

COMMUNITY WASTE DISPOSAL PRACTICE AND HUMAN HEALTH IN RURAL AREAS OF NORTHERN SENATORIAL DISTRICT OF CROSS RIVER STATE, NIGERIA

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Abstract

The study examined the perceived influence of community waste disposal on human health in rural areas in the northern senatorial district of Cross River State, Nigeria. The four (4) hypotheses were set as pit toilet, trash dump, garbage dump, and dumping ground as waste disposal practices. A validated four-point Likert-type scale questionnaire for the inhabitants of the Northern Senatorial District of Cross River was used to explain the responses of four hundred (400) individuals randomly selected from different people in rural communities in the Northern Senatorial District of Cross River State. Pearson A product moment correlation coefficient (r) statistical test was used to analyze the collected data. The four (4) hypotheses were tested at the 0.05 level of significance, r-critical 159, and degree of freedom (df) = 398. Among the variables tested, all show significant influence. Based on the findings, it was concluded that waste disposal has a negative influence on human health in rural communities in the Northern Senatorial District of Cross River State. It was also discovered that there is no proper knowledge of scientifically approved refuse disposal methods. This might be attributed to the fact that the government has not approved any particular method; rather, the council displays notices on open dumping sites. Dumping of refuse is prohibited “without any provision for an alternative dumping site. Effective and sustained mobilization and health education of the people to enable them to see the need to accept positive attitudes and practices in matters of refuse disposal, the provision of administration units of sanitary refuse disposal systems, for example, sanitary diversity with tight fitting covers made of galvanized materials at the strategies locations in the area, and the people being encouraged to use them when these are put in place, there should be enhancing legislation making it mandatory for each household to own at least a low-cost sanitary dustbin.”

Keynote: Waste Disposal, Human Health and Disposal Practice

Introduction

Generally, waste disposal is the release of unpalatable, unwanted, or non-useful materials or substances into the environment that will cause harm, sickness, death, or may be toxic to living organisms. Waste disposal practice is a streamline process that the community uses to dispose of, reduce, reuse and prevent waste in their area. Also waste disposal is an approach that people or society comprehensively apply strategies to efficiently manage waste from the its origin until their final disposal. Formal possible

waste disposal methods are; recycling, composting incineration, land field, bioremediation, waste to energy and waste minimization.

The disposal and collection of sewage, sludge, liquid, and solid waste is a major human health issue and a vital factor affecting the quality of the environment, as man's quest for survival has resulted in the distortion of the environment both physically and socially. These activities have brought about the generation of waste on the earth, which has given mankind

concern for both urban and rural environmental systems. Although the origin of the settlement pattern was not seen as a serious problem to tackle, the quantity of waste generated and the settlement pattern were in dispersed form, and the population was not dense in nature. Beatrice & Jussi (2013) noted that as attention to this problem increased as settlement patterns started increasing in numbers and sizes and population (natural and migration) to large settlements such as cities and towns, the face of waste changed to become a major problem to tackle in human health.

The Adewole (2019) stated that the emergence of the industrial revolution in the 19th century brought about the concentration of population in a particular settlement, which resulted in the establishment of waste management planning (WMP) and policies by municipal councils. Bullem (2012) opines that environmental adult education should help individuals and social groups gain a variety of experiences on the total environment and to acquire a basic understanding of the total environment, its associated problems, and humanity's critical role in it. for those seeking survival through their activities (employment, business activities, domestic activities, and their waste management practices). The waste generated from these activities needs prompt attention from city managers because of the inadequacy of tackling these problems, such as diseases, sicknesses, and vectors that feed on the indiscriminate dumping of waste or refuse without proper disposal (Salan, 2018). Due to these problems caused by indiscriminate dumping of waste, the cities require adequate sanitary conditions and have enacted sanitary conditions, edicts, laws, and policies on the issues of waste disposal. These have led to a better standard of living and human health to promote the idea of a healthy physical environment and sanitation in the cities and towns that exercise these policies and laws. Bullem (2012) adds that environmental adult education shall also create awareness

and help individuals and social groups acquire social values, a strong feeling of concern for the environment, and motivation for actively participating in its protection and proper disposal of waste. Attitudinal change is one of the most important elements of environmental adult education because it helps people change their attitudes towards nature and other forms of life. Anipi (2021). Thus, the township ordinance was promulgated, and waste management and sanitation matters were the responsibility of the municipal council in those towns that were seen as first and second townships. The municipal council and local government authority constitutionally carry out these functions and responsibilities by enabling their own laws to effectively and efficiently carry out waste management within their area of jurisdiction (Salan 2018).

