage from, and from the information presented in table 4.2.4 above, 13 respondents (19%) agreed, and 57 respondents (81%) disagreed. The 57 respondents (81%) who disagreed about there being gazatted garbage disposal points set up by local government authorities as garbage collection points, were asked where they disposed of their garbage. 30 of them (53%) said that garbage is disposed of in any hidden place, such as in the bushes, and 27 of them (47%) said that garbage was disposed of on the streets and along the roadsides. This implied that where there are gazatted garbage disposal points, they are not enough for all people, and therefore majority of the people dispose of their garbage in unconventional ways.

Table 4.2.5: Show the Regularity of Garbage Collection

Details (statements/questions)	**Category /answers**	**Frequency**	**Percentage**
How regularly do the local government authorities collect garbage from gazatted disposal points? Please tick the appropriate	Everyday	0	0
	Twice a week	5	7
	Once a week	8	11
	Twice a month	11	16
	Once a month	16	23
	Others (never at all or once a year)	30	43
	Total	**70**	**100**

The information presented in table 4.2.5 above shows that on how regularly the local government authorities collect garbage from gazatted disposal points, none of the respondents said there was daily collection of garbage. 5 respondents (7%) said the garbage is collected twice a week, 8 respondents (11%) said that the garbage is collected once a week, 11 respondents (16%) said that the garbage is collected twice in a month, 16 respondents (23%) said that the garbage is collected once a months, and others (30 respondents or 43%) said that garbage is collected once a year or in some cases not collected at all year round. This implied that the garbage collection process by the local government is highly irregular, as more and more respondents believed that local government authorities are less regular in collecting garbage, and in some cases they do not collect it at all.

The diseases related to garbage disposal practices

In order to achieve this objective, the researcher put various questions to the respondents, and their responses were as follows:

Table 4.3.1: Shows the Prevalence of Diseases

Details (statements/questions)	Category /answers	Frequency	Percentage
Is there a widespread prevalence of diseases in Rafin Atiku?	Yes	58	83
	No	12	17
	Total	**70**	**100**

The study aimed to establish whether there was a widespread prevalence of diseases in Rafin Atiku division. The information presented in table 4.3.1 shows that on this, 58 of the respondents (83%) agreed that there was widespread prevalence of diseases, and 12 respondents (17%) disagree. This implied that majority of the respondents believe that there is a widespread prevalence of diseases in Rafin Atiku division in Birnin Kebbi Metropolis.

Table 4.3.2: Shows what Diseases are most Prevalent?

Details (statements/questions)	Category /answers	Frequency	Percentage
If yes, what diseases are most prevalent?	Malaria	35	50
	Dysentery	10	14
	Cholera	20	29
	Tuberculosis	5	7
	Total	**70**	**100**

On what diseases are most prevalent in Rafin Atiku, the information presented in table 4.3.2 above, shows that 35 respondents (50%) said malaria is the most prevalent, 10 respondents (145) said that dysentery is the most prevalent, 20 respondents (29%) said that cholera is the most prevalent, and 5 respondents (7%) said that Tuberculosis is the most prevalent disease. This implied that according to the respondents' understanding, malaria is the most prevalent disease in Rafin Atiku division.

Table 4.3.3: Shows the causes of Disease Prevalence

Details (statements/questions)	Category /answers	Frequency	Percentage
What causes the prevalence of the diseases mentioned in (4.3.2) above?	Poor sanitation in the community	49	70
	Lack of garbage disposal points in the area	21	30
	Total	**70**	**100**

On what causes the prevalence of diseases, the information in table 4.3.3 above shows that 49 of the respondents (70%) said that its caused by poor sanitation in the community, and 21 of the respondents (30%) said that its caused by the lack of garbage disposal points in the area. This implied that the respondents fault poor sanitation and the garbage disposal practices as the causes of the diseases that are prevalent in the area.

