



The Effect of Public Awareness on Solid Waste Management in Sabon-Gari Local Government

*Kasimu Sani¹, Muhammad Bello Mansur², Nura Umar Muhammad³

¹Department of Public Administration, Ahmadu Bello University, Zaria. ²Department of Public Administration, Federal University, Gusau. Department of Pharmaceutics and Pharmaceutical Microbiology, Usmanu Danfodiyo University, P.M.B. 2346, Sokoto, Nigeria.

*Corresponding author: + 2348069515140, E-mail: skasimu1191@gmail.com

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Abstract

The paper examined the effect of public awareness on solid waste management in Sabon-Gari local government, Kaduna State, Nigeria. One of the major problems bedeviling the waste sector is inadequate public education on waste management practices such as proper waste disposal which have resulted in indiscriminate disposal of solid waste thereby posing serious hazards to the environment and human health. The major objective of the paper is to assess the level of public awareness on the waste management problems in Sabon-Gari and the extent to which the public awareness strategy put in place by the local government has changed public attitude towards waste disposal. Data were collected using structured questionnaire and semi-structured interview. Quantitative data were analyzed using frequency counts and percentages while Pearson correlation was used to test the hypothesis with SPSS. Data generated through interview were analyzed qualitatively. The paper established that residents of Sabon-Gari local government are aware of the waste management problems in their environment and the public awareness strategy put in place by the local government has had no significant effect on solid waste disposal practices. The paper recommends that Sabon-Gari local government should intensify its public awareness campaign through regular public awareness, promote the creation of environmental clubs in schools, adequate provision of waste containers etc. in order to safeguard health and protect the environment.

Keywords: *Local Government; Public Awareness; Public Attitudes; Solid Waste Management; Urban Area.*

1.0 INTRODUCTION

United Nation Environmental Protection (UNEP 2010), assert that waste management is regarded as a public service and those who do not pay are not totally excluded from the service generally. This is because efficient collection and safe disposal of waste, at the minimum, are essential

to public health and environmental protection. With increasing complexity of solid waste generation and quality, many options of management have been specified and guided by the waste hierarchy. The Federal Ministry of Environmental (FME 2013), also posit that

waste management is a public service essential to public health and environmental protection.

This is absolutely true because it is the responsibility of government to enact policies and legislation that will regulate the management of waste in order to ensure environmental safety. These services are supposed to be free. However, this sole responsibility of government is gradually shifting to the private sector through formal and informal private sector participation. The government in most developing are now partnering with the private sector in the management of solid waste because most waste management agencies of government have been weak and unsuccessful.

Chandak (2010) reported in his study on trends in solid waste management that waste management has evolved from the simple transportation of waste to landfills to complex systems, including waste prevention and waste recycling as well as several waste treatment and landfill technologies. This is in response to the increasing quantity and complexity of the composition of waste generation all over the world. According to him, the main challenge regarding waste management has changed perspective to the manner in which discarded resources will be handled such that future generations are not deprived of some or all of its value. This is a shift from the older view of ensuring minimum damage to public health and environment in the process of handling waste.

Chandak (2010) submission truly holds ground because increase in population growth rate also increases production of goods to meet human needs and thus the tendencies for increased waste generation. This poses a serious problem to the environment. Besides, some of these discarded and unused resources can be recycled and re-used in order to reduce waste generation especially waste that are non-degradable or hard to decompose. That is why the current trend in developed countries is closing the loop by moving from the concept of 'end-of-pipe' waste management to a more holistic resource management.

The growth of human population coupled with increased economic activities in towns and cities across the world result in high rate of solid waste generation (World Bank; 2012). A fundamental

attribute of solid waste is that it is inevitable as almost all human activity involves the generation of waste in solid, liquid or gaseous forms. Social dynamics such as modernization and economic development influence waste generation. This calls for careful planning and adequate resource allocation to forestall a mismatch between the rates of waste generation, collection and disposal (USEPA, 2002; UNEP, 2005; FME, 2005).

