

Assessment of Environmental Awareness Among Urban Slum Residents in Enugu Metropolis, Enugu State

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Abstract

Environmental pollution and hazards have contributed alarming risks to human life over many years. It calls for public attention in which Agenda 21 was rooted with emphasis on environmental awareness, formal education, and training as a process by which societies can reach their fullest potential in the prevention of such risks. Building strong mechanisms for environmental awareness can go a long way to minimize environmental challenges of the urban poor particularly in slums. Rapid urbanization growth has caused accelerating rate of urban poverty and the process of urbanization has many relationships with slum formation. Still in Nigeria, just as in other developing nations of the world, slums exist in most cities and urban centers like Enugu metropolis. The main environmental problem in the selected slum areas shows manifestations in hazardous locations; lack of basic services; substandard housing/building structures; overcrowding; unhealthy living conditions (open defecation, open sewers, uncontrolled dumping of waste), high level of criminal activities, bad roads and polluted environment. The negative impact of the slums on the environment makes it necessary to pay more attention to the analysis of human environmental behavior and its social interaction. As a result of these, residents' awareness and appreciation of their environment provides a foundation for a healthy relationship to the environment. The study centres on the evaluation of the environmental awareness among urban slum dwellers in Enugu Metropolis. A simple random sampling technique was employed to arrive at the sample size of 398 households. Physical observations and photographs were also used in collecting the data which were analyzed using the software SPSS (Statistical Package for Social Sciences). The hypothesis was tested using One-Way-ANOVA and the result shows that $p < 0.05$ level ($F(8,280) = 3.172$, $P = 0.001$). Therefore, we reject the null hypothesis and accept the alternative which signifies that there is a significant difference in the level of environmental awareness in the study area. However, media and education, both had marked effects on dissemination of environmental awareness. Improved environmental conditions with increased environmental awareness on proper waste disposal and pollution control can reduce the environmental hazards in slum residential areas in Enugu metropolis were recommended.

Keywords: *Environment, Awareness, Slum, Degradation, Pollution*

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Background to the Study

Globally, countries have expressed the urgent need to protect the environment so as to sustain the quality of life. In line with this, salient environmental issues have been discussed in different forms at the national and international levels in form of Reports, Conferences, Seminars, Workshops, Campaign and, Organizations. They all argued about safeguarding and prohibiting human activities that are detrimental to the environment (Kushwaha, 2015). These comprise World Symposium sponsored by United Nations in 1986. The 1972 report of UN World Conference on the Environment in Stockholm and the 1992 Earth Summit held in Rio de Janeiro. Other activities and events, spearheaded by International nongovernmental forums demonstrate that environment is an issue of concern amongst International Community (Toili, 2007). The need to protect our environment is pertinent. The 1992 UN Symposium on the Human Environment “Stockholm Conference” in particular came up with AGENDA 21 where approaches for improving the quality of the environment was outlined. The project report highlighted the necessity for environmental awareness as an instrument that may possibly be adopted by all countries of the world to stimulate public consciousness, confidently change their approaches and expertise that can stimulate effective management of the environment.

Environmental awareness as the capacity of an individual to comprehend the prevailing link between the present status of environmental quality; human activities; and his/her readiness to partake in environmental events (Yi et al., 2018). Ever since extant environmental challenges ensue essentially from lack of knowledge and diverse trend of persistent abuse of natural resources, this could nonetheless, be solved by promoting environmental consciousness amongst individuals on how human activities such as inappropriate waste disposal: industrial effluents, untreated domestic sewage, agricultural waste into water ways, carbon emission from auto mobiles, generating sets, burning of tires, carbon monoxide escapes into the air and brings down acid rain upon the fruits and vegetables we consume, affects human and the environment (Liu et al., 2016). Environmental awareness helps in developing environmentally literate citizenry. It equally transmits to public acknowledgement of environmental matters as well as ideals and the consequences they have relative to socio-economic concerns (Talero, 2004). It also comprises communication for connecting to different audiences, developing messages and/ or producing the proper resources and media to reach these audiences. The electronic and print media are the main medium of disseminating these statistics concerning the environment among the populace—enlightening them about environmental issues and means to solve the problems. Discussions, talk shows and news on radio and television are progressively concentrating on environmental subjects of today (Sinha, 2015). Poverty is a cause as well as consequence of environmental degradation and the study remarked that the high level of poverty and illiteracy in Africa is directly linked to the current level of environmental pollution and degradation in the continent. Omole (2010) pointed out that urbanization being one of the environmental challenges is caused by high population growth rate and rural-urban migration and the process of urbanization has many relationships with slum or shantytown formation. The study revealed that the rapid rate of urbanization witnessed in the last century has produced more slums in the major cities of the world, particularly in developing countries like Nigeria, where thousands of rural people

move into the major cities at large proportion. The development of slums is a common phenomenon in major cities in Nigeria as observed by Ajanlekoko (2001).