Table 4.3.4: Shows Household Proximity to Garbage Heaps and Disease Prevalence

Details (statements/questions)	Category /answers	Frequency	Percentage
Do households located near garbage heaps have a higher prevalence of diseases?	Yes		
	Reason being the garbage near their houses infect them with certain diseases	70	100
	Total	**70**	**100**

As to whether the households located near garbage heaps have higher disease prevalence, the information presented in table 4.3.4 above shows that all the 70 respondents agreed, saying that the garbage near their houses increases their risk of contracting certain diseases. This implies that there a widespread awareness that garbage causes diseases and that closer proximity to the garbage heaps is especially dangerous.

Table 4.3.5: Shows the common Diseases associated with Garbage Disposal Practices

Details (statements/questions)	Category /answers	Frequency	Percentage
What are the common diseases associated with garbage disposal practices in this community?	Malaria	29	41
	Dysentery	12	17
	Cholera	20	29
	Tuberculosis	9	13
	Total	**70**	**100**

The information presented in table 4.3.5 above, shows that on the common diseases associated with garbage disposal practices in the community, 29 respondents (41%) said the most common disease caused by the poor garbage disposal practices was malaria, 12 respondents (17%) said it was dysentery, 20 respondents (29%) said it was cholera, and 9 respondents (13%) said it was Tuberculosis. This implied that by the respondents' own admission, malaria is the most prevalent disease associated with the poor garbage disposal practices in their community.

Table 4.3.6: Shows how the Diseases are Transmitted

Details (statements/questions)	Category /answers	Frequency	Percentage
How are these diseases (in 4.3.5 above) transmitted and spread?	Through pests and insects	42	60
	Through direct contact with the garbage	28	40
	Total	**70**	**100**

The information in table 4.3.6 above shows that on how the diseases are transmitted, the respondents' responses were such that: 42 of the respondents (60%) said that the diseases are transmitted through bites from insects and pests, and 28 respondents (40%) said that the diseases are transmitted through direct contact with garbage. This implied that the respondents were fully aware of the ways through which diseases are transmitted in their community.

Table 4.3.7: Shows how the Prevalence of Diseases is linked to Garbage Disposal Practices

Details (statements/questions)	Category /answers	Frequency	Percentage
How is the prevalence of diseases linked with the garbage disposal practices?	It serves as a habitant for mosquitoes' growth	32	46
	It serves as a breeding site for insects	21	30
	It contaminates drinking water	17	24
	Total	**70**	**100**

The information in table 4.3.7 above, shows that on how is the prevalence of diseases linked with the garbage disposal practices, 32 of the respondents (46%) said that garbage heaps serve as habitats for mosquitoes to grow, 21 of the respondents (30%) said that garbage heaps serve as breeding grounds for vectors, and 17 respondents (24%) said that garbage contaminates drinking water, thereby causing water-borne diseases. This implied that the respondents are aware of the direct link between the garbage disposal practices and the prevalence of diseases.

Table 4.3.8: Shows the groups affected by Diseases associated with Garbage

Details (statements/questions)	Category /answers	Frequency	Percentage
Which groups of the population are most affected by the diseases associated with garbage disposal practices?	Children less than 10years	30	43
	Children less than 15 years	25	36
	House hold women (house wives)	15	21
	Total	**70**	**100**

The information presented in table 4.3.8 above, shows that on which groups of the population are most affected by the diseases associated with garbage disposal practices, 30 (43%) of the respondents said that children under 10 years are the most affected, 25 (36%) of the respondents said that children under 15 years are the most affected, and 15 (21%) of the respondents said that women are the most affected. This implied that the respondents believe that women and children are the most common people to be affected by the diseases associated with poor garbage disposal practices.