Eunomia (2019) opined that these towns pose waste problems. The lack of adequate waste disposal and the use of inappropriate technology, such as conditions for waste collection, storage, transportation, treatment, and waste disposal methods, can help the municipality carry out these functions. The problem is becoming a noticeable one, resulting in environmental degradation and reducing the quality of the urban form.

Adequate management of hospital waste is an integral aspect to consider when offering a successful health care service. The majority of developing countries like Nigeria are faced with severe constraints that may weaken proper waste management in our urban towns, industries, and hospitals. When waste products are deposited on land, pathogens can proliferate while using the components in the waste matter as a source of nutrients and thereafter degrade complex waste materials (Brown, Chakraborty, Renxus, Mark, Willcow, Williams, and Naresh 2020). The deposited waste contains pathogenic bacterial species that are of high public health importance, either positively or negatively. A major life-

threatening public health concern in our urban towns may arise from improper waste disposal and management due to the bacterial resistance at such sites. The release of bacteria into the environment aids in the exchange of genetic material and pollution between microbes that are formally known to be resistant, thereby increasing the concentration of resistant bacteria (Adelowo, Fagade, & Agerso 2014). The abundance and types of antibiotic resistance genes in the environment increase the chances of gene transfer and spread of disease with longer exposure to the environment and render a reservoir of resistant bacteria and subsequent resistant genes (Giacobbe, Mikulska, & Viscoli 2018). Before the use of antibiotics for the treatment of resistant waste in our environment, the commonest form of antibiotic resistance was restricted. Notwithstanding, inappropriate antibiotic use has resulted in unexpected outcomes necessitating a large-scale policy for waste disposal and mitigation (Chem, Cui, Su, Pennula, and Zhu 2019). Nowadays, multidrug-resistant bacteria and waste disposal threaten the health of people in rural areas of our developing countries. The development of antibiotic resistance in our society, especially in our rural areas, is a great public health concern. Current antimicrobial resistance status, damage, and future outcome of these bacterial pathogens from our waste disposal need a constant check to avoid more crises in our rural areas (Fischer, San Jose, Roschanski, Schmoger, Baumann, Irrgang, Friese, Roesler Helmuth, & Guerra 2017).

Making our rural environment a more hygienic and scenic place to work and live is a more important form of preventing seen and unforeseen problems. In this regard, identifying and suggesting more solutions will not solve this matter, but knowing. The magnitude of the problem and also finding an adequate solution for present and future failure occurrences will be essentially significant for the rural communities of

Cross River because the final disposal of waste is very necessary.

Statement of the Problem

The problem of how waste can be disposed in order not to create harm, or consequences of the human health has been the question of environmental health authorities who are charged with the duty of ensuring proper disposal and management of waste as the perusal health condition in developing countries and in Nigeria in particular have been such that is a threat of life in the area of health and environment and identified to be associated with the ways waste has been disposed indiscriminately along streets, open spaces and drainage line, which impede free flow of traffic and pedestrians movements, congestions and accidents, blocking of drainage channels, contamination of food through rodents and insects that perches on garbage liquid sewage drains from the refuse dumped after rainfall to water bodies and underground water that affects aquatic lives, man and biodiversity (ecosystem). These gave the scenic landscape of the physical environment an unpleasant picture and view. Waste disposal problems arise from rural growth, which results partly from natural increase and, more importantly, from migration of population, and they're unavoidably at the stage of urban development. The unpleasant situation urban liters have (informal planning) is a result of inadequate waste disposal planning. The drainage system (nature and man-made) has been blocked as breeding ground for mosquitoes, and other harmful vectors such as flies, rats, and other rodents feed on this exposed garbage and spread diseases and sicknesses to the inhabitants. These wastes that block the drains cause problems of different kinds as the problem increases every day. This result is provided to provide manpower and financial assistance through the treatment of human health. The ineffectiveness and inefficiency of waste disposal in rural areas are a result of poor transportation networks

(infrastructure) and a lack of political will to know. The causes of ineffective waste disposal. The problem of this project is to find out if waste disposal practices have any negative effect on human health in rural communities in the Northern Senatorial District of Cross River State, Nigeria.