The management of solid waste is far from being satisfactory in Nigeria. Many parts of our cities and towns do not benefit from any organized waste management strategy and therefore wastes are unattended to, buried, burnt or disposed haphazardly. In areas where the authorities do the collection, it is often irregular and sporadic. Recycling of wastes is negligible while the methods used for transportation and final disposal are very unsatisfactory (Adebola, 2006, UNEP, 2010, Adejobi and Olorunnimbe, 2012, Agwu, 2012). Waste when left unattended for a long time constitute serious public health hazard, causes offensive odour, pollutes underground water sources and decreases environmental aesthetics and quality (FME, 2005).

The poor state of solid waste management in Nigeria is the same everywhere in the country. The situation is the same in the Southern as it is in the Northern part of the country. Take a trip through the cities of Lagos, Ibadan, Benin, Port Harcourt, Aba, Kano, Sokoto, Kaduna, Maiduguri etc. the story is same everywhere. At the moment, it is only the city of Calabar, Abuja Metropolis and of recent Lagos and Kano that have some measure of cleanliness as a result of strict environmental policy and public awareness campaign initiated by their state governments (Simeon, 2009; Adejobi and Olorunnimbe, 2012).

Meanwhile, solid waste management still remains one of the most daunting environmental sanitation challenges facing Local governments in Nigeria today in spite their constitutional role of managing solid waste through the creation of public awareness and enlightenment campaign on the health and environmental dangers of indiscriminate disposal of wastes.

Solid waste management is one of the constitutional functions of local governments in

Nigeria as provided for in the Fourth schedule of the 1999 Constitution, this service is essential to public health and environmental protection. Considerable efforts have been put in place by Sabon-Gari local government to create public awareness on the need to properly dispose wastes. These strides range from house-to-house inspections, the use of town criers, distribution of letters and flyers to commercial areas to the setting up of a Rapid Response Team especially with the recent outbreak of Ebola and Lassa fever Virus.

In spite of these efforts, the challenge of indiscriminate disposal of solid waste is increasing by the day with heaps of wastes on roads, open spaces and drainage channels. The presence of mounted heaps of wastes on roads, open spaces and drainage channels resulting in general environmental pollution, has led many to question the capacity of the local governments to perform this very important function.

This is an obvious indication that there is a wide gap between public awareness and waste management in Sabon-Gari local government. If quick strides are not made to close the gap between public awareness and indiscriminate waste disposal, the waste burden will only result to potential hazards to human health and the environment.

A study by Stanley *et al.* (2012) in Sabon Gari reveals that households generate substantial quantity of wastes which are not properly disposed. Some households are aware of the negative impacts of the wastes and try to reduce its accumulation by burning which in turn affects the quality of air within the immediate environment. Their study recommended that there should be community-based public enlightenment on the health impact of improper disposal of waste in the environment (Stanley *et al.*; 2012). This shows how public awareness plays an important role in waste storage, waste segregation, recycling, waste collection and willingness to pay for waste management services.

In view of the above, this study seeks to find answer to these questions: To what extent are residents of Sabon-Gari local government aware of the problems of solid waste management in their environment? To what extent has the public

awareness strategy put in place by Sabon-Gari local government promoted proper waste disposal?

The main objective of this study is to assess the effect of public awareness on solid waste management in Sabon-Gari local government. Specifically, the study sought to ascertain residents' level of awareness on the problems of solid waste management in Sabon-Gari local government. Examine the extent to which the public awareness strategy put in place by Sabon-Gari local government promoted proper waste disposal.

The hypothesis formulated for this study state that: **H₀**: There is no significant relationship between public awareness strategy and the Sabon-Gari local government solid waste management.

The study spans from the year 2005 to 2015. The choice of this period is imminent because the period under study has experienced social dynamics such as modernization and economic activities through production of goods and these have greatly influenced waste generation in Sabon-Gari local government.

Solid waste management includes the collection, transport, treatment and disposal of municipal, industrial, special and domestic wastes. This study therefore, is limited to analyzing municipal solid waste. Municipal solid waste is usually applied to heterogeneous collection of waste in urban areas which includes the combination of household and commercial wastes such as market debris, unused, discarded or unwanted papers, metals, glasses, rubbers, leathers, textiles, ceramics, dusts, stones etc. As such other categories of wastes are not discussed.