Statement of Problems

The rise of the urban poor and the problems of their residential areas (slums) especially in the study area include:

1. Destruction of urban landscape and the aesthetic value of the study area.
2. Indiscriminant dumping of refuse with the resultant environmental degradations.
3. Incessant water logging and soil depletion.
4. Incidence of diseases such as cholera, skin infection.
5. Overcrowding of activities in the study area.
6. Lack of basic infrastructural facilities.
7. Development of shanties and squatter settlements.
8. Lack of environmental awareness towards slum improvement. For further environmental related problems in the study area, see Plate 1, 2, 3, 4 and 5 respectively.



Plate 1: An Area view of Jamboree Coal Camp (Agric Quarters) Near Enugu Metropolis (2018)



Plate 2: An Overview of Bunker near Iva-Valley in Enugu Metropolis (2018).



Plate 3: An Area view of Ugwu-agor near Abakpa-nike, Enugu Metropolis (2018).



Plate 4: An Area view of Ugwu-Aaron near old GRA site in Enugu Metropolis (2018).



Plate 5: A Street in Agu-owa near CBN quarters in Enugu Metropolis (2018).

Aim and Objectives of the Study

The aim of the study is to assess the level of environmental awareness among urban slum residents in Enugu metropolis. To address the above aim, the following objectives are put forward;

1. To examine the nature of physical environment within the urban slums in Enugu metropolis.
2. To examine the level of environmental awareness among the residents of urban slums in Enugu metropolis.
3. To identify the factors which determine the level of residents' environmental awareness amongst the slums in Enugu metropolis.
4. To determine the extent to which modern mass media and education contribute in disseminating environmental awareness.
5. To proffer proactive measures based on the outcome from the finding.

Research Questions

In order to address the problems of this study, the following research questions were formulated:

1. What is the nature of physical environment within the slum residents in Enugu?
2. What is the level of environmental awareness among slum dwellers in Enugu?
3. What are the factors that determine the level of environmental awareness amongst the slum residents in Enugu Metropolis?
4. To what extent does the modern mass media and education contribute in disseminating environmental awareness?

Research Hypothesis

The following Hypothesis was put forward for the purpose of achieving the objectives of the study;

- H₀:** There is no significant difference in the level of environmental awareness amongst the residents of urban slums in the study.
- H₁:** There is significant difference in the level of environmental awareness amongst the residents of urban slums in the study

Literature Review

Environmental issues are key global problems of concern in recent decades. As a result of the growth in human population and development in various sector which leads to slum formation, environment allied issues are proliferating in the contemporary times. With a multiplicity of problems, concentrating on the ultimate need for alternative sustainable technologies to safeguard our mother nature becomes imperative. Human desire for up-to-date technologies and changing life style patterns tends to be a serious menace to the environment as pollution levels are progressively increasing day-after-day. To achieve sustainable and unbiased development, it is noteworthy to adopt strategies and programmes that support effectual use of resources and technologies that illustrates the way to reduce environmental harms (Anbalagan and Shanthi, 2015). Environmental consciousness, education and perception play an important role in the management and reduction of pollution. The degree of flexibility and responsiveness in protecting the environment from noxious waste depends upon the level to which the people comprehend and appreciate the worth of the environment for their wellbeing and contentment (Kumar and Malaviya, 2015). According to Ali and Sinha (2013), environmental awareness means to create general knowledge regarding environmental issues and their causes by making changes in human approaches, values and needed skills to resolve environmental problems. Many environmental challenges and their impacts are the result of lack of knowledge. Hence, there is a need to raise public aware on environmental issues, their impacts, and actions that can address these environmental issues. Pacion (2001), observed that slums are global problems caused by exponential growth of population, which eventually forces a number of individuals into very unsustainable living conditions. The conditions of shantytowns and its dwelling exist partly because of economic isolation, colonial exploitation, political chaos, sectarian violence, mention but a few other different devastating conditions. Urban shantytowns were developing more rapidly than anticipated, and that the balance of poverty worldwide is shifting swiftly from country side to the large cities propelling the emergence of squalor settlements.

