

The Influence of Environmental Awareness on Human Attitude to Solid Waste Management in Boki Local Government Area of Cross River State

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Abstract

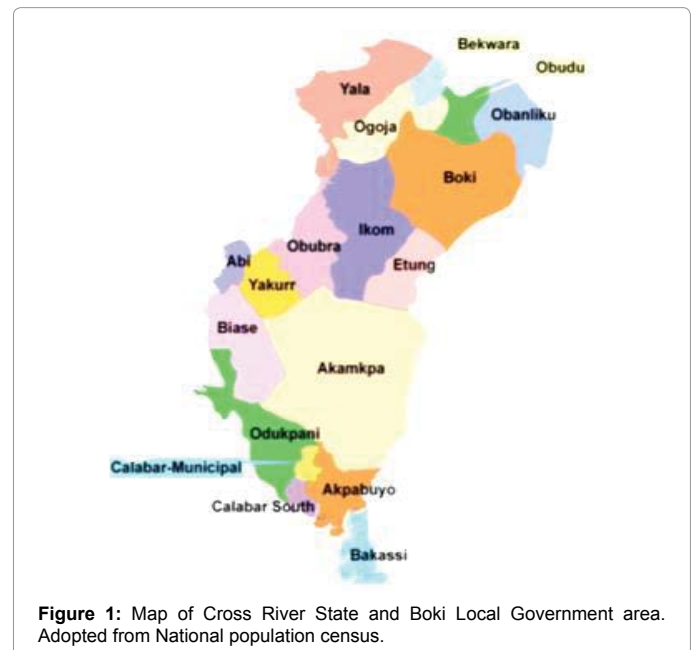
The attitude of residence on indiscriminate dumping of Solid waste in strategic location mounting to heaps of refuse and pervading dirty environments in some parts of Boki has breed concern. Human attitude towards solid waste management was investigated in locations that servers as receptacles. When refuse dumped remain un-evacuated, they constituted dirtiness and hazard. 120 questionnaires were produced for respondents. The findings, shows environmental awareness have no effect on human attitude to solid waste management. Education did not form criterion for waste management, as there was no difference in attitude towards waste control. Pearson's Moment Correlation Coefficient between Environmental Awareness and attitude Scores=120; Pearson's moment correlation coefficient between attitude and practice score. $N=120$; $p > 0.05$; $df=118$ Critical $R=1.960$. The calculated t-value of 2.33 is greater than the critical t-value of 1.980 at $p \geq 0.05$ level with 118 degree of freedom was established. Therefore, deliberate enforcement, regulation and awareness on the effect of solid waste decay to Public health are undertaken. This will help to educate the people on proper disposal and management of solid wastes.

Keywords: Solid wastes; Environmental awareness; Human attitude and management

Introduction

In recent years, anthropogenic activities have emitted various trace elements into ambient environments [1], some of such elements are the preponderant of Solid waste deposit. Solid wastes refer to non-liquid waste materials arising from domestic, trade, commercial, industrial, agriculture, mining activities, and public services. It is any movable solid object which the owner decides to dispose of [2]. Solid waste may be semi solid or semi-liquid. Wastes are disposed in dumpsites at designated land either owned by the government or private owner and in some cases in burrow pits and empty spaces unauthorized (Figure 1). She does so by evacuating the dump site using different approaches as shown in figure 2. The society perceived that it is government sole responsibility to collect and dispose solid waste. But where the evacuation of the dumpsite is delayed or left un-evacuated, the stench become toxic [3] figure 3-5. These wastes comprises of household garbage, rubbish yard waste, commercial refuse, street cleaning, dead animals, bulky waste, abandoned vehicles, hospital waste and sanitation residues or weeds. Solid waste management refers to the collection, transfer, treatment, recycling, resource recovery and disposal of solid waste generated in urban, semi-urban and rural areas. It involve vehicle maintenance repair, financial management, administrative activities to solid waste management planning [4]. The constituents of solid waste are similar throughout the world, but the proportions vary widely. Refuse heaps is a threat to beauty and aesthetic of the city, towns and villages as well as public health and safety [5] see figure 2 and 4. Environmental awareness refers to creation of mental attitude and the behavior of man towards keeping the environment clean [6, 7]. Attitude also refers to the way of feeling, learning, thinking and behavior to sustain a taught than enforced cleanliness [8]. Management is the act by which various methods or techniques could be used to control the presence of solid waste in an environment [6]. Environmental education is a process of transmitting environmental awareness to ensuring sustainable use of the environmental management [9]. Nwachukwu [10] shows that population growth with uncontrolled and unplanned urban expansion of areas compounded the problems of solid waste management. The generation of solid waste and disposal approaches along the roadside in study areas fall below acceptable standard see figure 4.