The study area is limited to Sabon-Gari local government. This is so because of the strategic location of Banks, Schools, industries and the Central market in the local government area which has a tendency of generating high quantity of commercial waste. Meanwhile, the local government is gradually urbanizing thereby leading to high generation of wastes. However, the major limitation of this study is the non-utilization of observational method in its analysis.

2.0 RESEARCH METHODOLOGY

The research is a descriptive survey of randomly selected Sabon-Gari residents using well structured Likert scale questionnaire for the purpose of generating quantitative data on the level of public awareness of the waste management problems in Sabon-Gari local government. Meanwhile, a semi-structured interview was conducted to generate qualitative information from the management of Sabon-Gari Health Office on the effect of public awareness strategy put in place by the local government on solid waste management.

The population of the study comprised all residents of Sabon-Gari local government and all staff of Sabon-Gari Health Office. A sample size of 51 was drawn from the population of Sabon-Gari residents put at 291,358 (Census Final Result, 2006) using the Yaro Yamane formula at 14% level of significance while 15% of the 14 staff of Sabon-Gari Health Office constitutes part of the sample size of staff population of the study.

50 copies of questionnaire were administered to respondents who are residents of Sabon-Gari. However, only 39 copies of the questionnaire administered were found to be properly

completed and used for the purposes of analysis. Similarly, two officials from the Disease Control Unit of Sabon-Gari health Office were interviewed with the aim of generating official information on the public awareness strategy put in place by the local government on solid waste management.

Data generated through questionnaire were analyzed using descriptive statistics of frequency counts and percentage while correlation was used to test the hypothesis earlier postulated using SPSS version 20 at 0.05% level of significance in order to determine the significant relationship between public awareness campaign and solid waste management in Sabon-Gari local government. Meanwhile, data generated through interview were analyzed qualitatively.

3.0. FINDINGS AND DISCUSSION

Data collected through the questionnaires are presented in tables and interpreted using frequency counts and percentages. The data were further analyzed using the correlation. The data collected through the interview conducted were used to further substantiate the hypothesis tested.

Table 3.1: Responses on awareness of the solid waste management problems in the environment ranging from waste collection, transportation to disposal.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	12	30.8	30.8	30.8
Agree	13	33.3	33.3	64.1
Valid Disagree	4	10.3	10.3	74.4
Undecided	10	25.6	25.6	100.0
Total	39	100.0	100.0	

S o u r c e : F i e l d S u r v e y , 2 0 1 5

Table 3.1 above indicates that 30.8% of respondents strongly agree that they are aware of the waste management problems in their environment while 33.3% of respondents agree to be aware. 25.6% claimed not to have decided on their level of awareness only 10.3% represented respondents who disagree to be aware of the waste management problems in their environment. Finally, 0% of respondents

strongly disagree with the level of awareness. Based on the highest percentages of 33.3% and 30.8%, it clearly shows that residents of Sabon-Gari are aware of the waste management problems in their environment.

An interview conducted with the management of Sabon-Gari Primary Health Department further revealed that in some areas of the local government, residents are highly aware of the

waste management problems in their environment such that they make concerted efforts towards proper waste disposal practices by disposing solid wastes in dumpsites situated in their areas for onward collection by waste collectors of the local government or better still burn the wastes themselves. This finding clearly shows that residents of Sabon-Gari are significantly aware of the waste management problems in their environment. Ideally, since their awareness level is high, then, their attitude

towards indiscriminate disposal of waste should also change. The scenario of Sabon-Gari is illustrated and explained by the theory of Planned Behaviour. The theory asserts that there should be consideration of outcomes before performing a behavior. In other words, residents of Sabon-Gari should consider the environmental and health hazards of indiscriminate waste disposal before performing the behavior.

Table 3: 2 Responses on enlightened through any of these public awareness strategies (House-to-house inspection, town criers, flyers or letters) on Waste Disposal Practices.

	Frequency		Percent		Valid Percent		Cumulative Percent	
Strongly Agree	1	3	3	3	.3	3	3	.3
Agree	1	4	3	5	.9	3	5	.9
Strongly Disagree		3	7		.7	7		.7
Disagree		2	5		.1	5		.1
Undecided		7	1	7	.9	1	7	.9
Total	3	9	1	0	0.0	1	0	0.0

Source: Field Survey, (2015).

