

## **Environmental Sanitation Activities of Residents of Enugu State, Nigeria**

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### **ABSTRACT**

The main purpose of the study was to ascertain the environmental sanitation activities of residents of urban and rural residents Enugu State for healthy living. One research question was formulated to guide the study, while one null hypothesis was tested at 0.05 level of significance. Descriptive survey research design was adopted for the study. The population for the study comprised 4,411,100 residents in the 17 local government areas in Enugu State. The sample for the study was 800 residents in Enugu State. The instrument for data collection was a 21-item self-structured questionnaire titled Housing and Environmental Sanitation Cognition and Activities (HESCAQ). The validation of the instrument was done by two experts from the Department of Human Kinetics and Health Education, and one from Measurement and Evaluation Unit of Department of Mathematics and Computer Education, all from the Faculty of Education, Enugu State University of Science and Technology, Agbani. Cronbach's Alpha was used to ascertain the reliability of the instrument, and yielded an overall reliability index of 0.69. Out of the 800 copies of questionnaire administered, only 767 were successfully filled and returned, yielding a return rate of 95.9%. Mean and standard deviation were used for the research questions while the hypotheses were tested using ANOVA at 0.05 level of significance. Results showed that residents of Enugu State recorded a low level of environmental sanitation activities. It was recommended, among others, that regular environmental education campaigns using jingles in radios should be promoted to enlighten citizens about the importance of environmental sanitation, and training and re-training of environmental health officers to effectively educate residents of the State on the implications of their environmental sanitation practices.

Keywords: Environmental, Sanitation, Activities and Residents.

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### **INTRODUCTION**

The state of human environment is crucial to their health and well-being. Access to clean environment is considered to be fundamental to health and the prevention of many diseases across the world [1]. In its modern concept, environment includes not only water, air and soil but also the social and economic conditions under which we live [2]. The key to man's health lies largely in his environment. In fact, much of man's ill-health can be traced to adverse environmental factors such as water, soil and air pollution, poor housing conditions, presence of animal reservoir and insect vectors of diseases which pose threats to human's health. Often, human beings are responsible for the pollution of their environment through urbanization,

industrialization and other human activities. Sanitation is one way by which the state of the environment can be kept in check. Sanitation, in one occasion, has been defined as the provision of facilities and services for the safe disposal of human waste, and its proper disposal in an economically viable, socially acceptable, technically and institutionally appropriate way, while protecting the environment and natural resources [3]. It is the state of cleanliness of a place, community or people particularly relating to those aspects of human health, including the quality of life determined by physical, biological, social and psychological factors in the environment [4]. The World Bank gave a more encompassing definition of

sanitation as 'interventions to reduce people's exposure to diseases by providing a clean environment in which to live and with a measure to break the cycle of diseases. This usually involves safe management of human excreta, garbage, and wastewater, the provision of washing facilities for personal and domestic hygiene. It also involves both practices and facilities which work together to form a hygienic environment' [5]. According to World Health Organization [6], sanitation is a group of methods to collect human excreta and urine as well as community waste waters in a hygienic way such that human and community health is not altered. It aims to decrease the spread of diseases by adequate elimination of excreta and other wastes from sight and proper handling of water and food in order to restrict the spread of disease [7]; [8]; [9]. In order to ensure a hygienic environment, there is the need to subject same to regular sanitation.

Environmental sanitation comprises the disposal and treatment of human excreta, solid waste and wastewater, control of disease vectors, and provision of washing facilities for personal and domestic hygiene which work together to form a hygienic environment [10]. In addition, environmental sanitation according to [6] is the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect on his physical development, health and survival. It could also be seen as the principle and practice of effecting healthful and hygienic conditions in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment [11]. Some of the essential components of environmental sanitation include: solid waste management; medical waste management; food sanitation; sanitary inspection of premises; market and abattoir sanitation; adequate portable water supply; pest and vector control; management of urban drainage; control of reared and stray animals, weed and vegetation control; hygiene education and promotion, among others. [12].

The physical environment is polluted owing to social misdemeanor of indiscriminate littering, improper

domestic wastewater discharge, and poor sewage disposal, and these behaviours promote unsanitary living conditions which result in the breeding of communicable diseases [13]; and [14]. Improved environmental condition affects positively a wide range of development indicators. Thus, environmental sanitation is a channel to improved quality of life of the individuals and a contributor to their social, economic and physical development [15]. It has been documented that about 24% of global diseases with high mortality ratio is caused by environmental exposures which can be averted [16]. Nevertheless, most of these deaths are preventable through adequate environmental sanitation practices. Furthermore, environmental hazards are responsible for about a quarter of the total burden of disease worldwide and as much as 30% in regions such as Sub-Saharan Africa. As many as 13 million deaths can be prevented every year by making the environments healthier.

