

REFUSE DISPOSAL BEHAVIOURS AMONG RURAL AND SLUM DWELLERS IN LAGOS METROPOLIS, LAGOS STATE

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Abstract

This study is a survey research on refuse disposal behaviour among rural and slum dwellers in Lagos metropolis. Three hundred and thirteen (313) respondents (123 males and 190 females) volunteered information through a self-developed and validated questionnaire with a r-value of 0.79. Respondents included landladies, landlords, tenants and other people residing in the various households involved in the study. The study revealed that most of the respondents had to take responsibility of their refuse disposal as the government's refuse disposal service was not extended to them; and that the refuse disposal behaviours of the respondents were not environment-friendly. The study concludes that concern for the environment requires that waste management be given adequate attention. The study suggests an innovative approach by the government in handling refuse disposal among seemingly hard-to-reach population, leveraging on the waste-to-wealth approach and the principles of waste hierarchy.

Key words: Refuse disposal behaviour; Rural dwellers; Slum dwellers; Lagos metropolis

Introduction

Wherever there are human beings and human activities, waste generation is unavoidable. The generation of waste automatically comes with the task of waste collection which is an important aspect of waste management. Waste generation in itself is not a problem; the problem comes when the waste generated is not properly managed and resulting in environmental pollution. As explained by Adejobi and Olorunnimbe (2012), the volume of waste generated does not actually constitute major environmental problem. The inability of government, individuals and waste disposal agencies to keep up with the task of proper and efficient waste management constitutes the burden of environmental management. Overcoming these problems has made governments, non-governmental organi-

zations and other stakeholders at different levels to design strategies in handling the issue of waste management.

The Lagos State Government is not left out of this waste management initiative to make the environment safe. In fact, Lagos State has been recognized as one of the leading states in Nigeria regarding concerted efforts in waste management. As pointed out by Iiruga (2012), specific efforts of Lagos State Government in waste management include among others: compost plant at Ikorodu, for treatment of market waste; waste-to-energy plant at Ikosi market; plastic recycling plant at Olushosun for conversion of water sachet into garbage bags; and establishment of recycling clubs in secondary schools to instill recycling habit in young people.

Besides these, Lagos State Government partners with private sectors particularly in the area of waste collection which can be regarded as an important entry point in the process of waste management. In addition, the state has a community development service unit under the National Youth Service Corps (NYSC) for sanitation where corps members serve the community in which they operate by ensuring that the streets are clean. And of course, there is the establishment of Lagos Waste Management Agency (LAWMA) charged with the responsibility of coordinating the activities of the private sector participation in waste management. As Abah (2013) observed, the most ambitious programme so far is the Lagos State Private Sector Participation programme (PSP) of LAWMA. The agency collects about 10,000 tonnes (10 Million Kg.) of waste daily and has two waste conversion schemes (Chibueze, 2012). There is also the Earth Care Nigeria which runs organic fertilizer plant that converts about 200,000 tonnes of wastes annually to compost manure. These are laudable programmes and initiatives by the Lagos State Government.

Ironically, efforts in waste collection are limited to the city and major towns in the metropolis. The people in the rural areas and slums settings are often left out. This could be attributed to the fact that there is poor road network to these places resulting from improper municipal planning. Consequently, inhabitants of these places are compelled to handle their waste issues using their own initiative within the available resources. Often, this results in unhealthy and questionable methods of waste disposal such as burning of refuse and throwing in open spaces. It is important to note that, regardless of economic status and affluence, every human being generates waste. There may

only be variation in the type and volume of waste generated. The consequences of pollution, however, do not discriminate; the effect of poor waste management in a given geographical area may be felt in another geographical area. This is the essence of global concern for the environment.

'Refuse' can be interpreted to mean 'what we refuse to use'. However, we can assert that there are some things that are useable in most refuse. This probably is the principle on which the waste-to-wealth concept is based. The model has the potentials of empowering individuals financially and in skill building, at the same time, promotes good health. Egun (2012) did an exposé of the Delta State of Nigeria waste market where millions of naira transactions take place. This in a way helps in sustainable development and human capacity building, especially, in developing countries where resources are grossly limited.

In this study, attempt was made to identify household waste disposal behaviours of inhabitants of rural and slum settings in Lagos metropolis. This emanates from the fact that inspite of Lagos State's effort in waste management, Lagos metropolis cannot be said to be clean.

