Effect of training on market women's level of awareness and their disposition towards solid waste management in Lagos metropolis

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ABSTRACT

The most important and recent subject that affects and worries mankind is the issue of waste and its management. Waste can be described in a relative or subjective term; relative because it is viewed in different ways by different persons or group of people and subjective because what is waste to some may not necessarily be to others. The aim of this study was to assess the effect of training on market women's level of awareness and their disposition towards solid waste management in Lagos State, Nigeria. A 2×2 schematic type of quasi-experimental design was used for this study. The population for this work consists of all market women selling raw farm produce in Lagos State. A sample of forty women was selected from two markets using a simple random sampling technique. A questionnaire on "effect of training on market women's awareness level on solid waste management" was used, having a reliability co-efficient (r) of 0.84 was established. Analysis of Co-Variance (ANCOVA) was used to analyze the data while post-hoc analysis was further used to identify which of the variables allowed for the significant effect in the study. The three formulated hypotheses were rejected showing that there is a significant effect among training on level of awareness, change in behaviour and rate of patronage of waste infrastructures in the respective markets sampled. It was concluded that more efforts from private bodies, government and even market officials should be saddled with the responsibility of sensitizing these market women in other states so that waste management can be a thing to be practiced in our respective houses.

Keywords: Awareness, waste management, training, behaviour.

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INTRODUCTION

The United Nations Environmental Programme (UNEP, 2005) referred to waste as unwanted materials, substances or objects which are disposed or intended to be disposed off by the provision of the law at state or national levels. It was further seen as substances or objects discarded as useless or unwanted from human and animal activities. Waste can be generated during the extraction of raw materials, processing of raw materials into intermediate and final products, consumption of final product and other human activities (Zurbrugg, 2004; Puwpiel and Owusu-Ansah, 2014). In real sense, wastes include all items that people no longer have any use of, which they either intend to get rid of or discard due to their hazardous nature.

The Organization for Economic Cooperation and Development, OECD (2002) said wastes can be classified into three major areas in line with how they are generated. The three classes are as follows:

1. Municipal: This consists of household waste, commercial and trade waste, waste from office building, institution and small scale businesses, yard and garden, street sweeping, contents of litter containers, market cleaning and so on.
2. Hazardous waste: This is mostly generated by industrial activities which relates mainly to toxic contamination of soil, water and air. This type of waste creates serious environmental risks if not properly

managed.

3. Nuclear (radioactive) waste: This is generated at various stages of nuclear fuel cycle such as uranium, mining and milling, fuel enrichment, reactor operation and fuel reprocessing. It also arises from decontamination and decommissioning of nuclear facilities and from other activities using isotope such as scientific research and medical activities.

Considering the three classes of waste above, the Federal Government of Nigeria at the 2005 Environmental statistics workshop in Dakar, Senegal presented some critical problems generated from waste and which serve as major concern in relation to the health of the populace. Out of these problems and related to this study is the issue of municipal waste which encompass the market (Federal Republic of Nigeria, 2005). In relation to this, Agwu (2012) identified that high rate of urbanization, rising standard of living results in increased generation from waste. Also, Kadafa, Latifa, Abdullah and Sulaimon (2013) looking at the developing countries, identified that rapid social development, population growth, resource exploitation and unchecked technological advancement create the main problems of waste. Quoting the United Nation's report on sanitation of 2004, Ojelade (2014) and Nandini, (2013) said, while developing countries are busy improving access to clean drinking water, they are falling behind on sanitation goal especially on the disposal of solid wastes".

Solid waste management is the generation, prevention, characterisation, monitoring, treatment, handling, reuse and residual disposition of materials produced by human activities in order to reduce their effect on health and the environment (UNEP, 2005; Ragassa et al., 2011). Of all the municipal waste generated, OECD (2002) noted that solid waste from trade in the markets and marketing sweeping need to be looked into. This is due to the fact that the product from these markets are either consumed raw or processed before consumption and can be hazardous to human health if not properly taken care of. Globally and considering the above assertions and notion the disposal of solid waste which has created numerous challenges may not be seen as the real problem, but its management by different nations of the world. The management in the real sense refers to people's habit and behaviour towards the said waste.