Concept of Environment

Environment can be defined as “surroundings in which an organization operates, including air, water, land, natural resources, flora, and fauna, human and inter relation”. The natural environment consists of four interlinking systems which are: the biosphere, hydrosphere, atmosphere, and lithosphere. These four systems are in continuous change and such changes are affected by human activities. The environment serves as: source of all raw materials (such as oxygen, carbon, hydrogen, phosphorous, calcium among others; source of all energy; receiving and reprocessing plant for all wastes and buffer from harsh conditions. Environment is an external force which influences us. Environment embraces the conditions and influences under which any living thing or organism exists, lives or develops. All these may perhaps be placed into three divisions such as; the set of physical conditions affecting and influencing the growth and development of an individual and community; the surroundings of an inanimate object of intrinsic social value. Environmental awareness is the process by which humans absorb, understand, store, and organize information in the environment. It does not simply involve in various elements in the environment, but also involves in affairs, emotional

attributes, and symbolic meanings in the environment. For this reason, environmental awareness is affected by individual qualities, perceived environment and experience.

Environmental Degradation

As one lives in the environment, one equally makes use of the resources in the environment such as air, land, water and minerals to meet one's needs. In the quest of one meeting the ever-growing needs. However, one exerts pressure on the environment. Once the pressure goes beyond the carrying capacity of the environment, to overhaul or replace itself, it creates a severe environmental problem. However, if environmental resources are used beyond its limit of replacement, one may perhaps lose it forever. Consequently, the need to create awareness about environmental protection becomes imperative. Despite the fact that at the national and international level efforts are being made to safeguard the environment, it is equally the duty of every individual to exploit the environmental resources with care and safeguard them from degradation. Growth and the fast development in science and technology are the two key factors in reducing the quality of environment and causing its degradation (Akinwumi et al., 2001).

Concept of Slums

The concept of slums differs from nation to nation dependent upon the socio-economic conditions of society or local perception. The basic characteristics of slums or shanty towns are scarcity of safe drinking water, dilapidated housing structures, acute over-crowding, absence of toilet facilities, non-availability of basic physical social services, faulty alignment of streets, insufficient lighting, water logging during rains and poor ventilation. The living conditions in shanty towns are generally unsanitary and contrary to all norms of planned urban growth and are an important factor in fast-tracking transmission of numerous air and water borne infection.

Concept of Environmental Concern

Environmental concern has been conceptualized as involving of behavioural and cognitive dimensions. The behavioural aspect embraces person's direct participation in actions aimed at benefiting the environment. Stern (2000) termed these 'Environmentally Significant Behaviour (ESB)'. The term 'Environmental Supportive Behaviour' (ESB) is referred to behaviours that are undertaken as a manifestation of one's pro-environmental morals and beliefs. The cognitive dimension of environmental concern includes: basic values, environmental world views and attitudes. As such, the cognitive elements provide an indication of the propensity to act to benefit the environment or support environmental protection policies and initiatives.

Methodology

Both secondary and primary data were sorted. The Taro Yamene's formula was applied to the selected urban slums in Enugu metropolis using the 2015 National Population Commission population figures which was projected to 2018 in order to arrive at the sample sizes of the selected urban slum areas studied. For further details see table 1.1 below. The simple random techniques were selected to select the number of households (398) studied. Data collected

were collated and presented in form of charts, percentages, pie charts etc while the formulated hypothesis was tested using One-Way-Analysis of Variance (ANOVA).

The Study Area

This chapter presents the basic characteristic of the study area. It describes the geographical location, historical background, physical features, human characteristics, and Economy of Enugu metropolis. The area of study is some selected slums in Enugu metropolis. Enugu is the capital of Enugu state in Nigeria. Enugu metropolis comprises of Enugu East Local Government Area, Enugu North Local Government and Enugu South Local Government Area.



Fig. 1: Maps of Nigeria showing Enugu State

Geographical Location

Enugu is geographically located in the southeastern part of Nigeria. The city is situated on a hill as indicated by its name meaning '*Hill Top*' in Igbo Language. Enugu urban is bounded by Enugu North local Government Area to the North, Nkanu West Local Government Area to the South, Udi Local Area to the West and Nkanu Last Local Government Area to the East (Odoh and Iyi, 2009). Aria, Idaw, Ekulu, Ogbete, Nyaba and Asata Rivers respectively are six (6) rivers located in the city and have all had layouts in their locations named after them. Ekulu River is the largest body of water in Enugu Urban, and its reservoir contributes to the part city's domestic water supply (Iyi, 2007). Enugu is situated at an elevation of about 232.6 meters above sea level and is actually located at the escarpment and not a hill (Udo, 1970). This city is also situated in the Cross River Basin and Benue Trough stretches from Enugu to Orlu and has been ravaged by soil and gully erosion (Egboka, 1985). Enugu Urban covers an area of 145.8sqkm (Ugwuoke, 2010).