Purpose of the Study

The main aim of the study was to identify community waste disposal practice and human health in rural areas of Northern Senatorial District of Cross River State, Nigeria. Specifically, the purpose of this study was to:

1. Determine the influence of pit toilet practices on human health.
2. To find out the influence of trash dump practices on human health.
3. Investigate the influence of garbage dump practices on human health.
4. Discuss the influence of dumping ground practices on human health.

Research Questions

The research questions that were addressed to guide this research are as follows:

1. Is there any relationship existing between pit toilet disposal practices and human wealth?
2. Does trash disposal influence human health?
3. Is there any effect of garbage dumps on human health?
4. Does dump ground practice influence human health?

Research Hypothesis

From the stated research questions in the study, these hypotheses are hereby formulated for testing:

1. There is no significant relationship between pit toilet practices and human health.
2. There is no significant relationship between trash dump practices and human health.
3. There is no significant relationship between garbage dump practices and human health.
4. There is no significant relationship between dumping ground practices and human health.

Methodology

The researcher adopted the survey design. A survey is an extensive cross-sectional

approach where a number of cases are considered at a particular time and the data is gathered to study the opinions, behaviors, attitudes, habits, desires, values, beliefs, etc. (the characteristics of a certain population are studied). Osuala (2013) asserts that the survey research design is a systematic way of measuring variables by asking people questions and then examining relationships among the variables. The design was considered appropriate because it enables the researcher to obtain information by gathering data from a particular sample of a given population, through personal or impersonal means, to study its characteristics. The population of the study consists of 8000 adults in rural areas in the Northern Senatorial District of Cross River State that practice waste disposal and its consequences for human health. Waste disposal is practiced in the following ways: pit toilet, trash dump, garbage dump, and dumping ground disposal. The population of each adult person, with total numbers of women in participation. The sampling technique adopted for this study was simple random sampling. The aim was to give every member of the population an equal and independent opportunity to be selected. The main purpose of using the simple random sampling technique was to compose a sample that would yield research data that could be generalized to a large population. The technique employed by the researcher is the hat and draw (balloting) method. Here, the researcher wrote the names of all the people in the rural communities in the Northern Senatorial District of Cross River State on pieces of paper, rolled each slip into a paper ball, mixed those paper balls well in a container (hat), and blindly drew the required number of people in urban towns. In the same manner, the required sample was randomly drawn for the study. The sample of the study comprised four hundred (400) adult people in urban towns in Northern Cross River State. A breakdown of this figure shows that 25% of the population forms the sample. The major instrument used for this study was the

questionnaire. The questionnaire had two sections. Section "A" was used to seek information in respect of the subject's demographic or personal data, such as sex, age, educational qualification, etc., while Section "B" was composed of questionnaire items designed to evaluate the study. There were four items on a four-point modified Likert scale to measure each of the subindependent variables and six items to measure the dependent variable of the study. The validity of an instrument is the extent to which a particular instrument measures what it purports to measure or whether it actually tests the desired variables. The researcher administered copies of the questionnaire directly to the respondents with the help of the research assistant. The questionnaire was distributed by the researcher and two research assistants, who explained the purpose of the study to all participants that are affected by waste disposal practices. The adult people were asked to give their candid responses to each

of the items. A total of three hundred (300) copies of the questionnaire were administered and retrieved from the respondents. After collecting copies of the questionnaire, codes and scores were assigned to each item. For ease of preparation, a coding schedule was prepared by developing a key for each of the constructs of the instrument. The following procedure was adopted for the analysis of research data on a hypothesis-by-hypothesis basis. All the hypotheses were tested on .05 level of significance.

Hypothesis one

The null hypothesis one states that there is no significant influence between pit toilet and human health.

In order to analyze this hypothesis, Pearson product moment correlation co-efficient analysis (r) was used to test the hypothesis at 0.05 alpha level of significance at 398 degree of freedom.

