

Percieved Socio-Cultural Variables, Predisposing Waste Managers' Use Of Solid Waste Management Techniques in Delta State: Implications for Health Education

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Abstract: Waste disposal and management is currently a major problem in Nigeria with emphasis accentuated in Delta State. Today heaps or "mountains" of solid wastes are seen all over our markets, gutters, culverts, abandoned vacant plots of land, roads, schools, miniteries to mention but a few. This poses threat to man and the environment and may lead to spread of disease, pollution of air, water and flooding after rains as well as a loss of aesthetic value of the environment. This study is to find answers to the following questions: Are there socio-cultural variables predisposing waste managers' use of certain management techniques in the disposal of solid waste in the urban areas of Delta State? The content and face validity of the instrument were ascertained by some lecturers from Departments of Human Kinetics and Health Education, Delta State University, Abraka and Health Environmental Education and Human Kinetics, University of Benin, Benin City. The reliability of the instrument, Crombach Coefficient Alpha ® was used to analyze the responses at 0.65 coefficients. Three (3) research questions and three (3) hypotheses were formulated to guide the study. The design of the study was descriptive survey. The total targetpopulation of the study was 510 while the sample size of this study was 142 comprising 80 Environmental Health Officers (EHO), 37 Delta Waste Management Board Workers and 25 Private Sector Participants. The proportionate stratified random sampling technique was used to obtain the sample size for each subgroup. A self-designed questionnaire was used for data collection. The researcher and five (5) trained research assistants participated directly in the administration of questionnaire to the respondents. The data generated were collated and analyzed. Mean and standard deviation were used in answering the research questions while multiple regression analysis was used to analyze the stated hypotheses at 0.05 level of significance. The findings revealed that all the socio-cultural variables of the study except economic status were predisposing variables to waste managers' use of solid waste management techniques in urban areas of Delta State. Recommendations were proffered.

Keywords: Waste managers, solid waste, management technique, health, socio-cultural

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I. Introduction

Environment is the component of the earth and it includes land, water, air, organic and inorganic matters. Man does not live, in fact, cannot live separately from his environment. Man lives in an environment in which some of his actions have negative impact on the surroundings and such actions are raw materials extractions, refining, manufacturing, distribution and marketing. Just as the environment can influence man's health so also can the man influences the environment for good or to the detriment of his health. A critical issue facing man in his struggle for a long healthful and fulfilling life is the quality of his environment. In most areas, serious environmental problems already exist while in some places, these problems are rapidly developing. Man is constantly being exposed to environmental hazards.

According to Ogundele (1997), man's activities and actions within his environment for shelter, food and security have brought tremendous changes such as industrialization, urbanization and other economic developments, with their attendant health consequences. One of these consequences is the waste generation which is an indispensable by-product of man's various activities. Hitherto, the inventions of man have created new causes of population in his environment. These activities create solid wastes.

Ogueri and Oparah (2007) quoting Okpara (2001) stated that wastes can be gaseous, liquid or solid and solid waste include municipal waste; industrial waste and hospital waste. Ogundele (1997) noted that with rising human urbanization, change in life styles and food habit, solid waste has increased rapidly with its composition changing. There is the absence of dustbins and dumpsites which has given rise to waste littering all over the streets, roads, gutters, open plots and spaces (Ogueri and Oparah, 2007).

These solid wastes pollute the environment and lack of careful planning and disposal can prevent damage of human health and environment. Some of the by-products of man's action and activities include solid waste from human, domestic animals, automobile parts, containers, cellophane bags and so on. The disposal of these solid wastes is one of the health challenges facing many urban areas of the world which Delta State is inclusive. These unsightly "mountain" of solid waste continue to build up on our street, schools, markets, gutters unattended to in urban areas of Delta State.

Olanipekun, Oyeniyi and Konwea(2007) defined solid waste as unwanted, discarded, non-liquid materials emanating from human activities at home, school, work place, market in the community and farms. Solid waste includes papers, wood, dust, garbage, animal carcass, cellophanes bags, leaves, empty sachet bottle, carton, abandoned automobile parts from industry, toxic industrial waste and so on.