Waste management: Problems and challenges

According to Banga (2011), waste management is the most important issue that starts from its generation to the handling effects and creates worries to man. Solid waste which is a by-product of human and animal activities and the most common waste within man's environment can be very hazardous and dangerous if not properly taken care of. Heaps of solid waste disposed indiscriminately in different areas of the environment such as the recreational sites, roads, alleys and even markets are being fed up by rats and houseflies which can serve as host of transmitting diseases to man directly and indirectly, thereby threatening human health.

Iriruaga (2012) from his own research conducted on the process of managing solid waste identified the following problems and challenges especially in developing nations:

1. Lack of comprehensive legal framework and enforcement of the existing regulations;
2. Low investigation in infrastructure;
3. Inadequate human capacity of administrative and technical issues;
4. Wrong attitude of the public towards solid waste disposal;
5. Financing cost recovery is low in most area and in some no funding;
6. Poor planning: low data management and uncontrolled urbanization uncoordinated institutional functions;
7. Low academic research and industrial linkages;
8. Lack of the needed political will.

The problem of solid waste management has become a debilitating factor towards sustainable development in all countries of the world especially as it concerns human health and this has yet to be properly addressed (Ayuba, 2013).

Factors responsible for increasing solid waste

Adewole (2009) and Agbaeze et al. (2014) in their studies on waste management in Nigeria using Lagos and Enugu States as case studies respectively discovered factors responsible for the increase of solid waste such as improper waste disposal habit, poor attitudinal behaviour or perception of people towards solid waste, non availability of waste bins in strategic areas, lack of provision of waste infrastructures, government policies, lack of education (illiteracy), poor sanitary system, natural factors as well as among others, militate against effective waste management.

In line with the associated problems, Adejobi and Olorunnibe (2012) quoting Olokesusi (1994) discovered that solid waste disposal is perceived to have negative social impacts on the entire area being generated and poses major risk to man health.

Also, in a bid to survive and put food on the table, traders especially women resort to engage in perishable foods. These women sell varieties of plantain, papaw, pineapple, oranges, coconuts, bananas, peppers, corns, tomatoes, vegetables, fruits of all kinds. These are highly perishable especially in humid conditions in which Lagos State falls into. Such produce hardly last for a week or two depending on the nature of such produce. Due to this

also, the market women prefer to have the produce exposed in a cross ventilated area within the markets. Should any harsh condition be meted on this farm produce, it can lead to mass destruction and high level of solid waste. These women discard the wastes or spoil produce indiscriminately in and around the markets thereby generating different offensive odour which is a vehicle to breed sicknesses and ailment of different kind.

Women and solid waste management practice in Nigeria

Women as the catalyst of population growth, play major roles in the society where they serve as primary harvesters of natural resources, managers of market environment of the natural resources and chief home managers in the effort to promote a clean and decent environment (Omosehin, 2004). In doing this, the little knowledge on how to manage the solid waste collected or generated is applied. Recently as population increases with advanced technology, this little knowledge is still applied particularly in Nigeria but yield is little. Therefore, to tackle the problem of solid waste management in which a high proportion of generator falls on the women, Olofin (2004) stressed the need to bring them into limelight due to their composite roles.

Lagos State and solid waste management

In a bid to ensure adequate sustainability of the environment, the Lagos State Government established Lagos Waste Management Authority (LAWMA) and charged with the underlisted responsibilities to ensure proper waste management system in the state and these responsibilities are as follows:

i) To provide unprecedented efficient waste management service to all domestic, industrial and commercial clients;
ii) To ensure adequate provision of waste receptacles as an alternate to indiscriminate waste dumping;
iii) To ensure adequate public enlightenment and education for re-orientation on decent waste collection and disposal habits;
iv) To ensure effective partnership with the private sector and other stakeholders in waste management.

Statement of problem

Indiscriminate disposal of wastes around undesignated areas which produce offensive odour de-face the general good aesthetics of the state environment. Appalling sight of heaps of refuse littered around which serves as habitat for the breeding of rodents, cockroaches, mosquitoes, flies, snakes who are potent carriers and transmitters of various epidemic diseases like malaria, cholera and most

recent one, the Lassa fever. A close interaction with some market women reveals that lack of adequate awareness on what solid waste is, lack of provision of these infrastructures around markets, failure of relevant agencies to provide training and enlightenment on waste management are some of the causal factors responsible for the indiscriminate disposal of waste in markets, schools and even in our houses respectively.

Purpose of the study

The purpose of this study seeks to establish the following objectives:

1. To determine the awareness level of women on solid waste management.
2. To investigate the availability /provision of solid waste infrastructure used in the market.
3. To determine the effect of training on the behaviour of market women on solid waste management.