Table 1

Variable	r-crit	$\sum x$	$\sum x^2$	$\sum xy$	r-cal
Pit toilet	.159	171	6035		
				4328	.319
Human health		129	3697		

* Significance at 0.05 alpha level, crit, 159, df=398

The result of the analysis as presented in Table 1 indicates that the calculated r-value of (.319) is greater than the critical r-value of (.159) observed under .05 alpha level of significance and 398 degrees of freedom. This implies that the result of the analysis is significant since the hypothesis was rejected, meaning there is a significant relationship between pit toilet practice and

the human health of the people. The result is presented in Table 1 above.

Hypothesis two

The null hypothesis was states that there is no significant relationship between trash dump practice and human health. In an attempt to analyze this hypothesis the Pearson product moment correlation coefficient was equally used (N=5). Result presented in table 2 below.

Table 2

Variables	$\sum x$	$\sum x^2$	$\sum xy$	r-cal	r-crit
	$\sum y$	$\sum y^2$			
Trash dump	131	4041			
					.159
Human health	169	6357			

*Significance at 0.05 alpha level, r-crit. 159, df=398

The result of the analysis as presented in Table 2 indicates that the calculated r-value of (.851) is greater than the critical r-value of (.159) at the .05 alpha level of significance and 398 degrees of freedom, resulting in the rejection of the hypothesis. This therefore implies that there is a relatively positive relationship between

trash dump practice and the human health results presented in Table 2 above.

Hypothesis three

The null hypothesis three states that there is no significant relationship between garbage dump and human health. In order to analyze this hypothesis, independent t-test analysis was used result.

Table 3

Variables	N	X	SD	DF	T-Cal	T-Crit
Garbage Dump	188	38	690			
				298	4.434	1.98
Human health	112	22.4	33.2			

*Significance at 0.05 alpha level, r-crit. .198, df=398

The result of the analysis as presented in Table 3 indicates that the calculated r-value of (.851) is greater than the critical r-value of (.159) at the .05 alpha level of significance and 398 degrees of freedom, resulting in the rejection of the hypothesis. This therefore implies that there is a relatively positive relationship between garbage dump practice and the human health results presented in Table 3 above.

Hypothesis four

The null hypothesis four states that there is no significant influence of dumping ground on human health of the people.

In order to analyze this hypothesis Pearson Product moment correlation coefficient was used.

Table 4

Variables	$\sum x$	$\sum x^2$	$\sum xy$	r-cal	r-crit
	$\sum y$	$\sum y^2$			
Dumping ground	221	11159			
			3631	.369	.159
Human health	79	1353	33.2		

*Significance at 0.05 alpha level, r-crit. .159, df=398

The above table 4 result shows that there is a significant relationship between solid waste disposal practices and human health. Based on the fact that the calculated r-value of (0.368) is greater than the critical r-value of (.159) observed under the 0.05 level of significance and 398 degrees of freedom, This implies that the null hypothesis was rejected while the alternate hypothesis was upheld, as presented in Table 4 below.

Discussion of findings

This section is concerned with the findings that emerged from the results of the analysis. The discussion is presented in accordance with the variables of the study.

H01: Pit Toilet Practice and Human Health

The result of the analysis as presented in Table 1 indicates that the calculated r-value of (.319) is greater than the critical r-value of (.159) observed under .05 alpha level of significance and 398 degrees of freedom.

This implies that the result of the analysis is significant since the hypothesis was rejected, meaning there is a significant relationship between pit toilet practice and the human health of the people. The findings, as reported in the data analysis of Hypothesis 1, portray a positive significance. This result is in line with Adewole (2019), who observed that just one-third of rural dwellers have access to basic sanitation facilities, while less than 20 percent of those in rural areas enjoy similar facilities. He therefore concluded that most Nigerians who do not have access to sanitary facilities have no option but to defecate indiscriminately wherever they find it necessary and convenient. He believes that such a comfort zone may be the bushes, water bodies, open space, or abandoned buildings. In a similar development, Beacterice and Jussi (2013) opined that the poor level of personal hygiene of the average illiterate Nigerian is also one of the significant factors in the pit toilet's influence on waste disposal practices and human health.