Fig.2: Maps of Enugu State showing Local Government Area

Source: Department of Urban and Regional Planning, University of Nigeria, Enugu Campus (2018)

Enugu Metropolis

Enugu metropolis lies within the geographical coordinates of $6^{\circ}27'9.60''N$ and $7^{\circ}30'37.20''E$. It is a cosmopolitan city situated in South-Eastern Nigeria. The total area of Enugu is 215sq mi ($556km^2$) and an elevation of 590ft (180m). Enugu Urban is bounded by Enugu North Local Government Area to the North, Nkanu West Local Government Area to the South, Udi Local Government Area to the West and Nkanu West Local Government Area to the East.



Fig. 3: Map of Enugu Metropolis showing the Study Area (Urban Slums)

Source: Department of Urban and Regional Planning, University of Nigeria, Enugu Campus (2018)

The study also shows the imagery of the selected slum areas within Enugu metropolis in fig 4.

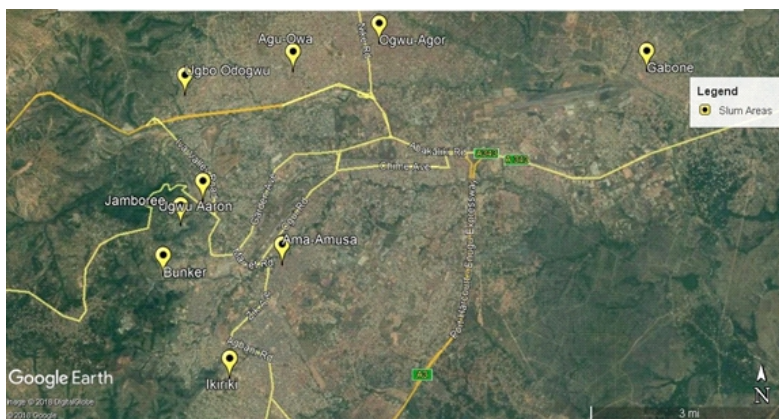


Fig 4: An Imagery showing the location of Slum Areas in Enugu Metropolis

Source: Department of Urban and Regional Planning, University of Nigeria, Enugu Campus (2018)

Physical Features

1. **Climate:** Enugu is situated in a Tropical Rain Forest Region with a derived Savannah. The city is characterized by a tropical climate. Its humidity is usually highest between the months of March and November. The mean daily temperature is 26.7°C (80.1°F). The city experiences wet and dry season. It also experiences harmattan, a dusty trade wind lasting a few weeks in the months of December and January.
2. **Soil:** The soil type of Enugu is classified among the hydro - morphic mineral bearing soil of Asata-Nkporo Shale deposits. This is characterized by reddish brown laterite soil sparsely dotted with iron stones. This type of soil is of high load bearing capacity and is not prone to erosion expected in sloppy area.
3. **Population:** The population history of Enugu city shows that there have been a steady increase of people in the city with the population census of 1991 recording a population of 464,514 people, 2006 census also showing an increase to 717,291 people and the most recent population census report recording an increase to 952,411 (NPC, 2006).

Urban Slum in Enugu Metropolis

The urban slums are the primary focus area for this study. Over the year a number of slums have emerged in Enugu metropolis. The identified urban slums in Enugu Metropolis include; Agu-owa near CBN quarter; Ama-Hausa near Obiagu in Asata; Ikiriki near Achara Layout; Gabone near Emenite Emene, while the Urban peripheral slums include; Bunker near old UNTH site, Jamboree near Agric quarters Coal camp; Ugwu-Agor near Abakpa-Nike; Ugwu-Aaron near old GRA; Ugbo-Odogwu near Phase 6 (Trans-Ekulu) all in Enugu Metropolis.

Data Analysis and Presentation

The presentation and interpretation of data were based on questionnaires administered to the respondents living in the selected urban slums, which constitute our study area. The data is presented in the form of tables, bar charts and pie charts as the case may be. A total of 398 questionnaires were distributed randomly to the selected urban slums in Enugu metropolis out of which 395 questionnaires were returned valid while the rest were either not returned or were not properly filled. The questionnaire is made up of five sections, namely sections A, B, C, D, and E, in line with the research objectives.

Demographic Characteristics

Gender

There is the need to know the proportion of males and females in the study area. Table below shows the distribution of male and female respondents amongst the residents of the study area. It was observed that 53% respondents were male whereas 47% respondents were females. Bunker had the largest male respondents with 21.9% of male respondents across the study area whereas Ugwu-Agor had the largest female respondents of 21.1% of the female population in the study area.