Objectives of the Study

The study sets out to determine if the refuse collection service of Lagos State Government is enjoyed by inhabitants of rural and slum settings in Lagos metropolis, assess the refuse disposal behaviours of inhabitants of rural and slum settings in Lagos metropolis and suggest how the refuse behaviours of inhabitants in rural and slum settings in Lagos metropolis can be improved. The following hypotheses are raised for the study:

- (a) Hypothesis One: Residents in rural and slum dwellings in Lagos

metropolis will not practice unhealthy refuse disposal behaviours.

- (b) Hypothesis Two: Residents in rural and slum dwellings of Lagos metropolis will not be knowledgeable about the health consequences of unhealthy refuse disposal behaviours.

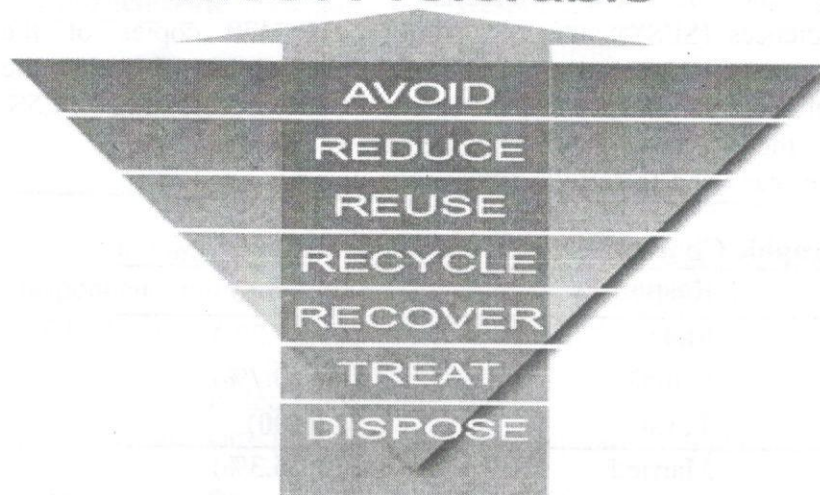
Theoretical Framework

The concept of Waste-to-Wealth literally means moving waste from a platform of exhausted utility to valuable and desirable level. Its transformation, in engineering, requires some form of energy, and in economics requires factor of production. The latent issue here is that "waste" in itself can never be wealth otherwise generator will never discard it. Likewise, wealth is created and process of creating wealth has some cost implications that the market forces construe as the price. This means that not all wastes are potentially of secondary benefit. In all, the slogan "waste-to-wealth" connotes that waste management operations must transcend delivery of service to provision of goods or value like energy (Egun, 2012).

In waste management, the principle of hierarchy of waste comes to play. As expanded by EAUC (2014), waste

management options can be placed in an order known as the Waste Management Hierarchy which reflects the relative sustainability of each component. One of the key principles underlying waste management policy in the UK is to ensure that waste is dealt with as high up the Waste Management Hierarchy as possible. All waste disposal options have some impact on the environment; the best way to avoid impact is not to produce waste in the first place. However, since generating waste is inevitable, there should be conscious effort to reduce the amount of waste generated. Followed by waste reduction in the waste hierarchy, is re-use. Re-use can be done through the following techniques: treat, recover and recycle. The worst options are at the bottom of the hierarchy. Although the hierarchy holds true in general terms, there will be certain wastes for which the waste management options are limited. In deciding the most appropriate disposal route, both environmental and economic costs and benefits need to be considered. This decision should be reached, taking into account all the costs and impacts associated with waste disposal, including those associated with the movement of waste.

Figure 1: The Waste Management Hierarchy
Most Preferable



Least Preferable

Source: Zero waste SA (2004)

Similarly, EPA (2015) explains that the waste hierarchy is a set of priorities designed to bring about efficient use of resources. Avoiding and reducing waste which are considered as the best options encourages community industry and government to reduce the amount of virgin materials extracted and used. Treatment or disposal which is at the lowest rung of the pyramid comes as an option that may not be avoided. This is because some types of waste such as hazardous chemicals or asbestos, cannot be safely recycled.

Methodology

The descriptive survey research method was adopted for this study. Population of the study comprised inhabitants of rural and slum settings in Lagos metropolis. A total of 313 respondents from selected households using purposive sampling technique volunteered information by responding

to a self-developed validated questionnaire. The questionnaire has two sections: A and B. In Section A, demographic and social characteristics of the respondents were solicited. Section B of the questionnaire focused on: refuse disposal behaviours of respondents; and respondents' perceived seriousness of health implications associated with poor refuse disposal behaviours. The validation of the questionnaire was determined using face and construct validity while the split-half method was used to determine the reliability of the instrument. Its r-value is 0.79.