Solid waste management techniques refer to the collection, transportation, processing and disposal of waste materials usually produced through human activities in an effort to reduce their effects on human health or local aesthetic (United Nations, 1999). Sridhar (2008) viewed solid waste management as the systematic administration of activities which provide for the collection, transportation and processing of waste. It is the handing process of solid waste materials from sources of generation to their final disposal.

Zerbock (2003) stated that the open dumps are characterized by lack of engineering measures, no leachate management, no consideration of land filled gas, operational measures as registration of users, control of the number of "tipping fronts". However, composting as a solid waste management method is the process of biological decomposition of solid waste under aerobic condition which breaks down organic materials leaving a humus rich residue, the compost. Another technique for solid waste management is the regular sanitary landfill which is usually a depressed land area that accommodates waste thereafter covered up with soil or other materials by bulldozer. Incineration is another technique of solid waste management's which involves the combustion of waste at high temperature that is destruction of waste materials by burning (Friends of the Earth, 2006).

In Delta State Government involvement in solid waste management dated back when the Federal Government established Federal Environmental Protection Agency (FEPA) by decree No 58 of 1988, when the unfortunate incident of the dumping of hazardous toxic was found in Koko town, in Warri North Local Government Area of Delta State. One of the statutory functions of the state government is to provide and maintain public conveniences and solid waste disposal especially in urban areas of the state as contained in sections 7 of the 5th Schedule of the Constitution of Nigeria. Each of the state government is expected to have state ministry of environment (SMENV). In Delta it is known as Delta State Environmental Protection Agency (DELSEPA).

In the state, it is the responsibility of local government, waste management board and some accredited (licensed) waste managers, to collect and dispose waste generated only in domestic and commercial areas, the state capital, local government headquarters as well as other urban areas. The perceived predisposing socio-cultural factors are social and the cultural variables that may affect positively or negatively the waste managers in the use of solid waste management techniques for waste management practices. For the purpose of this paper, the social factors are the number of environmental health officers, facilities and equipment and the level of economic status of residents while the cultural variables are the norms and traditions of the residents. People behave in certain ways based on their perceptions, beliefs and social forces including cultural factors which shape their health behaviour (Clawson 2008).

Udoh, (2002) observed that cultural values, norms and beliefs which people have can and often affect their health status. The positive behavioral and attitudinal changes are the pillars on which solid waste disposal practices can be built and the frame work for this can only be achieved through sound hygiene education and promotion (Badejo, 2008).

Udoh, (2002), observed that because of poverty, many dwellers or residents in our cities are unable to pay the weekly or monthly levy for the municipal waste collection. As a result of this, most of the residents throw their solid waste in open places, along the road, in vacant plots of land and gutters. Adedeji and Eziyi, (2010) observed that statistics showed that a majority of urban residents in the country fall within the low income group. This income class is the most ruler able group to be predisposed to environment problems such as disease associated with lack of access to natural resources and basic urban services and pollution. They stated that poverty breeds ignorance and ignorance breeds diseases.

This study therefore is to find out from the waste managers (Environmental health officers and waste management board workers) and accredited private sector participants in the state whether economic status of the urban residents, adequacy of health personnel (EHOs), cultural, traditions and availability of facilities and equipment are predisposing waste managers to the use of solid waste management techniques in urban areas of Delta State. They may be some hindrances fighting against their effective use of solid wastes management techniques in solid waste disposal. This is the crux of the matter. The study is to provide answers to the following question:

- Are they socio-cultural variables predisposing wastes manager's use of certain management techniques in the disposal of solid wastes in urban areas of Delta State?

HYPOTHESES

1. There is no significant relationship between economic status and waste managers' use of solid waste management techniques in urban areas of Delta State.
2. There is no significant relationship between facilities equipment.
3. and waste managers' use of solid waste management techniques in urban areas of Delta State.
4. There is no significant relationship between cultural norms, value and waste managers' use of solid waste management techniques in urban areas of Delta State.

