



Effective Domestic Waste Management: A Necessity for Environmental Adult Education in Port Harcourt Metropolis

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ABSTRACT

Domestic wastes are generated from preparation and cooking of food, utilization of household items and sweeping. Domestic waste generation and management had been in existence since men came together in the society to form households. Domestic wastes such as garbage, rubbish and house sweepings are common sight in Port Harcourt metropolis. They can be seen around premises, in drainages, at road sides and other unapproved sites. Efforts have been made by Government and non-government agencies to ensure proper management of waste in Port Harcourt metropolis in terms of procurement of equipment, employment and utilization of manpower. This study is focused on education of the populace to develop positive attitude towards the management of domestic waste at home before disposal at approved dump site through environmental adult education programmes. The Likert 4-scale questionnaire was used for data collection from the respondents and purposive sampling method was used for the distribution of the questionnaires among adult members of associations in the study area. The results show that the respondents have seen government officials informing people on how to manage domestic waste, seen posters and bill boards, heard radio and television announcements, attended health education programmes on how to manage domestic waste and agreed that when awareness on and enforcement of waste management laws, civic education and health education programmes are encouraged, the attitude and behaviour of people will positively change towards the management of domestic waste.

Keywords: Environmental Adult Education, Domestic Waste Management

1. INTRODUCTION

As society evolved from primitive to a more sophisticated one in terms of structural (housing, industrial, roads, etc.) and technological development many aspect of human life also evolved with it. Man's quest for a better living condition has also led to the production of goods and services that are not environmentally friendly and pose serious threat to the health of humans.

Different types of items are bought and brought to the home for consumption and thereby increasing and diversifying domestic solid waste generated from residential premises, which finally becomes a problem in the human environment. Onyekwere in Omodu (2007) Corroborated the above fact by stating that, the economic activities of humans have had positive and negative effect on the environment.

Eheazu (2011, in Eheazu, 2016) made it clear that the problem of global warming and climate change which had resulted to numerous problems on earth are linked to unexpected events which are as a result of man's developmental programmes in rural, urban, private and public settings. The purpose of this study is to bring to the fore the importance of environmental education in the management of domestic solid waste generated in Port Harcourt Metropolis. It is not aimed at scientifically analyzing and characterizing the types of domestic solid waste generated but to emphasize the importance of environmental literacy through environment adult education programmes among the populace as to ensure that everybody has the awareness, knowledge, attitude, basic skills and ability to participate in the collection, storage, transportation and disposal of domestic solid waste in Port Harcourt. Which is in line with what Kyburz-Graber, Hofer and Wolfenberger (2006) in Mbalisi (2016) stated that, interest in environmental protection was centred on the fact that providing solutions to local and global environmental problems cannot be accomplished by politicians and experts alone, but it is necessary to get the support and active participation of an enlightened populace in their various capacities as consumers, voters, employers, business and community leaders. Parker and Towner (1993 in Eheazu, 2016) emphasized the need for a special environmental education for adults to bring about a better way of making use of the earth's resources.

Port Harcourt metropolis has evolved from a rural, agrarian society where domestic waste was more of biodegradable materials that are easily broken down in the soil and there were farmlands for the conversion of these waste into manure to an urban centre where urbanization and

industrialization have changed the landscape and the types of domestic solid waste generated are more complex and contain a lot of non-biodegradable materials that are not environmentally friendly. Santra (2012) argued that, pressure from rapid population growth, uncontrolled and lavish consumption, urbanization, industrial expansion and advances in science and technology and their applications coupled with huge energy utilization, have caused accelerated changes — culminating in serious environmental problems.

In such a scenario emphasis is mostly laid on the development and procurement of equipment for the collection, storage, transportation and disposal of solidwaste. Which is not a bad response to the problem but it is done at the expense of adequate environmental education and literacy of the populace. Even in the availability of such equipment it is observed that domestic solid wastes are found in drains, open spaces, water bodies, corner of houses and unapproved dumping sites with its environmental and health implications. This occurred because people are not properly educated and enlightened to think and see environmental issues and problems as a product of human activities on the earth and therefore, that they have the responsibility of managing the waste they generate properly. Tartin (2011 in Licy, Raghavan, Kamath, Anies and Josphina 2013) made it clear that education makes people have a better understanding of the environment and its associated problems, and enables them to carry out activities that ensures proper waste management. The activities of man resulted to current environmental problems. So humans need to be educated for understanding, solution and prevention of these problems (Santra, 2012).