Trained research assistants who administered the questionnaire were selected from among the postgraduate students in the Department of Human Kinetics and Health Education, University of Lagos, Lagos. The structured interview approach was used for respondents who were not literate; although, this category of respondents

was not many. Data collected were coded and processed using the Statistical Package for Social Sciences (SPSS) at 0.05 alpha level. Data were presented using descriptive statistics of simple percentages while the inferential statistics of Chi-Square was used to test

the stated hypotheses.

Results

From the 420 copies of the questionnaire administered on the participants, 313 representing 74.5% response rate was usable.

Table 1: Demographic Characteristics of Respondents

Characteristics	Responses	Frequency
Gender	Male	123(39.3%)
	Female	190(60.7%)
	Total	313(100)
Marital Status	Married	173(55.3%)
	Single	133(42.5%)
	Divorced	7(2.2%)
	Total	313(100%)
Education	Primary	28(9%)
	Secondary	86(27.5%)
	Tertiary	199(63.5%)
	Total	313(100%)
Employment Status	Employed	127(40.6%)
	Unemployed	164(52.4%)
	Retired	22(7%)
	Total	313(100%)
Status in Household	Landlord/Landlady	126(40.3%)
	Tenant	178(56.8)
	Others	9(2.9%)
	Total	313(100%)

In table 1 above, majority of the respondents 190(60.7%) were female while 123(39.3%) were male. 173(55.3%) of the respondents were married, 133(42.5%) were single while 7(2.2%) were divorced. In terms of highest level of education attained, 28(9%) of the respondents had primary school education as their highest level of education, 86(27.5%) had secondary school education while 199(63.3%) had

tertiary education. Of this group of people, 127(40.6%) were employed either by self or an organization, 164(52.4%) were unemployed while 22(7%) were retired. In terms of the status of respondents in the household, 126(40.3%) of the respondents were landlords/landladies, 178(56.8%) were tenants while 9(2.9%) were dependents on landlords or tenants.

Table 2: Refuse Collection Service Providers

Characteristic	Responses	Frequency
Providers	Government	103(33%)
	Private	101(32%)
	Cart Pushers	109(35%)
	Total	313(100%)

In table 2 above, 103(33%) of the respondents indicated that government is their refuse collection service provider, 101 (32%) used private bodies while 109(35%) indicated that their service providers are cart pushers. This shows

that most of the respondents may be using methods of refuse disposal that are not environmental friendly which could lead to the spread of diseases connected with poor environment and negatively affect global warming.

Table 3: Common Refuse Disposal Method by Respondents

Methods	VC	OC	C	NC	Never	Total
Burning	153(49%)	51((24.8%)	26(8.3%)	21(6.7%)	62(19.8%)	313
Burying	43(13.7%)	51(16.3%)	18(5.7%)	46(14.7%)	155(49.5%)	313
Throwing in drainage	35(11.1%)	27(8.6%)	41(13.1%)	33(10.6%)	177(56.6%)	313
Landfill	52(16.6%)	48(15.5%)	58(18.5%)	20(6.4%)	135(43%)	313
Carting away	96(30.7%)	57(18.2%)	35(11.2%)	33(10.5%)	92(29.4%)	313
Throwing in open space	80(25.6%)	62(19.8%)	43(13.7%)	28(9%)	100(31.9%)	313

In table 3 above, burning of refuse by residents is the most common way of disposing refuse 153(49%). Followed by carting away 96(30.7%) and throwing in open spaces 80(25.6%). 35(11.1%) of the respondents dispose their refuse by throwing them in drainages, 43(13.7%) dispose their refuse by burying while 52(16.6%) dispose by landfill. Burning, carting away and throwing of refuse in open spaces are very common methods used by residents. These methods have serious health implication on the individuals and the

community at large. The flood situation in Lagos has been caused by blocked drainages resulting from indiscriminate dumping of refuse. The practice of throwing refuse in open spaces, aside blocking drainages also provides breeding ground for rodents and other animals which may lead to spread of diseases. Often, domestic animals such as dogs, pigs, goats do feed from these refuse grounds and come back home with the possibility of bringing back home some disease causing germs.