DELIMITATION OF THE STUDY

The study was delimited to three (3) sectional districts of Delta State which is made up of twenty-five (25) local government areas. This was further delimited to urban areas in the local government areas. It involves waste workers, comprising Environmental Health Officers, Waste Management Board Workers and accredited Private Sector Participants (PSP) in the local government areas of Delta State. The scope of the study is comprised of the adequacy of personnel (environmental health officers), economic status, facilities and equipment and cultural norms and traditions of the urban dwellers in the state.

Udoh (2002) noted that with a generous economic standing, an individual can well afford to buy the products and services that will enhance his health and quality of life. This is of course with the provision that he makes the right choices and decision most of the time, if not all the time, in matters concerning his welfare and health. Poverty carries with it a multitude of health related implications that undermine health and reduce the quality of life to mere existence.

Odijugo (2002) stated that insufficient number of Environment Health Officers and other wastes managers could hinder the operation of solid waste management. When the labour force is not enough to cope with the tax, it could affect the effective operation of waste management. The culture of a person seems to dictate how its people must reach and what to do in situation that may confront any member of that society (Obasanmi, 2011). Cultural factors such as patterns and norms of behaviour, customs and traditions, interpretation of health matters and disease, motions of the world around us, also may have profound effects on our health wellness and illness states. In some communities, sickness may be blamed on a curse or a spell.

Facilities are those stationery devices, structures used for solid waste management while equipment are moveable materials, devices employed for the wastes management. Ojo (2012) asserted that the availability of related health facilities is a significant factor in developing positive health behaviours in a specific direction. Suffix it to say that availability of some health facilities such as dust bin, refuse dumps, incinerators to mention but a few, will not only make the urban areas clean but will also make enforcement of other sanitation rules possible with a corresponding development of positive health behaviour among the residents.

II. Methodology

The population of this study comprise of all waste mangers in 25 local government areas of Delta State. The total target population of the study was 510 comprising 280 of all Environmental Health Officers in the Local Government areas of the State, 120 of all workers in Delta State Wastes Management Board and 110 of all licensed and registered Private Sector Participants in the State.

The sample size of this study was 142 comprising 80 Environmental Health Officers (EHO), 37 Delta Wastes Management Board Workers and 25 Private Sector Participants. Stratified random sampling techniques were adopted. The proportionate stratified random sampling technique was used to obtain the sample size for each sub-groups or strata of the respondents in the study.

DEVELOPMENT OF THE RESEARCH INSTRUMENT

A self-designed questionnaire was used for data collection. The closed form questionnaire made up of sections A and B was used. Section A contained items on demographic characteristics which sought information on personal data such as age, gender, marital status and educational background about the respondents while section B contained items on research questions and hypotheses. The items contained statements of 4-point Likert type format. Response to each statement was weighted on a four-point-scoring scale of "Strongly Agree – 4", "Agree – 3", "Disagree – 2" and "Strongly Disagree -1". The scores for each item were summed and their mean responses were calculated to determine the value score.

VALIDITY OF THE INSTRUMENT

The content, face validity, the structure and the sequence of the instrument were ascertained by five experts drawn from the Department of Human Kinetics and Health Education, Delta State University, Abraka

and Health Environmental Education and Human Kinetics, University of Benin, Benin City. To effectively determine the reliability of the instrument, the Cronbach Coefficient Alpha (r) method was adopted using 20 respondents. The respondents were drawn among waste managers comprising Environmental Health Officers, Waste Management Board Workers and accredited and licensed Private Sector Participants in urban areas of one senatorial district of Edo State (Edo Central). Scores were collated and Cronbach Alpha was used to estimate the reliability of the scores of the respondents. A reliability of coefficient of 0.65 was obtained.

The researcher and five (5) trained research assistants participated directly in administration of questionnaire to the respondents of the study. The completed copies of the questionnaire were collected and the responses were tallied to get their frequencies. The nominal data were analyzed using simple percentage statistics to indicate the level of response. While mean and Standard Deviation (SD) was used in answering the research questions. Multiple Regression (MR) analysis was used to test the stated hypotheses. All the hypotheses the hypotheses were tested at 0.05 level of significance.