2. STUDY AREA

The study was carried out in Port Harcourt Local Government Area. According to the 2006 population census, the population of the Local Government Area was 538,588 (National Population Commission of Nigeria, 2006). Four (4) communities were selected from the Local Government Area for the purpose of this study. The four (4) communities were Trans-Amadi, Abuloma, Amadi-Ama and Sekini — Ama. Adult members of associations located in the communities were used for the study. All the communities are urban areas where most of the solid waste generated are from domestic sources. The communities are heterogeneous in nature. That is, they are occupied by indigenes and non-indigenes.

3. MATERIAL

Material: The instrument used for data collection from the respondents in the study area was Likert 4-Scale questionnaire. The responses ranged from Strongly Agree to Strongly Disagree (SA, A, D, SD). A total of 316 questionnaires were distributed among the respondents through their leaders during their associations meeting days.

The study adopted a descriptive research design. Three specific objectives were formulated to guide the study

- i. To find out whether public enlightenment programmes are carried out for effective domestic waste management in the study area.
- ii. To highlight the importance of civic education programmes in changing people's behaviour for effective domestic waste management in the study area.
- iii. To highlight the importance of health education programmes in changing people's behaviour for effective domestic waste management in the study area.

The above specific objectives guided the formulation of the questionnaire questions for the purpose of eliciting responses from the respondents.

3.1 SAMPLE SIZE

The population for the study consists of adult members of associations in the four (4) communities (Trans-Amadi, Abuloma, Amadi-Ama and Sekini-Ama). Since the study focuses on the adult members of the community the census figure for Port Harcourt was not used for sample size determination because the census figure consist of both adults and children. Therefore, for the purpose of this study which focuses on adults alone, purposive sampling method which is a type of non-probability sampling was used in the distribution of the questionnaires amongst the respondents. Three hundred and sixteen (316) respondents were randomly selected from adult members of associations in the study areas.

Table 3.1: Respondents Distribution

Communities	Number of Respondents
Trans-Amadi	79
Abuloma	79
Amadi-Ama	79
Sekini-Ama	79

The members of the various associations mostly meet on Saturdays and Sundays especially the last Saturdays and Sundays of the month. Therefore, to avoid bias the above division was made to ensure equal distribution of questionnaires in the study area.

A total of 316 questionnaires were served on the respondents in the various communities. Out of which 28 questionnaires were rejected because they were not properly filled, while 288 questionnaires were properly filled and used for the analysis.

3.2 RESULTS

The arithmetic mean was used for the analysis of the questionnaire statements in line with the research objectives. The arithmetic mean for analysis was derived from

$$SA = 4$$

$$A = 3$$

$$D = 2$$

$$SD = 1$$

The total figure obtained after adding the above figures equal to 10. The number of response items on the questionnaire equals 4 (SA,A,D and SD), the mean equals 2.5 that is dividing 10 by 4.

Therefore, the decision taking mean is equal to 2.5.

Objective One: To find out whether public enlightenment programmes are carried out for effective domestic waste management in the study area.

Table 3.1

Questionnaire Statement	SA	A	D	SD	Total Weighted Score	Number of Respondents	Grand Mean
You have seen government officials informing people on how to manage domestic waste	392	228	132	48	800	288	2.8
You have seen posters and bill boards on how to manage domestic waste	328	267	106	64	765	288	2.6
You have heard radio and television broadcast on how to manage domestic waste	412	318	100	29	859	288	3.1

The above table show that respondents who Strongly Agreed (SA) that they have seen government officials informing people on how to manage domestic waste (informal waste management education) have a figure of 392 (98 x 4), while those who Agreed (A) have 228 (76x3), respondents who Disagreed (D) have 132 (66x2) and respondents who Strongly Disagreed (SD) have 48 (48x1). Addition of the above figure and division by the total number of respondents equal a grand mean of 2.8. The grand mean is greater than the decision taking mean (2.8>2.5) therefore, the statement was accepted.

The respondents who Strongly Agreed (SA) that they have seen posters and billboards on how to manage domestic waste have a figure of 328 (82x4), respondents who Agreed (A) have 267 (89x3), those who Disagreed (D) 106 (53x2) and the respondents who Strongly Disagreed (SD) have 64 (64 x 1). Summation of the above figures and division by the total number of respondents gives a grand mean of 2.6, which is greater than the decision taking mean (2.6>2.5). Therefore, the statement was accepted. The respondents who Strongly Agreed (SA) that they have heard radio and television broadcast on how to manage domestic waste have a total figure of 412 (103x4), respondents who Agreed (A) 318 (106x3), those who Disagreed (D) 100 (50x2) and respondents who Strongly Disagreed (SD) have 29 (29x1). Addition of the above figures and division by the total number of respondents gives us a grand mean of 3.1. Since the grand mean is greater than decision taking mean (3.1> 2.5) the statement was accepted.