Table 4: Perception of respondents regarding health implications of poor refuse disposal

Health problems	SA	A	D	SD	Total
Improper refuse disposal can cause disease	256(81.8%)	53(16.9%)	4(1.3%)	0	313
Improper refuse disposal can cause flood	181(57.8%)	116(37%)	8(2.6%)	8(2.6%)	313
Improper refuse disposal can provide breeding space for germs	161(51.4%)	106(33.9%)	38(12.1%)	8(2.6%)	313
Improper refuse disposal can affect the climate	106(33.9%)	143(45.7%)	38(12.1%)	26(8.3%)	313
Improper refuse disposal can cause pollution	230(73.5%)	69(22%)	14(4.5%)		313
Improper refuse disposal can affect health of people	227(72.5%)	82(26.3%)	2(0.6%)	2(0.6%)	313
Improper refuse disposal can contaminate underground water	183(58.5%)	105(33.5%)	19(6.1%)	6(1.9%)	313

In table 4 above, majority of the respondents were of the opinion that improper refuse disposal can cause disease 309(98.7%), flood 297(94.8%), pollution 299(95.5%). The respondents were also of the opinion that improper refuse disposal can provide breeding space for germs 267(85.3%), affect climate 249(79.6%), affect health of people 309(98.8%) and can contaminate underground water 288(92%). Responses from this table indicate that respondents are knowledgeable about the

consequences of refuse disposal behaviour. By implication, ignorance or lack of knowledge, to some extent may not be responsible for the respondents' poor refuse disposal behaviour. This shows that with proper enabling factor, they may exhibit healthy refuse disposal behaviour.

Hypothesis One: Residents in rural and slum dwellings in Lagos metropolis will not practice unhealthy refuse disposal behaviours.

Table 5: Chi-square analysis of Residents' unhealthy refuse disposal behaviour

Variables	N	Df	α level	Calc X^2 value	X^2_{tab}	Remark	Decision
Unhealthy refuse disposal behavior	313	22	0.05	280.95	33.92	Significant	Rejected

From table 5 above, the calculated X^2 value $280.95 > X^2_{tab} 33.92$ at 0.05 Alpha level. By implication, the null hypothesis which states that residents in rural and slum dwellings in Lagos metropolis will not practice unhealthy refuse disposal behaviours is rejected while the alternate hypothesis which states that residents in rural and

slum dwellings in Lagos metropolis practiced unhealthy refuse disposal behaviours is accepted

Hypothesis Two: Residents in rural and slum dwellings of Lagos metropolis will not be knowledgeable about the health consequences of unhealthy refuse disposal behaviours.

Table 6: Chi-square analysis of Residents' knowledge on the health consequences of unhealthy refuse disposal behaviours

Variables	N	Df	α level	Calc X^2 value	X^2_{tab}	Remark	Decision
Knowledge of health consequences of unhealthy behavior	313	17	0.05	703.68	27.59	Significant	Rejected

From table 6 above, the calculated X^2 value $185.72 > X^2_{tab} 27.59$ at 0.05 Alpha level. By implication, the null hypothesis which states that residents in rural and slum dwellings of Lagos metropolis will not be knowledgeable about the health consequences of unhealthy refuse disposal behaviours is rejected while the alternate hypothesis which states that residents in rural and slum dwellings of Lagos metropolis are knowledgeable about the health consequences of unhealthy refuse disposal behaviours is accepted.

Discussion of Findings

From Table 5 above, it is established that residents in rural and slum settings in Lagos metropolis do practice unhealthy refuse disposal. The findings of the study revealed that refuse collection service by Lagos State Government through the PSP does not cover the entire towns in the state. The rural areas and slum settings in the metropolis were grossly neglected. This has compelled dweller/inhabitants of these places to adopt refuse disposal methods that are not health friendly even when they agreed that improper waste disposal methods have health consequences as revealed by the study. Even when Lagos State has been recognized as one of the few states in Nigeria with enviable programme on waste management, the environmental sanitation of the state is still worrisome. Lagos

particularly has been ranked among the dirty cities in Nigeria. This may not be unconnected with large population of the city. According to Chibueze (2012), Lagos State generates over 10,000 metric tones of waste daily. Obviously, this can be overwhelming to handle. Working with an estimated population of over 12 million people in Lagos, Adejobi and Olorunibe (2014) explained the situation of waste generation through mathematical calculations: 'If on the average every inhabitant generates just 1kg of refuse per day; that means every day, we have 12 million kg (10,800 tons). In a month, we have 302,400 tons of refuse'. This refuse could also create wealth for the people of Lagos state including the rural and slum dwellers if properly managed.