TESTING THE STATED HYPOTHESES

Hypothesis 1 (Ho1): There is no significant relationship between economic status and waste managers' use of solid waste management techniques in urban areas of Delta State.

Table 1: Summary of multiple Regression (MR) analysis on economic status and waste manager's use of solid waste management techniques(Criterion Variable)

Model	Calculate r	r^2	r^2 adjusted	df	Std Error of estimate
1	.05	-.00	-.00	142	3.25

ANOVA

	Sum of squares (ss)	df	Mean square(ms)	f. calculated	sig
Regression	3.45	1	3.45	.33	.40
Residual	1491.975	142	5.27		
Total	1495.425	143			
Unstandardized Coefficient			Standardized Coefficient		
Coefficients	β	Std Error	Beta	T	Sig
Constant	17.66	1.59		11.10	.00
Economic status	0.08	0.05	0.80	0.80	.40

Table 1 showed that the regression value (r) is 0.05 and the coefficient of determination (r^2) is 0.00. This shows that a unit change in the standard derivation of economic status accounted for 0% variance in waste manger's use of solid waste management techniques. The computed calculated F value is $f=0.33$, with $p>0.05$. This showed that the null hypothesis which states that there is no significant relationship between economic status and wastes manager's use of solid waste management techniques is retained. The conclusion is that economic status of the city dwellers has no significant relationship with waste manager's use of solid waste management techniques.

Hypothesis2: There is no significant relationship between sanitary facilities and equipment and waste manager's use of solid waste management techniques in urban areas of Delta State.

Table2: Regression Analysis of Sanitary Facility and Equipment (Predictor) and waste manager's use of management techniques (criterion variable)

Model	Calculate r	r^2	r^2 adjusted	df	Std Error of Estimate
1	0.25	.06	.06	142	3.15

ANOVA

	Sum of squares (ss)	df	Mean square(ms)	f. calculated	Sig
Regression	94.45	1	94.45	9.95	0.00
Residual	1400.98	141	4.95		
Total	1495.43	142			
Unstandardized Coefficient			Standardized Coefficient		
Coefficients	β	Std Error	Beta	T	Sig
Constant	13.40	1.28		10.46	.00
Sanitary facilities and equipment	0.25	0.056	.25	4.37	.00

Table 2: showed that the regression value is 0.25 and coefficient of determination is 0.06. This shows that a unit charge in the standard deviation of facilities and equipment accounted for 6% variance is waste managers' use of solid waste management techniques. The computed regression analysis indicates that the

calculated F value is $f=9.95$, with $P<.05$. This showed that the null hypothesis which states there is no significant relationship between sanitary facilities and equipment and waste managers' use of solid waste management techniques is rejected. The conclusion is that facilities and equipment have significant relationship with waste manager's use of solid waste management techniques in Delta State.

Hypothesis3: There is no significant relationship between cultural norms, values and waste managers' use of solid waste management techniques in urban areas of Delta State.

Table3: Regression Analysis of Cultural norms, values (Predictor) and waste managers' use management techniques (Criterion Variable)

Model	Calculate γ	r^2	r^2 adjusted	df	Std Error of estimate
1	.42	.17	.17	142	1.48

ANOVA

	Sum of squares (ss)	df	Mean square(ms)	f. calculated	Sig
Regression	258.35	1	258.35	29.50	.40
Residual	1237.08	141	4.37		
Total	1495.43	142			
Unstandardized Coefficient			Standardized coefficient		
Coefficients	β	Std Error	Beta	T	Sig
Constant	6.01	1.01		5.36	.00
Cultural norms	.42	0.06	.42	3.84	.00

Table3: showed that the regression value is 0.42 and coefficient of determination is 0.17. The adjusted coefficient of determination is 0.17. This shows that a unit charge in the standard deviation of cultural norms accounted for 17% variance is waste managers' use of solid waste management techniques. The computed regression analysis indicates that the calculated F value is $f=29.50$, $P<.05$. This showed that the null hypothesis which states that there is no a significant relationship between cultural norms, values and waste managers' use of solid waste management techniques is rejected.