Table 1: Gender of Respondents in the Study Area

Questions	Residents									Total
	Ama Hausa	Agu-Owa	Bunker	Gabone	Ikirike	Jamboree	Ugbo-Odogwu	Ugwu Aarone	Ugwu Agor	
Gender of the Respondents										
Male	9.0%	12.9%	21.9%	17.1%	7.6%	5.7%	3.3%	6.2%	16.2%	53%
Female	6.5%	14.1%	11.4%	14.1%	5.5%	7.0%	9.7%	10.8%	21.1%	47%
TOTAL	7.8%	13.4%	17%	15.7%	6.6%	6.3%	6.3%	8.3%	18.5%	99.2%

Age

The age distribution of respondents in the study area would give a clearer understanding and acceptance of the outcome of the study. For instance, if the response or perception comes from people who are of age to understand the happenings in their environment, their responses would be taken seriously. Table 2 shows the age distribution of respondents. It is shown from the table that age group 20-24 had the largest number of respondents representing 38.9% of the total population. Bunker with 30.7% had the largest respondents from age group 20-24 of respondents in the whole of the population in the study area. However, a sizeable number of respondents fell between 20-44years indicating that the respondents can give workable responses to the questionnaires.

Table 2: Age Distribution of Respondents in the Study Area

Questions	Residents									Total
	Ama Hausa	Agu-Owa	Bunker	Gabone	Ikirike	Jamboree	Ugbo-Odogwu	Ugwu Aarone	Ugwu Agor	
Age Distribution of Respondents										
15-19	7.0%	18.6%	18.6%	9.3%	11.6%	2.3%	7.0%	11.6%	14.0%	10.9%
20-24	4.6%	7.2%	30.7%	19.0%	2.0%	8.5%	5.2%	3.3%	19.6%	38.9%
25-29	10.3%	17.2%	1.7%	12.1%	5.2%	8.6%	6.9%	12.1%	25.9%	14.7%
30-34	19.0%	19.0%	14.3%	0.0%	0.0%	4.8%	7.1%	11.9%	23.8%	10.6%
35-39	11.5%	15.4%	0.0%	11.5%	26.9%	7.7%	7.7%	19.2%	0.0%	6.6%
40-44	6.2%	22.9%	8.3%	18.8%	12.5%	2.1%	8.3%	4.2%	16.7%	12.2%
45-49	0.0%	0.0%	16.7%	50.0%	0.0%	0.0%	16.7%	16.7%	0.0%	1.5%
50-54	0.0%	0.0%	0.0%	77.8%	0.0%	0.0%	0.0%	22.2%	0.0%	2.3%
55-59	16.7%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	1.5%
60-64	0.0%	0.0%	0.0%	0.0%	50.0%	25.0%	0.0%	25.0%	0.0%	1.0%
TOTAL	7.8%	13.4%	16.9%	15.7%	6.6%	6.3%	6.3%	8.3%	18.5%	100%

Marital Status

The respondents were required to react to their marital status. Table 3 shows the distribution of marital status in the study area. Respondents who were single were the largest of all other groups for marital status. The total numbers of residents who are single are 63.6% of the total respondents. Bunker with 21.1% respondents had the largest number in the study area. However, majority of the respondents were either married or single and had a cumulative percentage of 96.8%.

Table 3: Marital Status Frequency and Percentage Distribution

Questions	Residents									TOTAL
	Ama Hausa	Agu-Owa	Bunker	Gabone	Ikirike	Jamboree	Ugbo-Odogwu	Ugwu Aarone	Ugwu Agor	
Marital Status of Respondents										
Single	8.4%	10.8%	21.1%	15.5%	5.2%	6.8%	7.2%	6.0%	19.0%	63.6%
Married	6.9%	18.3%	9.2%	17.6%	7.6%	5.3%	5.3%	13.7%	16.0%	33.2%
Separated	0.0%	0.0%	12.5%	0.0%	37.5%	0.0%	0.0%	0.0%	50.0%	2.0%
Divorced	0.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Widowed	25.0%	25.0%	25.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	1.0%
TOTAL	7.8%	13.4%	17%	15.7%	6.6%	6.3%	6.3%	8.3%	18.5%	100%

Educational Qualification

Awareness is a function of the level of education one has. Table 4 shows the distribution of respondents by their educational qualification. Educational status of the slum dwellers is not so high. Most of the elderly people are illiterates. The table 4 shows the distribution of the level of education amongst respondents in the study area. The study area was mostly constituted by undergraduates which were 41.2% respondents. Ugwu-Agor with 22.2% of respondents, who are undergraduates, had the largest number of undergraduates; whereas 2.5% had no formal education from total population from the study area and 40% of respondents from Ugwu-Agor had no formal education in the study area.