According to [17], poor sanitation accounts for almost 50 percent of children being underweight since it has a direct link to diarrhea.[18] reported that in Nigeria, there is high poor sanitation. A pleasant environment that promotes healthful living and is hazard free is a fundamental right of all Nigerians. Thus, ensuring improved Environmental Sanitation standards has become high on the political agenda of Government in the democratic dispensation [19]. This led to the creation of the Federal Ministry of Environment to address amongst other things, the problems of poor environmental sanitation and is expected to engender improved productivity and foster equitable share of the job and joy of national economic development. In order to determine effort and success of the strategy, this study seeks to appraise the environmental sanitation activities of Enugu State residents. Based on the importance of components of environmental sanitation to residents, it is important to appraise the level of residents of Enugu state on these four components of environmental sanitation. This is because [20] that researched on environmental related knowledge,

attitudes and practices among secondary school teachers, revealed that there was low level of knowledge and practices with respect to environmental issues by the populace whereas the findings of [19] revealed that majority of the Nigerian residents had good knowledge of environmental sanitation.

Environmental sanitation activities refer to residents' involvement in provision, utilization, and maintenance of environmental sanitation facilities and services and adherence to environmental legislation [21]. In Nigeria, adequate environmental sanitation activities have not been ensured. [22] revealed that there were poor environmental sanitation practices in Nigeria. They are characterized by lack of basic amenities and poor sanitation habits [23]; [24]. General access to environmental sanitation facilities and services by citizens remains very poor [25]. Nigerian cities are characterized by rapid population growth which is not accompanied by a corresponding increase in the delivery of environmental sanitation facilities and services capable of enhancing environmental sanitation practices. The resultant effects of these are unsanitary and unhealthy environmental conditions that are prevalent in Nigerian urban centres [26].

Poor environmental sanitation activities exhibited in the disposal of solid waste, wastewater and excreta, cleaning of drainage including personal, household and community hygiene significantly contribute to infant and child mortality [27]; [28]; [29], [20], [30]. This is contrary to the notion of environmental sanitation which aims at developing and maintaining a clean, safe and pleasant physical environment in all human settlements (IRC, 2006; Federal Republic of Nigeria, FRN, 2015). The environmental management activities are influenced by various factors [14], [8]; [31]; [32]. These include social, economic and demographic attributes, such as age, income, gender, education, household structure; situational conditions. Others include level of information, religious participation, enabling law and place of residence. This study focused on

demographic attributes such as location and level of education. This is because location and level of education have great impact on the environmental sanitation cognition and activities of residents [32]. Location is the area where a resident lives. [33], further stated that location of the residents has positive or negative effect on the residents' environmental sanitation cognition and activities. This is because the location makes every resident to hold a different experience and knowledge of environmental sanitation [32]. Location means urban and rural areas. Urban areas are those places located at satellite towns. They are situated at the major cities of a particular state while rural areas are areas located in the villages or semi-villages. Findings from [34] indicated that residents in urban areas had better knowledge than their counterparts in the rural areas while findings from [35], revealed that there was no difference in the amount of knowledge possessed by urban and rural residents as a result of ICT. Hence, the study appraised the environmental sanitation cognitions and activities for healthy living among residents of Enugu state based on location. Enugu State is a state in southeastern Nigeria, created in 1991 from the old Anambra State. Its capital and largest city is Enugu. The principal cities in the state are Enugu, Ohum, Ezeagu, Ngwo, Nsukka, Agbani, Awgu, Aninri and Udi. Enugu state has 17 local government areas which are grouped into two major areas; the urban area and the rural area. The urban area of Enugu state contains the Enugu East, Enugu North, Enugu South and Nsukka LGAs while the other local government areas are the rural areas of Enugu state. [35], revealed that Enugu state is also known to be a state that is filled with residents with various forms of education, both the illiterate and the literate scattered around urban and the rural areas of Enugu state. [36], revealed that the educational status of a resident affects the residents' environmental activities. [37], further revealed that residents with high educational status embarked on better environmental sanitation activities. [18], revealed that indiscriminate waste disposal is a common attribute of residents with informal level of Education.