The conclusion is that cultural norms have a significant relationship with wastes managers' use of solid waste management techniques in Delta State.

III. Discussion Of Results

The findings shown in Table 1 stated that there is no significant relationship between economic status and waste manger's use of solid waste management techniques in urban areas. The result showed that the influence of the economic status of waste managers does not predict the use of solid waste management techniques. The economic status of waste managers is inversely related to their use of management techniques for the disposal of solid waste. The reason for this may be due to high level of solid waste management and solid waste management being very expensive to procure. The finding is in line with Adedeji and Eziyi (2010) who pointed out that majority of urban residents in the country fall in with the low income group and is the most vulnerable group to be predisposed to environmental problems such as diseases. This study concluded that economic status is not a discriminating factor in waste management in urban areas of Delta State.

The analysis of data in Table2 revealed that sanitary facilities and equipment has significant relationship between waste mangers' use of solid waste management techniques in urban areas. The findings revealed that facilities and equipment was a predisposing variable predicting wastes managers' use of solid wastes management techniques in urban areas of Delta State.

This finding is in line with Adio-Moses (2012) who stated that the problem of solid waste management in urban areas is compounded by the gross inadequacy of sanitary facilities including sanitary refuse disposal bays, poor supervision by ill-trained and ill-equipped officials. This finding also agreed with Olanipekun et al, (2007) who stated that solid waste disposal facilities and equipment and personnel utilized are minimal in the urban areas of the state. Also this finding agreed with Ojo (2012) who asserted that the availability of related health facilities is a significant factor in developing positive health behaviour in a specific direction.

The findings from the analysis of data in Table 3 revealed that cultural norms, values were significantly predisposing waste managers' use of solid waste management techniques in urban areas in Delta State. Culture is an important aspect of man's life on earth. The finding agreed with Lawal (2000) who stated that cultural factors such as pattern and norms of behaviour, customs and traditions interpretations of health matters and diseases. Also in line with the findings, Oladipopu-Okorie and Anyanwu (2006) opined that human beings behave in the contest of a specific culture that profoundly influence their values, daily activities and reactions to the problems such as the attitude towards waste disposal in their environment.

HEALTH IMPLICATIONS

The findings revealed that health implications of poor solid waste disposal results in areas where there are inadequate facilities and equipment of the disposal of solid waste by the urban residents resort to dumping their solid waste in drains, rivers and gutter thereby exposing them to health hazards. Improper management of solid waste may lead to the pollution of the air, water, land, blockage of gutter and culverts during flooding. This may lead to spread of germs which cause diseases and loss of aesthetic value of the environment.

IV. Findings Of The Study

1. There is no significant relationship between economic status and waste managers' use of solid waste management techniques in urban areas of Delta State.
2. There is significant relationship between sanitary facilities and equipment, and waste managers' use solid waste management techniques in urban areas of Delta State.
3. There is significant relationship between cultural norms values and waste managers' use solid waste management techniques in urban areas of Delta State.

V. Conclusion

Based on the findings of the study the following conclusions were drawn:

1. That all the socio-cultural variables of the study except economic status were predisposing variables to waste managers' use solid waste management techniques in urban areas of Delta State.
2. That the health implication in solid waste management is directly proportional to the management techniques used by the waste managers' and polluters.

VI. Recommendations

The following recommendations were proffered thus:

- a. The three tiers of Government should endeavour to assist waste managers in provision and procurement of sanitary facilities and equipment to enhance the management and disposal of solid waste.
- b. The waste managers and the polluters should be exposed to public lectures, symposia, drama and workshops on solid waste management
- c. The Local Government Council should organize house-to-house talk and inspection as a mean of educating the polluters.
- d. The Government and the waste managers should not only provide the sanitary facilities and equipment for waste disposal but also should endeavour to manage, supervise and evacuate solid wastes promptly.

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