Table 4: Educational Qualification Frequency and Percentage Distribution

Questions	Residents									Total
	Ama Hausa	Agu-Owa	Bunker	Gabone	Ikirike	Jamboree	Ugbo-Odogwu	Ugwu Aarone	Ugwu Agor	
Level of Education										
Primary	0.0%	22.2%	5.6%	0.0%	38.9%	0.0%	0.0%	0.0%	33.3%	4.5%
Secondary	5.7%	14.9%	19.5%	14.9%	10.3%	9.2%	9.2%	9.2%	6.9%	22.0%
Technical/Vocational	15.0%	10.0%	10.0%	5.0%	15.0%	15.0%	0.0%	10.0%	20.0%	5.0%
College (NCE/TTC)	0.0%	20.5%	0.0%	10.3%	5.1%	5.1%	15.4%	15.4%	28.2%	9.8%
Undergraduate	16.2%	18.0%	24.7%	20.4%	3.1%	4.9%	5.6%	4.9%	22.2%	41.0%
Postgraduate	20.3%	18.6%	10.2%	18.6%	0.0%	5.1%	3.4%	13.6%	10.2%	14.9%
No Formal Education	10.0%	20.0%	10.0%	0.0%	0.0%	10.0%	0.0%	10.0%	40.0%	2.5%
TOTAL	7.8%	13.4%	17%	15.7%	6.6%	6.3%	6.3%	8.4%	18.5%	100%

Nature of Physical Environment

Nature of Physical Environment Affects Behaviour Towards Environment

The respondents were asked if they concur that the nature of their physical environments affects their behavior towards their environment. Table 5 shows the resident's perception about nature of environment affecting behavior in the study area. From the Table 5, 43.4% of all respondents in the study area strongly agree that the nature of their physical environment affect their behavior towards the environment while 22.2% of the respondents that strongly agree are from Bunker.

Table 5: Nature of physical environments affects behavior towards environment

Nature of environment affects behavior	Residents									TOTAL
	Ama Hausa	Agu-Owa	Bunker	Gabone	Ikirike	Jamboree	Ugbo-Odogwu	Ugwu Aarone	Ugwu Agor	
Strongly Agree	9.9%	9.9%	22.2%	19.3%	7.0%	9.4%	4.1%	6.4%	11.7%	43.3%
Agree	8.0%	15.3%	15.3%	11.3%	3.3%	4.7%	9.3%	10.7%	22.0%	37.9%
Undecided	0.0%	16.7%	0.0%	16.7%	50.0%	0.0%	0.0%	16.7%	0.0%	3.0%
Disagree	3.8%	13.2%	9.4%	17.0%	5.7%	1.9%	7.5%	7.5%	34.0%	13.4%
Strongly Disagree	0.0%	44.4%	11.1%	11.1%	0.0%	11.1%	0.0%	0.0%	22.2%	2.3%
TOTAL	7.8%	13.4%	17%	15.7%	6.6%	6.3%	6.3%	8.3%	18.4%	100%

Test of Hypotheses

H₀: There is no significant difference in the level of environmental awareness amongst the residents of urban slums in the study.

A one-way ANOVA was conducted to compare level of environmental awareness amongst the residents of the urban slums in the study area. Section C of the Questionnaire was used to run the analysis. The result is presented in table 6.

Table 6: ANOVA Table Showing Result for Testing the First Hypothesis

		ANOVA				
		Sum of Squares	Df	Mean Square	F	Sig.
Concern for the Environment	Between Groups	44.602	8	5.575	3.284	.001
	Within Groups	475.336	280	1.698		
	Total	519.938	288			
Rate of Motivation to protect the Environment	Between Groups	49.778	8	6.222	5.979	.000
	Within Groups	291.405	280	1.041		
	Total	341.183	288			
Frequency of using Reusable bags	Between Groups	26.516	8	3.315	4.910	.000
	Within Groups	189.027	280	.675		
	Total	215.543	288			
Participation in Environmental Protection Functions	Between Groups	5.674	8	.709	2.355	.018
	Within Groups	84.319	280	.301		
	Total	89.993	288			
No participation	Between Groups	27.068	8	3.383	2.818	.005
	Within Groups	336.213	280	1.201		
	Total	363.280	288			
Devoting Free Time to Environmental Protection Activities	Between Groups	34.115	8	4.264	3.452	.001
	Within Groups	345.892	280	1.235		
	Total	380.007	288			