H02: Trash Dump and Human Health

The result of the analysis as presented in Table 2 indicates that the calculated r-value of (.851) is greater than the critical r-value of (.159) at the .05 alpha level of significance and 398 degrees of freedom, resulting in the rejection of the hypothesis. This therefore implies that there is a relatively positive relationship between trash dump practice and the human health results presented in Table 2. The finding shows that the result was highly significant and that there is a positive relationship between trash dumps and human health. This result is in consonance with the findings as reported by Salan (2018). In his study of waste disposal systems in the metropolitan area of Lagos, he noted that the nature of the sludge waste disposal system in any urban area is a determinant factor of human health purification and determination rates. He observed that the insanitary pouring of waste water into open

spaces constitutes a threat to urban human health and environmental quality. He went on to state that improper discharging of trash dumps on pathways is a frequent phenomenon among rural dwellers since they do not channel their bathroom waste water in the appropriate direction. He believes the only alternative is the need for proper awareness and a change of attitude among the people.

H03: Garbage Dump and Human Health

The result of the analysis as presented in Table 3 indicates that the calculated r-value of (.851) is greater than the critical r-value of (.159) at the .05 alpha level of significance and 398 degrees of freedom, resulting in the rejection of the hypothesis. This therefore implies that there is a relatively positive relationship between garbage dump practice and human health, as presented in Table 3. The findings, as reported in the analysis of Hypothesis 3, portray a significant influence of the two variables. The findings are in line with those of Uche, Olele, and Nwabueze (2013), who observed that most of the liquid waste has to do with industrial activities that are either liquid or semi-liquid in nature. He went ahead to observe that activities related to petroleum exploitation have caused untold damages to the Nigerian environment. He believes that the impact of oil spillage on and off-shore has a significant influence on the biodiversity and lives of the entire ecosystem, and he also believes there must be a change in attitude and care toward man and his health.

H04: Dumping Ground and Human Health

The above table 4 result shows that there is a significant relationship between dumping ground practices and human health. Based on the fact that the calculated r-value of (0.368) is greater than the critical r-value of (.159) observed under the 0.05 level of significance and 398 degrees of freedom, This implies that the null hypothesis was rejected while the alternate hypothesis was upheld, as presented in Table 4. The

findings based on the analysis show a significant influence between dumping grounds and human health. This finding is in consonance with Beatrice and Jussi (2013), who, in their study of fifteen Nigerian towns, attributed the accumulation of garbage dumps in these cities to the inefficiency of the organization saddled with these responsibilities to manage the waste, which he believes has been generated at about 440 x 10 kg of solid waste per year. In an attempt to cope with this problem, Jassam (2014) recommended that disposal in developing countries should be more efficient and sanitary in nature when dealing with waste disposal and management.

Conclusion

The result of this work from fieldwork observation conclusively shows that waste disposal practices influence the public health of the people in rural areas in the Northern Senatorial District of Cross River State. It goes extensively to confirm that the perceived influence of pit toilet practices on human health in rural communities in the Northern Senatorial District of Cross River State, Nigeria, is a myriad problem. Again, the negative attitude of the residents in the study area toward pit toilets, trash dumps, garbage dumps, and dumping ground disposal greatly influences human health. In order to maintain a good and healthy environment in rural communities in the Northern Senatorial District of Cross River State, the government should ensure that the refuse generated is appropriately disposed of by the sanitary workers.

Recommendations

For effective and efficient disposal to be ensured in rural communities of the Northern Senatorial District of Cross River State and also to save the inhabitants from human health hazards and degradation, the researcher has the following recommendations:

1. The government should conscientiously educate its citizens

through the establishment of environmental health policies. This should be done each time a developmental project is being considered in rural areas of the Northern Senatorial District of Cross River State. Such policy should, as a matter of fact, incorporate national and international organizations like the United Nations Development Programme (UNDP) and other agencies.

2. There should be massive public enlightenment through various mass media to help change and create awareness among the masses as regards waste disposal in rural communities in the Northern Senatorial District of Cross River State, Nigeria.
3. For effective and efficient waste disposal, the taskforce on environmental sanitation should be re-organized and properly funded by the government.
4. As an environmental educationist, the creation of awareness house-to-house should be a personal concern.

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