Research hypotheses

Ho$_1$: There is no significant effect between awareness level of women on waste disposal and solid waste management.
Ho$_2$: There is no significant effect between availability/provision of waste infrastructures in the market and solid waste management.
Ho$_3$: There is no significant effect between women's behaviour and training administered on solid waste management.

Significance of the study

This study will be important to the various waste agencies in the state on the need to provide adequate waste infrastructures, that is, waste bins in strategic locations to ease indiscriminate dumping of wastes by trader. Also, the market women will find the outcome of this work very important because it will go a long way in changing their disposition towards waste management in and around their markets. They will also be able to adapt strategies in turning waste to wealth.

Scope and limitation of the study

The study is limited to Lagos State due to its cosmopolitan nature, high population of consumers, large markets that serve as depots of raw farm produce (pepper, tomatoes, different kinds of vegetables and fruits) brought from different parts of the nation, thereby increasing the mass of waste generated from such produce.

METHODOLOGY

Research design

The research adopted a quasi-experimental design, a non-randomized pre-test and post-test control group design. Treatment was at two levels (one experimental group and one control condition). Gender operated at one level (female only) and the women were pre-tested and post-tested in the study, which adopted a 2×2 factorial design.

Sample

The study comprised of all market women trading in perishable farm produce in Lagos State Metropolis. A total of forty (40) market women participated in the study as sample. Two markets were selected as main study through simple random sampling technique with twenty (20) women from each. One was used as experimental and the other as control. The two markets were Oyingbo (20 market women) and Iyana-Iba (20 market women). These markets have similar characteristics of being large markets, depots for raw farm produce like pepper, tomatoes, vegetables and fruits of all kinds coming from other neighboring states. The existence of these features allowed for interaction with the market women with respect to the effect of level of awareness and their disposition towards solid waste management in their various markets.

Instrumentation

A structured questionnaire on the assessment of market women knowledge towards waste management (MWKTWM) was used as instrument to collect data. The questionnaire was exposed to face validation by experts in measurement and evaluation. The construct and content validity was determined by research fellows in the department of adult education and lecturers in the faculty. A field testing of the instrument with twenty market women trading on farm produce in other markets distinct from the markets used in the work yielded reliability co-efficient of 0.84 using Kuder Richardson (KR-20). This is an indication of a high internal consistency of the instrument.

Administration

In other not to interrupt the women during sales, the researcher scheduled all the research exercises for Thursdays which took place consecutively for one month in the market where treatment and Focus Group Discussion took place. This decision was taken with the view between the hours of 8 am to 10 am, on Thursdays; all markets in Lagos State observed compulsory environmental exercises. The experimental group was exposed to treatment and after which the women were grouped into eight and a Focus Group Discussion (FGD) was formed. The theme for the discussion was based on the research title; "market women's level of awareness and their disposition towards solid waste management" which was discussed extensively in the presence of the market leaders/officials.

The two groups (experimental and control groups) were exposed to a pretest exercise, after which the experimental group was exposed to treatment package as regards the awareness level of women on solid waste management. At the end of the last Thursday of the month, the same groups were again exposed to a post test exercise. It should be noted that the market used as control group is very distant from the experimental group, so conditions like, item contamination, interference among others were controlled.

Data analysis

The data of the study was analyzed with mean, standard deviation and ANCOVA tested at the 0.05 level of significance.

RESULTS

Table 1 revealed that market local government women in the control group (Oyingbo Market) has a mean score of 2.0 which is higher than those in the experimental group (Iyana-Iba Market) with 1.0, as well as the age of women in experimental group tend to be older with mean of 2.20. Surprisingly both groups have the same marital status of 1.80 for its mean and 0.405 for their standard deviation. However, the level of education of market women in control group revealed that they are more educated than those in the experimental group with its mean as 1.80 and 1.65, respectively. Slightly difference is that, women in control group tend to trade more in varieties of perishable produce than women in the experimental group.

From Table 2, it is shown that solid waste management has its sum of square as and mean square as 280.335, F-calculated value as 33.487 and a significant value as 0.000. Also Level of awareness and availability/provision of infrastructures recorded an increase in partial eta value but training displayed a significant value of 0.000 which depicts significance, that treatment is responsible for the significant witnessed.