From the One-Way ANOVA table 6 shown above, the following deductions can be made: there was a significant difference on concern for the environment in the study area at $p < 0.05$ level [$F(8,280) = 3.284, P = 0.001$]. Therefore, we reject the null hypothesis. On the rate of motivation to protect the environment, there was a significant difference in the study area at the $p < 0.05$ [$F(8,280) = 5.979, P = 0.000$]. Therefore, we reject the null hypothesis. It was found that there was a significant difference on the frequency of using reusable bags in the study area at the $p < 0.05$ level [$F(8,280) = 4.910, P = 0.000$]. Therefore, we reject the null hypothesis. On the participation in environmental protection functions, it was found that there was a significant difference at the $p < 0.05$ level [$F(8,280) = 2.355, P = 0.018$]. Therefore, we reject the null hypothesis. It also shows that among some residents some persons had not participated in the awareness activities. The test shows a significant difference on this variable at the $p < 0.05$ level [$F(8,280) = 2.818, P = 0.005$]. Therefore, we reject the null hypothesis. On devoting free time to environmental protection activities, it was shown from the analysis that there was a significant difference in devoting time to environmental protection activities in the study area at the $p < 0.05$ level [$F(8,280) = 3.452, P = 0.001$]. Therefore, we reject the null hypothesis.

Discussion of Findings

The study made the following findings under each of the objectives of the study;

1. **Nature of Physical Environment:** The study revealed that residents of the selected slums areas agreed that the nature of their physical environment affect their behavior towards the environment. For instance, the resident's thought about the causes of poor environmental conditions in the study area. 32.1% respondents agreed that all the mentioned parameters namely lack of basic services (e.g. water, toilet facilities), unhealthy living conditions, overcrowding and high density are the main cause of poor environmental conditions in the study areas. Ugwu-Agor had 23.6% respondents who are of the opinion that all the mentioned parameters lack of basic services (e.g. water) unhealthy living conditions, overcrowding and high density are the main cause of poor environmental conditions in the study areas. However, the quality of human life depends to a large extent upon the quality of the condition of the environment (Kumer and Malaviya, 2015).
2. **Level of Environmental Awareness:** The overall basic environmental awareness about various environmental issues was moderate among the slum dwellers denoting that they had adequate level of basic environmental awareness. There was no significant difference between the basic environmental awareness score of male and female respondents, although the average level of environmental awareness score of males (53%) respondents was slightly higher than females (47%) respondents. The results show that the level of environmental awareness of the respondents varies in the pool, but most of them declare that they are aware of their responsibility for the environment in which they live. A significant increase in the level of basic environmental awareness was observed with rise in the level of education. When the basic environmental awareness of different age groups was compared it was found that the younger age group showed more awareness than the other groups and 41.2% are mostly undergraduates. The study also revealed that the level of environmental awareness differed from one slum area to the other and from one environmental problem to another. It was found out that 7.8% respondents from Ama-Hausa

(Obiagu) in Asata in Enugu metropolis had the lowest concern for the environment and the current and emergent environmental concepts and problems. Though proper new radio, television and other media, common man has been stimulated to be environmental conscious (Sinha, 2015).

3. **Factors that Determine the Level of Environmental Awareness:** The third objective of this study was to find out the factors that determine the level of environmental awareness among the residents. Some factors were discussed such as education, poverty, level of income, access to media, social status and environmental sanitation. For instance, respondents were asked whether they agree that poverty contributes to environmental degradation. From the responses obtained from the study, it was noted that the majority of the respondents shows resident's perception about poverty contributing to environmental degradation in the study area. 46.7% respondents strongly agree that poverty contributes to environmental degradation. Bunker with 22.7% respondents strongly agree that poverty contributes to environmental degradation. Education must be critical for promoting environmental awareness protection, conservation and improving the capacity of people to positive environmental management necessary for the development of knowledge, understanding, skills, attitudes, values, and commitment in the attainment of a better quality of environment and higher quality of life.
4. **The extent to which modern mass media contributes in disseminating environmental awareness:** The last part of the objectives is to acquire the extent to which mass media contributes in promoting environmental awareness. The first question is regarding sources of knowledge of environmental awareness. Table shows resident's response about the source of knowledge on the state and protection of environment. A total number of 49.0% of the respondents in the study area said they get knowledge about the state and protection of the environment from the media as stimulated in (Sinha, 2015). Ugwu-Agor had 21.8% of residents who said they get knowledge about the environmental awareness through media. Analysis found that media was the main source of knowledge on environmental issues where Enugu State Waste Management Authority (ESWAMA) plays a major role in dissemination, sensitization program and actions concerning environmental protection awareness in Enugu Metropolis. In the study area, 48.0% respondents said that the Enugu State Waste Management Authority (ESWAMA) was the source of their information. Thus, raising the awareness of a society through media is one of the strategies required for the effective realization of environmental awareness objectives and goals. Media's efforts to sensitize the public about environmental issues and its continuing central role in the struggle against environmental problems are indispensable.