Hence, the study appraised the educational status of Enugu residents on the environmental sanitation activities since none of the scholars conducted their studies in Enugu state. Also, Enugu State is one of the states in Nigeria with a very high rate of expanding urbanization [38]. Urbanization is the driving force for modernization, economic growth and development. There is increasing concern about the effects of expanding cities, principally on human health, livelihoods and the environment [31]. The rapid urbanization process of Enugu has consequences such as overcrowded dwellings, informal settlements, pollution, inadequate household facilities and carefree attitude of people toward poor environmental conditions which have been the precondition for deteriorating environment [39].

Waste management in Enugu city is becoming an increasing problem daily and a complex task. The Enugu State Waste Management Agency (ESWAMA) was established in 2007 to develop and

#### **Statement of the Problem**

Environmental sanitation has in recent times become one of the issues of concern to society, especially in the wake of the threats posed by cholera and malaria. Countries with increasing population density are mostly on the spotlight due to the attendant increase in human generated wastes. When not properly managed, such wastes end up not just constituting environmental nuisance, but pose serious health threat to human and animals. Enugu State is, no doubt, one of the fastest developing states in south east of Nigeria, and as such, has witnessed significant population growth over the years. The implication of this phenomenon includes

implement policies on the management of solid and liquid wastes that would promote the health and wellbeing of the people [40]. To this end, ESWAMA has the responsibility to ensure effective and efficient collection, removal, treatment and disposal of all kinds of wastes [40]. It also has the mandate to check the illegal dumping of refuse at roadsides, enclosures, streams in neighborhoods and in drains. The agency is further empowered to prosecute defaulters of sanitation laws, while providing waste management facilities. The level of cognition and activities of residents of the state will not only determine the success or failure of this government agency, but also the health conditions of the residents of the state, especially in this era of growing health concerns such as Lassa fever and Cholera outbreak. This study is therefore, poised to ascertain the environmental sanitation activities for healthy living among residents of Enugu State.

an increase in human activities which have sanitary consequences on the environment. Despite the efforts and programmes of government and private stakeholders towards ensuring a clean environment, complementary actions of citizens are needed to ensure environmental sanitation. The extent to which this will be positively achieved is dependent on the level of cognition and activities of the people residing within the state. In line with aforesaid, the problem of this study, put in a question form: what is the environmental sanitation activities among residents of Enugu State?

#### **Research Questions**

The following research questions were formulated to guide the study:

1. What are the environmental sanitation activities of respondents who are resident in urban and rural areas of Enugu State?

2. What are the environmental sanitation activities of Enugu State residents based on educational status?

#### **Research Hypotheses**

The following null hypotheses were tested at 0.05 level of significance.

Ho<sub>1</sub>. There is no significant difference in the environmental sanitation

activities of urban and rural residents of Enugu State, Nigeria.

Ho<sub>2</sub>. Residents of Enugu State do not differ significantly in their environmental

### **Methodology**

The researcher adopted a descriptive survey research design for this study. The study covered Enugu State. The population for the study comprised 4,411,100 residents in the 17 local government areas in Enugu State. This comprised of 1,575,100.00 residents in Enugu East Senatorial District, 1,660,000 in Enugu West Senatorial District and 1,176,000 in Enugu North Senatorial District (NPC, 2016). The sample for the study was 800 residents in Enugu State. The sample size was obtained using multi-stage procedure. Firstly, random sampling technique was used to select four out of the 17 L.G.As in Enugu State viz: Enugu North, Enugu South, Nkanu East and Nkanu West. The four LGAs were in both urban and rural areas. Secondly, for even representation, non-proportionate stratified random sampling procedure was used to draw ten communities from the sampled L.G.As amounting to 40 communities in both urban and rural areas. This was to accommodate L.G.As with few communities. Thirdly, in each community, 20 households were accidentally sampled for the study. Therefore, the sample size was 800 residents, comprising 400 urban and 400 rural residents. The instrument for data collection was a self-structured questionnaire titled Environmental Sanitation Activities Questionnaire (ESAQ).