Also Table 2 shows interaction between Awareness * Availability, Behaviour * Availability and Behaviour * Awareness. However, change in behaviour and awareness recorded the lowest partial eta value but with the highest significant value, although still showing a significant interaction effect between the variables. Meanwhile, Behaviour * Availability * Awareness show a 3 way interaction effect and a partial eta value of 0.004 was recorded and 0.042 significant value was ascertained, however, from the three interaction model, it shows a strong relationship among the variables. Conclusively from Table 2, the R Squared 0.295 was observed, meaning that about 29.5% of the error can be accounted for while the remaining 70.5% of errors can be attributed to factors outside the model.

DISCUSSION

Solid waste generated, dumped and not properly handled can create lots of problems and result in unhealthy living environment. They affirmed that solid waste management especially of farm products in terms of raw food and different kinds of fruits is a big challenge as they generate high proportion of solid waste.

The findings in this study revealed that treatments (trainings) have a far contributory factor to the attitude of these women on the usage of the available

Table 1. Means and standard deviations on features unique to the women in both markets.

Variables	Control group (Oyingbo Market)		Experimental Group (Iyana-Iba Market)	
	Mean	SD	Mean	SD
Local Government	2.00	0.000	1.00	0.000
Age	2.07	0.349	2.20	0.607
Marital status	1.80	0.405	1.80	0.405
Level of education	1.80	0.405	1.65	0.483
Types of product	3.25	1.480	3.22	1.458

Table 2. Summary of Analysis of Covariance (ANCOVA) of level of awareness, availability/ provision of waste infrastructures, change in behaviour and solid waste management.

Tests of between-subjects effects
Dependent Variable: Solid Waste Management

Source	Type III sum of squares	df	Mean square	f	Sig.	Partial eta squared
Corrected Model	896.314[a]	12	74.693	8.922	0.000s	.295
Intercept	2856.822	1	2856.822	341.254	0.000s	.571
Solid waste management	280.335	1	280.335	33.487	0.000s	.116
Main Effects						
Level of awareness	484.667	2	242.334	28.947	0.000s	.184
Behaviour	.364	1	.364	.043	0.035s	.000
Availability / provision of infrastructures	49.258	1	49.258	5.884	0.01s	.022
2-Way Interaction Effects						
Awareness * Availability	15.188	2	7.594	907	0.030s	007
Behaviour * Availability	24.226	2	12.113	1.447	0.027s	.011
Behaviour * Awareness	.681	1	.681	.081	0.036s	.000
3-Way Interaction Effects						
Behaviour * Availability * Awareness	7.777	2	3.888	.464	0.042s	.004
Error	2143.114	256	8.372			
Total	49310.000	269				
Corrected Total	3039.428	268				

a. R Squared = .295 (Adjusted R Squared = .262)

infrastructures in the markets. This finding was in line with that of Williams and Shiju (2009) in a discussion panel on "behaviour makes the difference", where he referred to behaviour as the way a thing or situation is perceived either positively or negatively. Williams and Shiju (2009) on the same issue said that due to the unique nature of human being they can alter their lives by altering their attitudes. He added that a positive attitude constantly improves productivity and quality of work, reduces stress, forms a pleasing personality while also having a good growth and performance level. Through awareness exercise, change in attitude can occur which will culminate to affect their perception towards solid waste management. The findings of this work was also in conformity with that of Oladipo (2006) who asserted that only proper awareness can bring about improvement of people well being, their environment, strengthen their values, knowledge and technology as well as motivate them to create changes in the society. Awareness serves as base of people's attitude, behaviour and disposition towards a course or issue. It serves as an eye opener in things in and around an individual, group of people, community or nation. Desa et al. (2012) emphasized that awareness is what is what people think about and in their thought, there is need for change in habits, behaviour and participation if need be. They asserted further that once information has been given, the receiver shares the new information and their activities with families, other adults and the community at large and this will probably have some positive implications and practices.

RECOMMENDATION

Based on the findings, the following were recommended:

1. Various environmental agencies, NGO's, private bodies among others should as a matter of urgency provide more trainings and platforms where women especially market traders will be enlightened on the various endemic challenges awaiting the populace should they pay lip service to the cleanliness of their environment.
2. The government should as a matter of urgency, re-strategize other means of recycling these wastes so that its nearness to the various markets will not cause environmental hazards.
3. Other relative study should employ the use of interview guide and rating scales in data generation because it is perceived that these instruments will help generate other qualitative attributes that were not captured in this paper.
4. For a robust work, it is advocated that more sample size be employed in other studies so that other characteristics and traits of the market women can be identified and worked upon extensively.

