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## The Health Implication of Indiscriminate Plastic Waste Disposal in Port Harcourt Metropolis.

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### ABSTRACT

The study was carried out to investigate the Health implication of indiscriminate plastic waste disposal in Port Harcourt Metropolis. Three (3) research questions was used for the study, the research design used for this study was the descriptive survey research design, it was considered appropriate in this study to examine health implication of indiscriminate plastic waste disposal in Port Harcourt metropolis. For the respondents to whom questionnaire was conducted, a random sampling was used and a sample of 153 respondents was determined. The instrument used for the collection of data was structured questionnaire. Data was presented using simple percentages tables. Data revealed that revealed that the table shows the records of responses from the respondents which according to the table, 100 (65.36%) agreed that littering of plastic waste affects the health of people while 53 (34.64%) of the respondents disagreed. Based on the findings Recommendations were made, Community sensitization and campaigns should be organized to educate the public on their role and the necessity of their involvement and cooperation in ameliorating the plastics menace in comm. Unities. Radio discussions should be held to bring to bear some of the practices of the populace that propels the indiscriminate plastic waste disposal in the community.

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### INTRODUCTION

Poor waste management practices in particular the widespread of dumping waste in water bodies and uncontrolled dumping sites, aggravates the problem of low sanitation levels across the African continent (Mwesigye et al., 2019). Generally waste management in Rivers State is the responsibility of the Ministry of Local Government and Rural Development which supervises the decentralized Metropolitan/Municipal/District Assemblies (MMDAs) (Mwesigye et al,2019).

Solid waste management is more a problem in the urban areas in Nigeria than the rural areas. The Urban areas produce different kinds of solid waste. The current environmental sanitation status in Nigeria leaves much to be desired. Less than 40% of urban residents are served by a solid waste collection service less than 30% is served by acceptable household toilet facility. Even those areas where wastes are removed most are disposed of in unsanitary manner, posing danger to human health and the environment. At the household level, poor hygienic practices by individual and communities are compounded by insufficient and inefficient hygienic education. Vector- borne diseases suciras malaria, bilharzias are rife due to the virtual absence of pest and disease vector control programmes (ESP, 2011).

Consequently, drains continue to be choked with abandoned plastic wastes creating conditions that serve as breeding grounds for vectors like mosquitoes, bugs and among others that facilitate the spread of diseases in urban and rural areas.

Livestock also suffer from the indiscriminate disposal of plastic waste. These animals feed on the littered wastes which result in indigestion and other digestion complications leading to their death. Post mortems conducted on livestock have

shown the cause of death for several cattle and sheep to be plastic products. The littering of plastic waste makes Rivers State and its surrounding dirty and unattractive; thus posing serious health challenges to the people. The purpose of this study was to shed light on the factors that perpetuate indiscriminate plastic disposal and the health implications associated it, using Port Harcourt metropolis as a case study.

## Objectives of the Study

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The broad objective of this research is to investigate the health implication of indiscriminate plastic waste disposal in Rivers State precisely Port Harcourt Metropolis and to suggest sustainable and effective ways of controlling the dumping of plastic waste in Port Harcourt.

## Specific Objectives

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1. To investigate the reasons why people litter the environment with plastic waste in Port Harcourt Metropolis.
2. To identify and discuss the effects of indiscriminate plastic waste disposal on the environment and its health related problems in Port Harcourt Metropolis.
3. To suggest sustainable ways of reducing the indiscriminate disposal of plastic waste in Port Harcourt Metropolis.

## Research Questions

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The research focused on the underlying causes of indiscriminate plastic waste disposal and its attendant health implications on the population in the study area?

1. Why do people litter plastic waste indiscriminately?
2. What are the effects of indiscriminate disposal of plastic waste?
3. What effective measures can be taken to control indiscriminate plastic waste disposal in Rivers State in the Port Harcourt Metropolis

## METHODOLOGY

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This chapter describes the research methods and procedures adopted by the researcher to carry out the study.

### Research design

The research design used for this study was the descriptive survey research design. A descriptive survey “concerns itself with ascertaining and establishing the status- quo, facts or pieces of information at the time of the research and presenting such facts as they are. (Elendu, 2010). Furthermore, descriptive surveys are those studies which aim at collecting data on, and describing in a systematic manner, the characters, features and facts about a given population. Therefore, it was considered appropriate for use in this study to examine implication of indiscriminate plastic waste disposal in Port Harcourt Metropolis.