The instrument was divided into two sections: A and B. Section A sought to collect demographic data of the participants while section B measured the environmental sanitation activities of the respondents. The section comprised one cluster which contained 15 which adopted four-point response options comprising Always (A), Occasionally (O), Rarely (R) and Never (N). The instrument was validated by three experts, two from the Department of Human Kinetics and Health Education and one from Measurement and Evaluation Unit of Department of Mathematics and Computer Education, all from the Faculty of Education, Enugu State University of Science and Technology, Agbani. Cronbach Alpha was used to determine the internal consistency of the instrument. The overall reliability index for the instrument was 0.69. The coefficient was considered high and indication that the instrument was reliable. The researcher with the help of three research assistants administered the instrument to the residents who were the respondents for the study. Out of the 800 instruments administered, only 767 copies were successfully filled and returned. This gave a return rate of 95.9%. The research questions were answered using mean and standard deviation, while hypotheses were tested with Analysis of Variance (ANOVA) at 0.05 level of significance.

**RESULTS**

**Research Question 1:** What are the environmental sanitation activities of respondents who are resident in urban and rural areas of Enugu State?

**Table 1:** Mean ratings and standard deviations on the environmental sanitation activities of respondents who are resident in urban and rural areas of Enugu State

**Source:** Field Survey (2022)

SN	ITEMS	Urban = 385		Rural = 382		Overall = 767		Decision
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
1	I urinate into the river	2.52	1.14	2.82	1.19	2.67	1.17	Occasionally
2	I practice open defecation	2.62	1.17	2.91	1.17	2.76	1.18	Occasionally
3	I indiscriminately drop of sachet water polythene	2.40	1.12	2.79	1.18	2.59	1.16	Occasionally
4	I practice burning of refuse	2.48	1.16	2.80	1.16	2.64	1.17	Occasionally
5	I go to toilet at the water side	2.53	1.12	2.71	1.18	2.62	1.15	Occasionally
6	I litter the environment with refuse where I live	2.50	1.10	2.76	1.19	2.63	1.16	Occasionally
7	Refuse burning is common in my environment	2.41	1.13	2.80	1.16	2.60	1.16	Occasionally
8	Wastewater is discharged into the surrounding	2.51	1.16	2.75	1.17	2.63	1.17	Occasionally
9	I store refuse in the kitchen	2.56	1.16	2.72	1.18	2.64	1.17	Occasionally
10	I store refuse for a long period before disposal due to lack of collection centre	2.50	1.13	2.76	1.18	2.63	1.16	Occasionally
11	Bushes around the environment are allowed to grow unchecked	2.44	1.11	2.70	1.18	2.57	1.16	Occasionally
12	More than 10 persons share one toilet	2.45	1.13	2.85	1.17	2.65	1.16	Occasionally
13	Excreta is disposed into the river in my neighbourhood	2.46	1.15	2.79	1.17	2.63	1.17	Occasionally
14	Children defecate in the openly in my environment	2.53	1.18	2.83	1.19	2.68	1.19	Occasionally
15	I go to toilet in the bush	2.53	1.13	2.81	1.18	2.67	1.16	Occasionally
	<b>Grand <math>\bar{x}</math> and SD</b>	<b>2.50</b>	<b>1.14</b>	<b>2.79</b>	<b>1.18</b>	<b>2.64</b>	<b>1.17</b>	<b>Occasionally</b>

The results presented on table 1 above showed that the overall mean ratings of respondents on items 1 to 15 were in the midpoint of 2.50 and 3.49 and therefore, adjudged as occasionally. The grand mean rating of urban respondents ( $\bar{x}$  = 2.50, SD =

1.14) was lower than that of their rural counterparts ( $\bar{x}$  = 2.79, SD = 1.18), indicating that rural residents practiced the listed activities more than their urban counterparts. Also, the overall grand mean rating ( $\bar{x}$  = 2.64, SD = 1.17) was also high

and adjudged as occasionally. This implied that that resident in urban and rural areas of Enugu State occasionally practice unhealthy environmental sanitation activities such as urinating into the river,

open defecation, burning of refuse, poor waste management, etc.

**Research Question 2:** What are the environmental sanitation activities of Enugu State residents based on educational status?

**Table 2:** Mean ratings and standard deviations on the environmental sanitation activities of Enugu State residents based on educational status