Table 4.3.9: Shows the sensitization about the relationship between Garbage Disposal Practices and Prevalence of Diseases

Details (statements/questions)	Category /answers	Frequency	Percentage
Are the people properly sensitized about the relationship between garbage disposal practices and prevalence of diseases?	No	62	89
	Yes	8	11
	Total	**70**	**100**

The information presented in table 4.3.9 above, shows that on whether people are properly sensitized about the relationship between garbage disposal practices and prevalence of diseases, 62 (89%) of the respondents disagreed and only 8 (11%) of the respondents agreed, implying that there is a widespread belief among the population that government has not done enough to sensitize them about how their garbage disposal practices are related to the prevalence of diseases in their communities.

Discussions, Conclusions and Recommendations

The study aimed to garbage disposal practices and the prevalence of diseases in Rafin Atiku division, in Birnin Kebbi Metropolis, in Nigeria. The results of the study are discussed as follows:

Garbage Disposal Practices

The findings of the study show that on the sources of garbage, majority of the respondents said that garbage comes from the markets, 14% of the respondents said that garbage comes from industrial products and 29% of the respondents said that garbage comes from household materials, which implied that majority of the garbage generated in Rafin Atiku comes from the market places. On the types of garbage generated, the findings show that 64% of the respondents said that packaging leather is the most common type of garbage generated, 7% of the respondents said that garbage also comes from electronic waste materials, and 29% of the respondents said that the garbage comes from food items and organic material, which therefore implies that the most common type of garbage generated in Rafin Atiku is packaging leather materials. On the daily volumes of garbage generated, the findings of the study show that 71% of the respondents said that household generate the most garbage, while 29% of the respondents

said that businesses generate most garbage on a daily basis, which implied that majority of the respondents believe that most of the garbage generated in Rafin Atiku division comes from households.

The regulatory framework for garbage management in Nigeria's law (Public Health Act of 2014 and the Local Governments Act of 1999) provides that the responsibility of solid waste management lies with Local Governments Authorities. Although the Public Health Act of 2014 doesn't exactly have provisions on garbage management, it does emphasize good health through empowering health workers to prevent and minimize disease transmission resulting from unhygienic practices, and improper environmental management. The Local Governments Act of 1999 on the other hand, clearly mandates the city authority (Kebbi Urban Development Authority - KUDA) the responsible for all the activities dealing with garbage; from the point of production through collection to disposal. The law mandates local governments with the overall responsibility of environmental management.

The Prevalence of Diseases

The findings of the study show that on whether there is a widespread prevalence of diseases, 83% of the respondents agreed that there was widespread prevalence of diseases, and 17% of the respondents disagreed, which implied that the largest majority of the respondents believe that there is a widespread prevalence of diseases in Rafin Atiku division in Birnin Kebbi Metropolis. On what diseases are most prevalent, the findings of the study show that 50% of the respondents said malaria id the most prevalent disease, 14% of the respondents said that dysentery is the most prevalent, 29% of the respondents said that cholera is the most prevalent, and 7% of the respondents said that Tuberculosis is the most prevalent disease, implying that according to the respondents' understanding, malaria is the most prevalent disease in Rafin Atiku division. On what causes the prevalence of these diseases, the findings of the study show that 70% of the respondents said that its caused by poor sanitation in the community, and 30% of the respondents said that its caused by the lack of garbage disposal points in the area, which implied that the respondents fault poor sanitation and the garbage disposal practices as the causes of the diseases that are prevalent in the area.

These findings are in line with various findings and reports already documented by different authors: According to Messineo and Panno (2008), there are multiple ways that improper garbage disposal can be harmful to human beings. The first of these is by introducing pathogens into the environment. This is when bacteria or viruses are transported in the garbage and introduced to new areas. There is a chance that humans may be exposed to the waste. More likely, though, is that another animal, such as a rat or bird, may be exposed to the pathogen and then return to a larger population infected. This can create diseased populations that can spread the disease, possibly to other species. The other way that improper disposal of some garbage can

result in the spread of disease is from waste acting as a food source or breeding ground for pathogens that might not have reached such high population otherwise.

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