### Study Area

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The research study Area is Port Harcourt Metropolis and it is formulated into zones to cover the following areas, 1st Artillery (commercial), Rumuola (commercial), Air force I (Passenger loading but stop), 2x Artillery (Passenger loading bus stop), Rumuokoro (Busy Road Junction /intersection), Air force 11 (Busy road Junction/intersection), GRA Iyarninimast (Low density residential), Orogbum Crescent St (Low density residential), Tere-ama (High density residential) and Differi St in Femie (High density residential).

## Population of the Study

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The population of the study consisted of about 161 respondent both male and female in Port Harcourt Metropolis Rivers State.

## Sample Size

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The sample size for this study was 270 respondents from the Port Harcourt metropolis. The sample size for road sweepers was obtained by using Slovene's formula (Yarnane, 1967):

$$N = \frac{N}{1+N(e)^2}$$

Where n is the sample size, N is the population size and e is the level of precisions.

$$N = \frac{270}{1+270(0.05)^2} = \frac{270}{1.675} = 161$$

Considering this total number of sample size, the study dealt with 161 respondents selected from the study in Port Harcourt metropolis. As for qualitative data, the targeted population was made up by 4 managers.

### 3.5 Sampling technique

For the respondents to whom questionnaire was conducted, a random sampling was used and a sample of 161 respondents was determined. Regarding the interview, four people were selected using purposive sampling. According to Kothari (2004) this sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe. Four people interviewed were selected taking into consideration the sex and position for getting rich information.

## Instrument for Data Collection

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Instrument for data collection is questionnaire developed by the researcher. It consist of two section —section A and B respectively. Section A is designed to get personal data from the respondents such as age, sex, marital status, religion, current level in school. Section B on the other hand contains items which focus on implication of indiscrimination plastic waste disposal in Port Harcourt metropolis. These are designed to provide information about the survey to be identified by the research project.

## Reliability of the Instrument

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Reliability of the instrument refers to the consistently with which respondents understand and respond to all questions.

The reliability of the instrument being the questionnaire would be determined through a test of the questionnaire items on another group of respondents and the result obtained would be collected to ascertain its probability of success.

## Administration of Instrument

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The questionnaire would be administered to respondents personally (face to face) explanations guiding the filing and response would be made. The questionnaire would be retrieved (collected) back at the spot after filing and completing the questions

## PRESENTATION AND ANALYSIS OF DATA

This chapter deals with presentation and analysis of data collected from the field as having to do with this work

For the purpose of clarity and comprehension, data are presented first in tables followed by analysis of data.

### 4.2 Presentation and Analysis of Data

#### Section A: Biometric Data

**Table 4.1: Gender**

Sex	Responses	Percentage
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Male	53	34.641
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Female	100	65.359
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<b>Total</b>	<b>153</b>	<b>100%</b>
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Table 4.1 above shows the different sex of respondents that were involved in the study. The tables indicate that more male gender participated in the research. This was justified by the number of respondents (100 female) representing (65.359%) while 53 male respondents representing 34.641% also participated in the study.

**TABLE 4.2: AGE DISTRIBUTION OF THE RESPONDENT**

Age Range	Responses	Percentage
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18—28	20	13.071
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28—39	30	19.607
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40—50	53	34.64
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51 and above	50	32.679
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<b>Total</b>	<b>153</b>	<b>100%</b>
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Table 4.2 above shows responses on the various age groups set as options among which the respondents. The table however shows that the population commonly used in the study were those within the age of 40 — 50 as shown above, followed by those within the age of 51 and above, the responses were justified by 53 and 50 respondent respectively.

The percentages were represented as 34.64% and 32.67% respectively, the reason for the above development was that the respondents used for the study were within the age limits and were adults who could have obtained either secondary or tertiary educational discipline.

**Table 4.3: Marital Status**

Marital Status	Responses	Percentage
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Single	60	39.215
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Married	37	24.183
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Widow	20	13.071
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Widower	6	3.921
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Separated/Divorced	30	19.61
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<b>Total</b>	<b>153</b>	<b>100%</b>
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In table 4.3 above, 39.215% representing 60 respondents were single, 24.183% representing 37 respondents were married, 13.071% representing 20 respondents were widow, 3.821% representing 6 respondents were widower and

19.61% representing 30 were separated /divorce.