SN	ITEMS	Urban = 385		Rural = 382		Overall = 767		Decision
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	
	<b>Environmental sanitation activities are as follows:</b>							
1	I urinate into the river	2.52	1.14	2.82	1.19	2.67	1.17	Occasionally
2	I practice open defecation	2.62	1.17	2.91	1.17	2.76	1.18	Occasionally
3	I Indiscriminately drop of sachet water polythene	2.40	1.12	2.79	1.18	2.59	1.16	Occasionally
4	I practice burning of refuse	2.48	1.16	2.80	1.16	2.64	1.17	Occasionally
5	I go to toilet at the water side	2.53	1.12	2.71	1.18	2.62	1.15	Occasionally
6	I litter the environment with refuse where I live	2.50	1.10	2.76	1.19	2.63	1.16	Occasionally
7	Refuse burning is common in my environment	2.41	1.13	2.80	1.16	2.60	1.16	Occasionally
8	Wastewater is discharged into the surrounding	2.51	1.16	2.75	1.17	2.63	1.17	Occasionally
9	I store refuse in the kitchen	2.56	1.16	2.72	1.18	2.64	1.17	Occasionally
10	I store refuse for a long period before disposal due to lack of collection centre	2.50	1.13	2.76	1.18	2.63	1.16	Occasionally

11	Bushes around the environment are allowed to grow unchecked	2.44	1.11	2.70	1.18	2.57	1.16	Occasionally
12	More than 10 persons share one toilet	2.45	1.13	2.85	1.17	2.65	1.16	Occasionally
13	Excreta is disposed into the river in my neighbourhood	2.46	1.15	2.79	1.17	2.63	1.17	Occasionally
14	Children defecate in the openly in my environment	2.53	1.18	2.83	1.19	2.68	1.19	Occasionally
15	I go to toilet in the bush	2.53	1.13	2.81	1.18	2.67	1.16	Occasionally
	<b>Grand <math>\bar{x}</math> and SD</b>	<b>2.50</b>	<b>1.14</b>	<b>2.79</b>	<b>1.18</b>	<b>2.64</b>	<b>1.17</b>	<b>Occasionally</b>

The results presented on table 2 above showed that respondents who attained tertiary level of education recorded the lowest grand mean rating ( $\bar{x}$  = 2.19, SD = 1.03). A higher rating was recorded by residents in the secondary school category ( $\bar{x}$  = 2.47, SD = 1.12), followed by those in the primary category ( $\bar{x}$  = 2.48, SD = 1.12). The highest rating was recorded by those with non-formal education ( $\bar{x}$  = 3.19, SD = 1.12). This implied that that the practice of unhealthy environmental sanitation activities was higher among residents with

lower educational status. In other words, the lower the educational status, the higher the practice of unhealthy environmental sanitation activities. The unhealthy environmental sanitation activities include urinating into the river, open defecation, burning of refuse, poor waste management, etc. Hypothesis 1: There is no significant difference in the environmental sanitation activities of urban and rural residents of Enugu State, Nigeria.

**Table 3:** Analysis of Variance (ANOVA) on the mean ratings of urban and rural residents of Enugu State on their environmental sanitation activities

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	16.119	1	16.119	37.204	.000	Rejected
Within Groups	331.441	765	.433			
Total	347.559	766				

The result in Table 3 above showed that the F value for the difference in mean ratings of urban and rural residents of Enugu State on their environmental sanitation activities F (1, 766) was 37.204. This was significant at 0.000 which was less than 0.05 set for the study. The null hypothesis was therefore rejected. This

means that the mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to location. **Hypothesis 2:** Residents of Enugu State do not differ significantly in their environmental sanitation activities with regard to educational status



**Table 4:** Analysis of Variance (ANOVA) on the mean ratings of residents of Enugu State on their environmental sanitation activities with regard to educational status

	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	113.498	3	37.833	123.327	.000	Rejected
Within Groups	234.062	763	.307			
Total	347.559	766				

The result in Table 4 above showed that the F value for the difference in mean ratings of residents of Enugu State on their environmental sanitation activities with regard to educational status F (1, 766) was 123.237. This was significant at 0.000 which was less than 0.05 set for the study.

The null hypothesis was therefore rejected. This means that the mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to educational status.

#### Summary of Findings

The following constitute the summary of the major findings of the study:

1. Resident in urban and rural areas of Enugu State occasionally practice unhealthy environmental sanitation activities such as urinating into the river, open defecation, burning of refuse, poor waste management, etc. The mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to location.

2. The practice of unhealthy environmental sanitation activities was higher among residents with lower educational status. In other words, the lower the educational status, the higher the practice of unhealthy environmental sanitation activities. The mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to educational status.