Objective Two: To highlight the importance of civic education programmes in changing people's behaviour for effective domestic waste management.

Table 3.2

Questionnaire Statement	SA	A	D	SD	Total Weighted Score	Number of Respondents	Grand Mean
Your attitude will change if you are enlightened on the laws concerning waste management	416	357	80	25	878	288	3.0
It is important to educate the public on the laws concerning waste management	388	375	90	21	874	288	3.0
You will be encouraged to properly manage domestic waste when sanitation laws are enforced	416	324	108	22	870	288	3.0

The above table indicates that respondents who Strongly Agreed (SA) that their attitude will change if they are enlightened on the laws concerning waste management had a total figure of 416 (104 x 4), respondents who Agreed (A) to the above statement had 357 (119 x 3), those who Disagreed (D) 80 (40 x 2) and the respondents who Strongly Disagreed (SD) had a total figure of 25 (25 x 1). Summation of the above figure and division by the total number of respondents gives a grand mean of 3.0. Since the grand mean is greater than the decision taking mean ($3.0 > 2.5$), the statement was accepted.

The respondents who Strongly Agreed (SA) that it is important to educate the public on the laws concerning waste management had a figure of 388 (97 x 4), those who Agreed (A) 375 (125 x 3), respondents who Disagreed (D) 90 (45 x 2) and those who Strongly Disagreed (SD) with the statement had 21 (21 x 1). Addition of the figures and division by the total number of respondents gives a grand mean of 3.0 which is greater than the decision taking mean ($3.0 > 2.5$), therefore, the statement was accepted.

Respondents that Strongly Agreed (SA) that they will be encouraged to properly manage domestic waste when sanitation laws are enforced had a total figure of 416 (104 x 4), those who Agreed 324 (108 x 3), respondents who Disagreed 108 (54 x 2) and respondents who Strongly Disagreed (SD) had a total figure of 22 (22 x 1). Addition of the figures and division by the total number of respondents gives a grand mean of 3.0 which is greater than the decision taking mean ($3.0 > 2.5$), therefore the statement was accepted.

Objective Three: To highlight the importance of health education programmes in changing people's behaviour for effective domestic waste management.

Questionnaire Statement	SA	A	D	SD	Total Weighted Score	Number of Respondents	Grand Mean
You are aware of the health problems associated with domestic waste	308	294	126	50	778	288	2.7
You became aware of health problems associated with domestic waste through health education programmes	312	330	116	42	800	288	2.7
Your behaviour towards domestic waste have changed because of health education programmes you have attended	284	261	146	57	748	288	2.7

The figures from the above table show that respondents who Strongly Agreed (SA) that they are aware of the health problems associated with domestic waste had 308 (77x4) as their total figure, respondents who Agreed (A) 294 (98 x 3), those who Disagreed (D) 126 (63 x 2) and respondents who Strongly Disagreed (SD) 50 (50 x 1). Summation of the figures and division by the total number of respondents gives a grand mean of 2.7. The grand mean is greater than the decision taking mean ($2.7 > 2.5$) therefore, the statement was accepted. The respondents who Strongly Agreed (SA) that they became aware of health problems associated with domestic waste through health education got a total figure of 312 (78 x 4), respondents who Agreed (A) 330 (110 x 3), those who Disagreed (D) 116 (58 x 2) and respondents who Strongly Disagreed had 42 (42 x 1). Addition of the figures and division by the total number of respondents resulted to a grand mean of 2.7. The grand mean was greater than the decision taking mean ($2.7 > 2.5$) therefore, the statement was accepted. Respondents who Strongly Agreed (SA) that their behaviour towards domestic waste have changed because of health education programmes they have attended had 284 (71 x 4) as their total figure, respondents who Agreed (A) 261 (87 x 3), those who Disagreed 146 (73 x 2) and respondents who Strongly Disagreed (SD) 57 (57 x 1). Addition of the figures and division by the total number of respondents results to a grand mean of 2.5. Since the grand mean is equal to the decision taking mean ($2.5 > 2.5$), the statement was accepted.

4. DISCUSSION

This study was carried out in Port Harcourt Local Government Area, specifically in four (4) communities, which are; Trans-Amadi, Abuloma, Amadi-Ama and Sekini-Ama, the purpose of the study is to highlight the importance of environmental adult education programmes in inculcating the culture of sanitarily collecting, storing domestic waste and when necessary sorting into different categories before storage and disposal at approved dump sites. This is necessary in order to prevent domestic waste from becoming a nuisance in the environment.

The State government, local government authority, agencies and non-governmental organizations should continue in their effort of carrying out public enlightenment campaigns to sensitize the public on the importance of sanitarily managing domestic waste. Public enlightenment vehicles, handbills, posters and billboards should be utilized for this purpose. This is in line with what UNEP-ITEC(1996) emphasized, that making people aware of the environment and the health problems arising from insanitary waste management are significant points which should be continuously communicated to all sectors of the populations.