**Table 4.4: Level of educational attainment**

**Educational Level Responses Percentage**

Primary	20	13.071
Secondary	50	32.679
Tertiary	53	34.64
Non-formal	30	19.607
<b>Total</b>	<b>153</b>	<b>100%</b>

In table 4 above, 13.071%, representing 20 respondents attained primary education, 32.679% representing 50 respondents got secondary education, while 34.64% representing 53 respondents got tertiary level education and finally, 19.607% representing 30 respondents attained non-formal education.

**Table 4.5: Occupational status of the Respondents**

**Occupation Responses Percentage**

Farming	6	3.921
Business	37	24.182
Civil service	20	13.071
Being service	60	39.215
None of the above	30	19.61
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.4 above, shows various responses from respondents to the question to determine the different occupations engaged by the respondents. It is reflected in the table that the respondents were more of students. This is justified by the number of respondents or a response represented by to respondents and was expressed as 39.215%. The other respondents that were used were the business people, which were represented by 37 respondents of 24.183% and 30 respondents which were presented by 19.61% The table shows that very minimal numbers of farmers were used as the table showed 3.921% respective.

**Table 4.6: Religion of the respondent**

**Religion Responses Percentage**

Christianity	100	65.36
Islam	3	1.97
Traditional religion	50	32.67
None of the above	0	0
<b>Total</b>	<b>153</b>	<b>100%</b>

In table 4.6 above, 65.36% representing 100 respondents were Christians, 1.97% respecting 3 respondents were Muslim, 32.67% representing 50 respondents were traditional worshippers

The table shows that those respondents of the Christian religion participated most in the study.

**Table 4.7: Do you use or have you ever used plastic products?**

Options	Responses	Percentage
Yes	100	65.36
No	53	34.64
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.7 above, shows the various response from different respondents. The table shows the records of responses from the respondents which according to the table, 100 (65.3 6%) of the respondents said yes that they have used plastic production while 53 (34.64%).

**Table 4.9: Which is the common plastic waste generated by you or your household daily**

Option	Responses	Percentage
Ice water bags	60	39.21
Black polyphone delivery bags	78	24.18
Others polythene bags	17	50.88
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.9 above shows that 60 (39.12%) of the respondents said ice water bags, 78 (24.18%) said black polyphone delivery bags and others 17 (50.88%) of the respondents said others polythene bags.

**Table 4.10: Who is responsible for the disposal of waste in the household?**

Option	Responses	Percentage
Wife	100	65.36
Husband	3	1.97
Children	50	32.67
Others (specify)	0	0
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.10 above shows that 100 representing (65.3 6%) of the respondents are wife, 3 (1.97%) of the respondents are husband, 50 representing (32.67%) of the respondents are children while others have nothing.

**Table 4.11: Why do people litter plastics in Port Harcourt?**

Option	Responses	Percentage
Lack of information about effects of plastic on the environment and health	6	3.92 1
Inadequate liter bins in the community	67	43.79
People do not care about environmental hygiene	20	13.071
People are not punished for littering the environment	60	39.215
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.11 above, shows the various response from different respondents. The table shows the records of responses from the respondents which according to the table, why people litter plastics in Port Harcourt is lack of information about the effects of plastic on the environment and health with 6 (3.92%), 67 representing (43.79%) of the respondents said inadequate litre bins in the community, 20 (13.071%) of the respondents said people do not care about environmental hygiene while 60 (39.21%) of the respondents said that people are not punished for littering environment.

**Table 4.12: What are the causes of indiscriminate plastic waste disposal in Port Harcourt?**

Option	Responses	Percentage
Inadequate litre bins in the homes for disposal of waste	60	39.21
Inadequate litre bins at vantage points in the community for disposal of waste	50	32.67
Lack of regulations on waste disposal	30	19.60
Lack of information about the health risk of plastic waste among the population	13	4.49
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.12 above shows the responses to the questions postulated to determine the causes of indiscriminate plastic waste disposal in Port Harcourt, it were agreed that inadequate litre bins in the homes for disposal of waste with 60 (39.21 %), inadequate litre bins at vantage points in the community for disposal of waste 50 (32.67%), lack of regulations on waste disposal 30 (19.60%) while lack of information about the health risk of plastic waste among the population 13 (4.49%).

**Table 4.13: Do you think littering of plastic waste affects the health of people of Port Harcourt.**

Options	Responses	Percentage
Yes	100	65.36
No	53	34.64
<b>Total</b>	<b>153</b>	<b>100%</b>

Table 4.13 above, shows the various response from different respondents. The table shows the records of responses from the respondents which according to the table, 100 (65.36%) agreed that littering of plastic waste affects the health of people while 53 (34.64%) of the respondents disagreed.