#### Discussion of Findings

Findings from the results of data analyses for this study discussed below:

##### Environmental sanitation activities of Enugu State residents

Results indicated that residents in urban and rural areas of Enugu State occasionally practice unhealthy environmental sanitation activities such as urinating into the river, open defecation, burning of refuse, poor waste management, etc. The mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to location. Results also showed that the practice of unhealthy environmental sanitation activities was higher among residents with lower educational status. In other words, the lower the educational status, the higher the practice of unhealthy environmental sanitation activities. The mean ratings of residents of Enugu State on their environmental sanitation activities differed significantly with regards to educational status. This finding agrees

with the report of [41] which established poor environmental sanitation practices among the residents in terms of utilization of available amenities across the residential zones. The findings also complemented the submissions of [24] and [23]. They noted that in Nigeria, adequate environmental sanitation activities have not been ensured. They are characterized by lack of basic amenities and poor sanitation habits. [42], also found that despite high awareness about environmental sanitation (95.0%) reported among the respondents, proportion of them with good knowledge about environmental sanitation (22.9%), attitude (38.6%) and practice (20.8%) towards environmental sanitation was low. The findings, on the other hand, contradicts the results of research by [43] which stated that there is a positive correlation between

level of cognition and standard of activities. Part of the factors which explain the status quo is the fact that general access to environmental sanitation facilities and services by citizens remains very poor [44]. [45], similarly added that Nigerian cities are characterized by rapid population growth which is not accompanied by a corresponding increase in the delivery of environmental sanitation facilities and services capable of enhancing environmental sanitation practices. The resultant effects of these are unsanitary and unhealthy environmental conditions that are prevalent in Nigerian urban centres. This situation was also highlighted by the report of [46] which

showed that there were poor environmental sanitation practices in schools. This is an anomaly, as a school is supposed to be an environment accommodating people with knowledge of environmental sanitation. This is especially true when considering the assertion of [47] that attitude, knowledge, and practices were found to be key determinants of waste management in secondary schools. Based on the findings of this study, it is the researcher's opinion that there is the need for promotion of strategies or interventions that influence behavioural change towards environmental sanitation especially in developing countries like Nigeria.

### CONCLUSION

This study revealed there was a high level of environmental sanitation cognition among residents of Enugu State; meanwhile poor environmental sanitation activities were practiced among them. This indicates that the environmental sanitation problem should not be attributed to knowledge, cognition or awareness, but on behaviour or attitude. It was also observed that the level of cognition and practice was higher among

urban residents and those with higher educational status, and vice versa. It can therefore be concluded that the educational status of residents of Enugu State determined their level of cognition and practice of environmental sanitation. Hence, there is the need for stakeholders to introduce and implement measures towards ensuring increased rate of education among the masses.

### Educational Implications of the Findings

The findings of this study have educational implications which include:

1. The need for increase the education at least to secondary school level. This is necessary to equip the residents with relevant general and health education necessary for their preservation of the environment.

2. The finding is a clarion call to stakeholders to embark on mass literacy campaign to enable citizens with non-formal education to acquire skills of reading, writing, and numeracy that will help them to function in their environment.

### RECOMMENDATIONS

Based on the findings, the following recommendations were proffered:

1. Regular environmental education campaigns using jingles in radios should be promoted to enlighten citizens about the importance of environmental sanitation.
2. Training and re-training of environmental health officers to effectively educate residents of the State on the implications of their environmental sanitation practices.

3. The Enugu State Waste Management Authority ESWAMA should live up to her responsibilities of ensuring a cleaner environment by strictly pursuing laid out mandates.
4. Faith-based organizations such as churches should educate their adherents and followers on the importance of cleanliness and environmental sanitation.

### LIMITATION OF THE STUDY

The researcher was faced with difficulties in distributing and collecting the

instrument from some residents. The generalization made in this study may be affected by the following limitations:

1. The respondents' biasness, emotions and personalities may have affected the study.
2. The influence of reading the instrument and interpreting the instrument by the researcher and research assistant (s) for the respondents that were not able to read and write may have affected the study.
3. Some respondents might have given false information especially some civil servants by hoarding information that may have been very useful, in order to boost their facilities, and not to be dismissed.

#### Suggestion for Further Studies

It is suggested that further research should be carried out in the following areas:-

1. Knowledge, attitude and practice of environmental sanitation among

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4. It took the researcher and the research assistants various forms of persuasions to convince some respondents to accept and fill the research instrument which may have affected the result of the study.
5. It was not easy getting the some respondents to spare their time for the conduct of this study which made the researcher and the research assistants making several trips that involved time and expenses.

Though these conditions may have affected the results of this study, they didn't invalidate the results because the researcher controlled and minimized many of the extraneous variables.

traders in major markets in Enugu State.

2. Water and sanitation hygiene knowledge, attitude practice in urban slum settings

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