Table 3.2 above indicates that 33.3% of respondents strongly agree and 35.9% of respondents agree that they have been enlightened at least through one of these public awareness campaign strategies on solid waste management practices while 7.7% of respondents strongly disagree and 5.1% of respondents disagree that they have not benefitted from the public awareness campaign on proper waste disposal, and 17.9% were undecided. The figures above are indications that majority of residents have been educated in one way or the other on proper waste management practices that will safeguard their health and protect their environment.

Meanwhile, an interview conducted with the management of Sabon-Gari Primary Health Department further support these figures. Informants from the Health Department attested to the fact that the local government has made several strides through house to house inspections, the use of town criers and Industrial

Training students to ensure both internal and external environmental inspections. Particularly, with the outbreak of Ebola Virus, a Rapid Response Team was set up by the local government to educate the public on the need to properly dispose wastes in order to achieve both environmental and personal hygiene.

Table 3:3 Responses on public awareness strategies such as house-to-house inspection, town criers, flyers and letters) have not changed public attitude towards waste disposal practices

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	5	38.5	38.5	38.5
Agree	16	41.0	41.0	79.5
Valid Strongly Disagree	2	5.1	5.1	84.6
Disagree	2	5.1	5.1	89.7
Undecided	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source: Field Survey, (2014).

Table 3.3 above indicates that 38.5% of respondents strongly agree that the public awareness strategy put in place by Sabon-Gari local government has not changed public attitude towards proper waste disposal. While 41.0% agree with the claim, 10.3% did not decide as to whether or not there is a significant effect of these public awareness strategies on solid waste management practices. 5.1% disagree with the position while 5.1% strongly disagree to it. Based on the highest responses, it could deduce that the public awareness strategy put in place by Sabon-Gari local government has not changed public attitude towards proper waste disposal.

On the other hand, an interview conducted with the management of Sabon-Gari Primary Health Department revealed that in some areas of the local government like the G.R.A have recorded great improvement in the way and manner they manage solid wastes. The management affirmed that it has made several strides through house-to-house inspection, the use of town criers, distribution of letters and flyers to create awareness on the need to properly dispose wastes. But that the nonchalant attitude of the public is responsible for the insignificant effect of public awareness on solid waste management in some areas of the local government. The relevance of the theory of Planned Behavior is illustrated in the findings as shown above. In spite efforts by the local government to educate

the public on proper waste disposal practices, there seems to be this nonchalant attitude. Social norm as an element of the theory explains the cultural context or the norms of the people in relation to their behavior. In relation to this study, the way of life of Sabon-Gari residents show that they perceive environmental quality as the primary responsibility of the government and that the individual plays an insignificant role.

3.1 Test of Hypothesis

As earlier stated in the methodology aspect that the operation of Pearson correlation coefficient was carried out using SPSS version 20.0 in testing the hypothesis postulated for this study.

The null (H_0) to be tested states that: “There is no significant relationship between public awareness strategy and the Sabon-Gari local government solid waste management”. The independent variable is `public awareness strategy` while the dependent variable is `solid waste management`. The study wants to see how independent variable affects the dependent variable.

For the purpose of performing Pearson correlation coefficient on the computer for the hypothesis, responses from respondents in table 4.1 and table 4.2 were coded in the computer using SPSS package to produce the output presented in table 4.4 below:

Table 3.4: Correlations: There is no significant relationship between public awareness strategy And the Sabon-Gari local government solid waste management.

		Public Awareness Strategy (Independent Variable)	Solid Waste Management (Dependent Variable)
Public Awareness Strategy (Independent Variable)	Correlation Coefficient	1 . 0 0 0	. 9 3 0 * *
	Sig. (2-tailed)		. 0 0 0
	N	3	9 3 9
Solid Waste Management (Dependent Variable)	Correlation Coefficient	9 3 0 * *	1 0 0 0
	Sig. (2-tailed)	0 0 0	.
	N	3	9 3 9

* *. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Version 20.0 output, (2015).