Recommendation

The awareness on environmental condition and problems are necessary to render environmental actions. One of the best ways of preserving the environment is through environmental education and creating awareness among society, especially the youths as they are the future leaders. Environmental awareness leads to the achievement of environmental knowledge on environmental issues, environmental awareness guarantee motivation on

people to adopt new behaviour on the current environmental issues in a wider perspective towards the environment.

Based on the findings of this study, the following recommendations are made:

Classroom Education: Educating children and young adults about environmental problems are crucial for long-term success. This will help them foster a sense of responsibility and “proactive citizenship”. So that when they become adults, they will make choices that help the environment rather than harm it. Many schools do not currently teach their pupils/students about environmental education into current science classes or teaching environmental science as a separate discipline is one of the best ways to educate children and teens about environmental problems. Schools should get their students in one or two of the following activities;

1. Environmental club
2. Environmental awareness campaigns/training
3. Waste management campaigns
4. Pollution control campaigns
5. Tree planting campaigns

Local Outreach: Reaching out to the people especially in those slum areas can be very difficult. Language barriers, illiteracy, and cultural differences can prevent them from learning about environmental issues, particularly in rural or tribal areas. Reaching out to tribal, religious, and community leaders can often help a government organization or non-governmental organization (NGO), educate the people on environmental issues. Community leaders can help ease communication problems and bridge the cultural divide that often stands in the way of outreach efforts.

Encouraging and Introduction of Community Participation in Waste Management (Environmental Sanitation): Enugu State Government should strengthen existing laws and regulations pertaining waste management especially in slum areas and ensure strict compliance to such laws as this would improve the control and management of waste not only in the study areas but in Enugu state. Refuse storage devices that are moderate in size and easy to handle such as polythene bags, portable plastic containers etc should be provided by ESWAMA on a constant basis. Also larger street disposal bins should be provided and at reasonable distances on each street in the study areas so that foul odor will reduced to a minimal.

Upgrading of Necessary Infrastructures: There is the need to upgrade the necessary dilapidated infrastructures within the study area i.e. drainage system clearing and reconstructing, road rehabilitation, provision of safe pipe-born water, landscaping among others, as this will really improve the environment, make it healthy and sustainable for human living.

Through the Media: The use of print, broadcast, and internet media can be a great way to increase environmental education and awareness. By working with the media, government

agencies and non-profit organizations can help spread their message, either by holding press briefings, issuing printed press releases or even setting up online databases that can be used as information centers. Information centers can be useful tools to educate both the people living in the slum areas and town about environmental concerns.

Finally, Government should get involved in planning, action, and communication of specific ideas related to environmental awareness, its logic, and how it will benefit people. It should involve short-term and long-term measures. In this regards; during the celebration of World Environmental Day activities such as planting saplings of trees; every tree cut for development projects must be replaced by planting at least 50-100saplings. Also, there should be awareness and re-orientation programmes for the population in the study areas towards a proper waste and effective environmental management. Such programmes should able to enlighten the population in the study area on the need for proper use of refuse storage devices and consequences of improper refuse disposal in indiscriminate places such as unauthorized dumping sites and on the streets, burning of waste, bush burning and, open defecation. If this is done it will improve the outlook of the environment in the study areas.

Conclusion

Urban degradation is caused principally by urbanization processes. However, most of the environmental problems in Enugu metropolis suburbs result essentially from its unplanned land uses, swampy nature of built areas, lack of accessibility and weak developmental control. Other critical problems that bother minds also include lack of open space, poor management of erosion channels, poor drainage system, substandard housing, pollution from the municipal solid wastes, and encroachment of good agricultural land. The level of environmental awareness between the slum areas does not differ significantly but will improve as they get access to media, increase in their level of income, education and social wellbeing. Their attitude towards the environment is positive and therefore need sufficient information to understand problems associated with the environment so that they can meaningfully contribute to their solutions. It may be noted that the level of environmental awareness depends on the cultural, social, political and educational context. Environmental awareness information and knowledge must be available to the people through education, awareness and literacy programmes. The urban slum residents need knowledge and skills to investigate environmental problems and be able to take informed decisions. They need to develop values, positive attitudes and commitment to keep the environment clean and healthy and use the resources in a sustainable manner for future generation.

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