**Table 4.14: Which of the following are the effects of littering of plastic waste on the health of the people in Port Harcourt?**

Options	Responses	Percentage
Odour nuisance	30	19.607
Fly infestation	20	13.071
Rodent infestation	13	8.496
All of the above	90	58.823
<b>Total</b>	<b>153</b>	<b>100</b>

From the data recorded in the table 4.14 above, the show that all health effects listed are the effects of littering of plastic waste on the health of people of Port Harcourt. From the responses of the people, 58.823% of 90 respondents supported that people are affected by all effects listed in the above table, 13.071% from 20 respondents agreed with fly infestation, 8.496% from 13 said “rodent infestation” is one of the effects of littering of plastic waste on the health of the people

while 19.607 from 30 respondents also supported that odour nuisance is noticeable. Therefore, according to the data recorded it is obvious that all the effects of littering of plastic wastes affect the health of the people of Port Harcourt.

## Discussion of findings

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Result shows the records of responses from the respondents which according to the table, 100 (65.36%) of the respondents said yes that they have used plastic production while 53 (34.64%).

Table 4.8 above shows that 60 (39.21%) of the respondents said daily, 50 (32.67%) of the respondents said weekly while 43 (28.10%) of the respondents said monthly.

Table 4.9 above shows that 60 (39.12%) of the respondents said ice water bags, 78 (24.18%) said black polyphone delivery bags and others 17 (50.88%) of the respondents said others polythene bags.

Table 4.10 above shows that 100 representing (65.36%) of the respondents are wife, 3 (1.97%) of the respondents are husband, 50 representing (32.67%) of the respondents are children while others have nothing.

Table 4.11 above, shows the various response from different respondents. The table shows the records of responses from the respondents which according to the table, why people litter plastics in Port Harcourt is lack of information about the effects of plastic on the environment and health with 6 (3.92%), 67 representing (43.79%) of the respondents said inadequate litre bins in the community, 20 (13.071%) of the respondents said people do not care about environmental hygiene while 60 (39.21%) of the respondents said that people are not punished for littering environment

Table 4.12 above shows the responses to the questions postulated to determine the causes of indiscriminate plastic waste disposal in Port Harcourt, it was agreed that inadequate litre bins in the homes for disposal of Waste with 60 (39.21%), inadequate litre bins at vantage points in the community for disposal of waste 50 (32.67%), lack of regulations on Waste disposal 30 (19.60%) while lack of information about the health risk of plastic Waste among the population 13 (4.49%).

Table 4.13 above, shows the various response from different respondents. The table shows the records of responses from the respondents which according to the table, 100(65.36%) agreed that littering of plastic waste affects the health of people while 53 (34.64%) of the respondents disagree

## Summary

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The study covered the effects of Health Implication of indiscriminate plastic waste disposal in Port Harcourt. The primary objective of this study is to identify the reasons why people litter the environment with plastic waste in Port Harcourt, to identify and discuss the effects of indiscriminate plastic waste disposal on the environment and its health related problems in Port Harcourt Metropolis and to suggest sustainable ways of reducing the indiscriminate disposal of plastic waste in Port Harcourt. The research design used for this study was the descriptive survey research design. Furthermore, related works of literature were meticulously reviewed which encompassed different findings that were gotten from previous research of similar nature. Practices should be observed that is Reduction in plastic waste generation Reuses of plastic waste and Recycling of plastic should be encouraged in our development setting

## Recommendation

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Based on the key findings summarized above it is recommended that the following measures should be put in place to address the indiscriminate disposal of plastic waste in Port Harcourt and its environs

- Community sensitization and campaigns should be organized to educate the public on their role and the necessity of their involvement and cooperation in ameliorating the plastics menace in communities.
- Radio discussions should be held to bring to bear some of the practices of the populace that propels the indiscriminate plastic waste disposal in the community.
- Litter bins should be made available in the communities and at homes to inculcate the sense of proper disposal of Waste in homes and communities. This will help stop the littering culture among people.



- Cleanup campaigns and health talks should be organized and intensified at least twice in a month and participants rewarded sometimes for participating and practicing some of the best practices of proper waste management in the community. Environmental Sanitation Hygiene Department in collaboration with the Ministry of health should be deployed to educate the people on the dangers of plastic waste and waste in general.

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