Civic education programmes should be encouraged among residents of the local government. Management of waste from domestic premises is a joint responsibility between the resident's non-governmental organizations and the government. Residents should be properly educated on their responsibility to ensure that they properly collect, store and dispose domestic waste in appropriate places and when they fail to carryout such appropriate activities, the penalties and relevant provisions of the law for the punishment of defaulters should be made known to the public for people to be conscious of their civic responsibilities and the consequences of defaulting. Omodu (2007) argued that as part of urban life, unless with force of law most people do not observe sanitary laws. Uchendu (2016) noted that adequate legal framework exist to ensure that domestic waste is properly managed as a public health issues. But, inadequate refuse management in Nigeria shows that implementation of sanitation measures is still a huge challenge for local government authority.

There is a correlation between health education and domestic waste management based on the responses of the respondents. Health education programmes motivated people to manage domestic waste properly in order to avoid the health hazards associated with domestic waste.

Awareness on the health issues and problems associated with inappropriate domestic waste management through health education programmes among residents helps people to develop the right attitude and behaviour to safeguard their health because they have realized that their health status depends on their negative or positive actions towards domestic waste management. When a community engages in proper sanitation activities, it enhances their health, dignity, security and wellbeing (Sida, 2012 in Addo, Adei, and Acheampong, 2014). Therefore, it is imperative that health education programmes should be encouraged among resident of domestic premises to enhance the management of domestic waste.

When public enlightenment, civic education and health education programmes which are all environmental education programmes are encouraged and given adequate priority as it concerns the collection, sorting storage and disposal of waste in general and domestic waste in particular, the behaviour and actions of people will change. The resultant effect is that the environment will be clean, healthy and safe for human habitation. Diseases that are product of inadequate domestic waste management will be prevented and controlled within the human environment.

5. RECOMMENDATIONS

The following are recommendations made based on the result of the research work.

1. **Procurement of Campaign Vehicles:** More vehicles should be purchased by the government to be used by those in-charge of public enlightenment. This will enable them cover more areas in the state and by so doing creating more awareness on the management of domestic waste.
2. **Employment of Qualified Staff:** Ministries and agencies involved in public education programmes should employ staff with relevant qualifications in environmental education. Employing experts in the field of environmental education will lead to the development of programmes and material relevant to the need of the people as it concerns domestic waste management.
3. **Partnership with Private Organization:** Private establishment, religious organizations and non-governmental organizations should also be involved in the dissemination of information to the public on the importance of keeping their surroundings clean. Posters and banners in strategic places in these organizations will help to pass the message to the people.
4. **Civic Education Programmes:** People should be enlightened on the laws that govern the management of waste. It will enable people know the legal implication of indiscriminate disposal of waste.
5. **House to House Inspection:** Environmental health officers should seriously embark on house to house inspection, incriminate and remedy domestic waste nuisance in such premises. They should use the opportunity to educate the people on how to manage domestic waste.
6. **Prosecution of Offenders:** When necessary, habitual offenders should be taken to sanitation courts for prosecution and subsequent payment of fine when convicted. This will discourage others from indiscriminate disposal of domestic waste and inculcate in people the desire to dispose the waste they generate properly.
7. **Infusion of Environmental Literacy into Functional Literacy Programmes:** at any level of adult education or literacy programmes, environmental literacy should be included with serious emphasis on the importance of the environment on the existence of man.
8. **Formal and Non-formal Waste Management Education:** At the formal and non-formal level waste management education should be encouraged. Residence should be taught how to sort or segregate, store and properly dispose domestic waste. The different classes of waste should be known to them and how to handle each of the different type of waste should be emphasized.
9. **Emphasis on Environmental Safety Education:** Importance of the environment should be highlighted. Our survival depends on the environment and therefore the safety of the environment is important to ensure the prolonging of human lives. When people are made to value the environment and its resources protection of the environment becomes easy.
10. **Create Awareness on the Link between the Environment and Human Health:** The link between environment and human health should be clearly made known to people as they attend health education programmes. They should be made to understand that the way they handle domestic waste will determine their health status. Such awareness will dispel false beliefs and unfounded ideas and making people to take the responsibilities for their health into their hands. In creating such awareness, the diseases and infected agents arising from domestic waste should be made known to people.
11. **Educating people on the Methods of Managing Domestic Waste:** In carrying out environmental literacy and functional education programmes, methods of managing different categories of waste should be explained and put into practice with available material. This will enable the participants to develop the capability to manage the waste they generate.

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