From the Pearson correlation coefficient output on table 4.4 above, hypothesis one testing procedures are as follows:-

3.2 Decision Rule

The researcher decision rule in the study is to accept the null (H_0) if Pearson correlation coefficient calculated value is less than 0.5 if otherwise rejected.

3.3 Comparison

From the table above, the results shows that $r(1.000) = 0.930^{**}$, $P > 0.01$ or 0.05 or $r(1.000) = 0.930^{**}$, $P = 0.000$. This result is statistically significant because it is less than p-alpha, since it is less than alpha; we reject the null and state that there is significant relationship between public awareness strategy and the Sabon-Gari local government solid waste management.

4.0 CONCLUSION

Because the null hypothesis (H_0) is rejected in favor of the alternate hypothesis (H_1), it could be concluded therefore that there is significant relationship between public awareness strategy and the Sabon-Gari local government area of Kaduna State solid waste management.

This further proved that there is a significant relationship between `public awareness strategy` as the independent variable and `solid waste management` as the dependent variable, meaning that if there effective public awareness strategy, there will be proper waste disposal by the residents and effective solid waste management in Sabon-Gari local government.

4.1 Summary of Findings

This study sought to establish a baseline of descriptive information on the level of public awareness by residents of Sabon-Gari local government on indiscriminate disposal of solid wastes in their environment and the extent to which the public awareness strategy put in place by the local government has changed public attitude towards indiscriminate disposal of wastes. Thus, the findings of the study include:

1. Solid waste management is a serious environmental problem in Sabon-Gari local government and residents are significantly aware of it. The responses on table 4.1 clearly shows that majority of residents are aware of the challenges of waste collection, waste transportation, waste treatment and waste disposal facing the waste sector in Sabon-Gari local government. This is supported by Chan’s (1998) report that people’s environmental knowledge was highly specific to issue and geographic scale.
2. The study further revealed that there is a significant effort and strides by the local government authority through her Primary Health Department to create public awareness through house-to-house inspections, the use of town criers, distribution of letters and flyers to commercial areas like Markets and motor parks, the setting up of a Rapid Response Team to contain the spread of Ebola Virus through the promotion of

public awareness on the need to be conscious of both environmental and personal hygiene. Furthermore, interview conducted with the management of Sabon-Gari Primary Health Department revealed that little effect of public awareness campaign on solid waste management has been recorded in most areas of the local government like the G.R.A, where residents properly utilize open dumpsites and incinerators and in some cases contract with private waste collectors for disposal of wastes. However, the interview on the other hand revealed that in most areas, residents still have this nonchalant attitude towards waste disposal.

3. The study also observed that solid waste management is far beyond public awareness campaign alone. Public attitude too plays an important role in solid waste management. Information gathered during the interview revealed that several strides were made by the local government to educate the public on the need to properly dispose wastes but the nonchalant attitude of the public has been a major setback to proper waste management practices in Sabon-Gari local government. This is supported by Adewole's (2009) investigation that most people perceive environmental quality as the sole responsibility of the government and the individual has only an unimportant role of disposing waste from their immediate surroundings.

4.2 Recommendations

It is evident from the study findings that residents of Sabon-Gari local government are aware of the waste management problems in their environment and there is significant relationship between public awareness strategy put in place by Sabon-Gari local government and solid waste management. Therefore, the findings of this research have great implications for the improvement of the current public awareness strategy on solid waste management practices in Sabon-Gari where there is a need for behavioral and attitudinal change in order to

achieve a clean and a healthy environment for sustainable environmental management.

In view of the above conclusion, the following recommendations are hereby made;

- Other than the use of house-to-house inspection, town criers, flyers and letters as public awareness strategy, Sabon-Gari local government should utilize electronic means such as the use of television and radio to intensify its public awareness campaign.
- Attitudinal change:- Since residents are aware of the problems of waste collection, waste transportation and waste disposal in Sabon-Gari, their attitude towards indiscriminate disposal of waste should also change.
- The public awareness strategy of Sabon-Gari local government should be supported with adequate provisions of the necessary disposal facilities like incinerators, bins, dumpsites etc. to enhance easy collection and disposal of solid wastes.

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