Asides from the issue of over-population, Oyeniyi (2011) also observed that the poor planning of Lagos is another hinderance to the effective waste collection service. According to him, the situation in densely populated areas such as Ketu, Mushin, Lagos Island, Lagos Mainland (all in Lagos) shows that the unplanned nature of these places imposes considerable limitations on waste disposal and waste management, as most houses were built with no adherence to standard. Most houses were found to have had no town planning approval. The effect of this unplanned nature of the metropolis is felt more during the

rainy season with flood creating problem in vehicular movements. And unfortunately, this is the period when more domestic wastes are generated with more farm produce in the market. Heaps of maize shaft, rotten oranges, mangoes and other perishable farm produce litter the streets during this period. Aside from the places mentioned by Oyeniyi (2011), areas such as Ajegunle, Apapa-Iganmu, Ajeromi, Kirikiri, Ijora-Badiya and Ajagbandi share the same characteristics.

Table 6 showed that residents in rural and slum settings of Lagos metropolis are knowledgeable about the health and consequences of unhealthy refuse disposal. The fact that only 33% of the respondents claimed that the refuse collection service of the government was extended to them has a lot of implications for effective refuse disposal in rural and slum settings in Lagos metropolis. Inhabitants of these areas, as revealed by the study use more of the following methods of refuse disposal: burying of refuse, carting away and throwing refuse in open space. These refuse disposal behaviours are not without some strong health implications. The finding was in line with that of Zagozewski, Judd-Henry, Nilson and Bharadwaj (2011) who observed that waste incineration is known to produce a variety of pollutants from the combustion of chemical, industrial and household wastes. Also, the above finding gives support to the findings of Adejobi and Olorunnimbe (2012) that the problem of air pollution is caused by open burning of refuse. Foul odours and wind-blown litter are also associated with this refuse disposal method. Furthermore, the finding corroborated the finding of Owaduge (2010) that improper handling, storage and disposal of wastes are major causes of environmental pollution, providing breeding grounds for pathogenic organisms and

encouraging the spread of infectious diseases. Saidu (2011) in a study carried out in Minna using wells, revealed that water quality in that region is not good for drinking as a result of refuse dumped indiscriminately. In a broader perspective of the effect of the environment on the health of an individual, it is opined that:

“Because of the permanent interaction between man and his environment, our health is to a considerable extent determined by the environmental quality. As a consequence, environment and health are closely related. The environment in which we live, work and relax, is determining our health and well-being. Physical, as well as chemical and micro (biological) factors in the environment can have repercussions on our health, both physically and mentally.” (www.lne.be, 2016)

In Lagos State, operators of refuse cart pushers have been banned officially. It is interesting to note however, that the practice of carting away refuse is still very much in practice. The problem involved in this is that since government pretends not to know that these refuse disposal operators are in existence, provision regarding where to dump their refuse will not be made. Consequently, refuse collected by these operators may be disposed in environmentally questionable ways: They may end up in drainages and other odd places further degrading the environment and causing more health problems. Flooding, air pollution, contermination of water and breeding of disease vectors are not unlikely to occur under these circumstances.

Conclusion

The study revealed that majority of the inhabitants of rural and slum settings in Lagos metropolis do not benefit from the government refuse collection services; refuse disposal behaviour of the respondents were not environmental friendly and give room for many possible health problems; and respondents' agreement to the fact that poor refuse disposal methods have health implications does not influence their refuse disposal behaviours. The principal actor in effective waste management is the government. Even in a situation where a settlement or society/community is practicing a communal life, the government is expected to provide a guideline on refuse management. When this role is abdicated by the government, individuals are likely to take the easiest option available to them. Such option may be based on convenience, which may not be good for his health, the health of his neighbours and the general wellbeing of the community at large.

Recommendations

Arising from the findings of the study, the following recommendations are suggested:

- Adapting the principles of hierarchy of waste may be one possible way of solving the problem of environmental pollution in Lagos State and other states in Nigeria with similar characteristics. This model enhances the waste-to-wealth approach which is now the trend in waste management, especially, in highly populated areas. The recycle component of the model should be emphasised.
- The refuse collection service should be innovatively extended to people in slums and rural areas. For example, inhabitants of rural areas and other 'hard to serve' places like slums should be encouraged to sell their refuse by depositing at a central collection centre from where the government will evacuate the refuse after paying the depositors. When the people are aware they can make some money with their refuse, they are more likely to refrain from other unhealthy ways of disposing their refuse.

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