REFERENCES

Adejobi, O. S., and **Olorunibe**, R. O. (**2012**). Challenges of waste management and climatic changes in Nigeria: Lagos State metropolis experience. African Journal of Scientific Research, 7:346-362.

Adewole, A. T. (**2009**). Waste management towards sustainable development in Nigeria: A case study of Lagos State. Journal of International NGO, 4(4):173-179.

Agbaeze, E. K., Onwuka, I. O., and Agbo, C. C. (**2014**). Impact of sustainable solid waste management on economic development - Lessons from Enugu State, Nigeria. Journal of Economics and Sustainable Development, 5(9):130-139.

Agwu, I. (**2012**). Issues and challenges of solid waste management practice in Port Harcourt City, Nigeria: A behavioural perspectives. American Journal of Social and Management Sciences, 3(2):83-92.

Ayuba, K. A. (**2013**). Current Status of Municipal Solid Waste Management Practice. Retrieved on 10th April 2015 from www.maxwellsci.co.

Banga, M. (**2011**). Household knowledge, Attitude and Practices in Solid Waste Segregation and Recycling: A case of Urban Kampala. Zambia Social Science Journal, Vol. 2 No.1.

Desa, A., Abdkadir, N. B., and Yusoof, F. (**2012**). Environmental awareness and education: A key approach to solid waste management – A Case Study of a University in Malasia. Retrieved on 10th January 2015 from http://www.intechopen.com/book.

Federal Republic of Nigeria (**2005**). Environmental Statistics in Nigeria. Being the Country's Report presented at the Workshop on Environmental Statistics held in Dakar, Senegal. 28th Feb – 4th Mar 2005. Retrieved on 7th of May, 2014 from http://unstarts.un.org.

Iriruaga, E. T. (**2012**). Solid waste management in Nigeria. Retrieved on 30th March 2015 from http://d-waste.com.new-infograp.

Kadafa, A. A., Latifah, A. M., Abdullah, H. S., and Sulaiman, W. N. (**2013**). Current status of municipal waste management practice in FCT Abuja. Research Journal of Environmental and Earth Sciences, 5(6):295-304.

LAWMA (**2014**). Markets in Lagos State (PRS Databank). Retrieved on 6th July 2015 from http//www.lawma.gov.ng/databank/markets.

Ojelade, I. A. (**2014**). Environmental stability development: Focusing on solid waste reduction in Nyanya and environ of Abuja, Nigeria. Social Science Research Journal, Vol.1 No. 6.

Oladipo, E. O. (**2006**). Sustainable Development, Concept and Practice in Sustainable Environmental Management in Nigeria. Matt. F. A. Ivbijaro et al (ed). Ibadan: Mattivi Production.

Olofin, E. A. (**2004**). Municipal solid waste problems in Nigeria: An analysis of municipal solid waste in Kano metropolis, Nigeria. British Journal of Environmental Sciences. Vol. 2, No. 2.

Omosehin, F. (**2004**). Women in Development. Journal of Women in Colleges of Education (JOWICEA) Vol.1 Lagos: Anason Press.

Organisation for Economic Cooperation and Development (**OECD**, **2002**). Strategic Waste Prevention. OECD Reference Manual.

Puwpiel, F., and Owusu-Ansah, J. (**2014**). Solid waste management in Ghana: A case of Tamale metropolitan area. Journal of Environment and Earth Science, 4:129-147.

Ragassa, N., Sundaraa, R. D., and Seboka, B. B. (**2011**). Challenges and opportunities in municipal solid waste management, A case of Adissa Ababa city, Central Ethiopia. Journal of Human Ecology, 33(3):179-190

Stapp, W. B. (**1997**). The concept of environment education. The Journal of Environmental Education, 1(1):30-31.

United Nations Environmental Programme (**UNEP**). (**2005**). Solid Waste Management: waste Quantities and Characteristics. Retrieved on 6th of May, 2014 from http://unep.or.org.

William, J., and **Shiju**, M. (**2009**). Attitude Makes a Difference. Retrieved on 19th of January 2016 from www.citehr.com.

Zurbrugg, C. (**2004**). Decentralized composing of urban waste - An overview of community and private initiatives in India cities. Waste Management Magazine, 24(7):655-662.