Non-biodegradable portion form the major problems in solid waste management. For example, plastic, polythene and e-waste materials constitute physical nuisance to the environment. In addition most of these non-biodegradable materials contain hazardous chemicals,



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wherein some are implicated in the etiology of many ailments peculiar to humans [11]. The biodegradable content of the solid waste disposed at major public arena such as highways in Boki are mostly food remains, yard wastes, kitchen consumables and discarded papers/cartons. These materials may not have direct chemical implications, but constitute physical environmental nuisance, harbor bacteria and other poisonous insects; rodents and reptiles figures 4 and 5. In some five decades, issue associated with environment hasn't been of serious concern to the world. But recently due to increased urbanization, climate change, environmental pollution, global warming, ground and surface water pollution, general littering habit, poor refuse disposal in urban and rural areas and management of human waste. Perhaps the need to address this problem through environmental education is imperative.



Figure 2: Government taking responsibility to evacuate wastes (Source: Field work, 2015 at Boje, Boki).



Figure 3: Government evacuating dumpsite via land fill technique (Source: field work, 2015).



Figure 4: Indiscriminate dumping of waste along the road site at Okundi, Boki (Source: field work, 2015).



Figure 5: Students on field work, surveying un-evacuated dumpsite (Source: field work, 2015).

Wastes are complex in nature depending on the sources of generation [12]. Their effect on human health varies. In a case where some ten nursing, midwifery and public health students were reported to have slumped by inhaling the stench from a dumpsite behind the hospital [13]. The human attitudes on filthy environments influence waste generation and poor disposal in some towns and villages in Boki area [14]. The potential risks to health, environment and improper disposal near waste generation site, refuse collection methods, street cleansing, disposal and inadequate environmental awareness strategies of solid waste in Boki area, inform the rationale of this research to strike a balance between human behavior to solid waste and clean environment. This study upon successful completion is expected to form a base-line information that is indispensable to researchers and environmentalist whose basic works has implication of near-term practical environmental cleanliness and benefit the Government and the people of Boki on environmental sanitation and hygiene. They will appreciate the need to properly manage solid waste in homes and farms. And government will experience reduction in waste to the public dumpsite and around the roadside.

Area where this research was carried out

Boki is one of the 18 local government areas of Cross River State. Boki is bounded on the north to Obudu, Obanliku to the north east, Ogoja bounded North West, Ikom south west and Etung south. On the East lies the Cameroon Boundary see figure 1 illustrating Cross River state map and Boki. Boki have a population of 186,611 [15]. A huge dumpsite found closer to the road site. It was discovered after a road construction company abandons their bulldozer. Usually, it is set on fire periodically to reduce the waste heap.

Methods

Statement of hypothesis

The hypothesis statement used for this study.

- Environmental awareness has no considerable effects on attitude to solid waste management.
- No relationship exists between attitude and practices of solid waste management.
- Between people with higher education qualification and people with lower education or no qualification, no significant difference exist between their attitudes to solid waste management.

Basic assumptions

The following assumptions guide this study:

- Environmental awareness campaign is carried out among the residents of Boki
- The Boki people generate and disposed solid wastes at different unauthorized points.
- The Boki environment is selected for this study to help educate indigents on the effect of indiscriminate solid waste disposal.

Research questions

The following research questions were used to guide this investigation:

- Does environmental awareness have any effect on people's attitude to solid waste management?
- What is the relationship between attitude and solid waste management practices in Boki?
- Do people with higher education qualification practice better waste management more than people with no or lower academic qualification?
- Do environmental awareness influences the practice of solid waste management among residence?

Sampling procedure

Due to the heterogeneous nature of the samples, a simple random sampling technique to selected four wards from eleven (11) political wards was adopted. In each of the four wards, thirty (30) questionnaires were issued out to be filed using random sampling technique. One hundred and twenty (120) questionnaires were administered to the respondents cutting including civil servants, students and farmers. The respondents comprise of male (72) and female (48) see table 1. The questionnaire method was used, they consist of thirty items (30) formulated. Four research questions used a four point likert scale such as Strongly Agreed (SA), Disagreed (D) and Strongly Disagreed (SD). They were score as follows: SA=4, A=3, D=2and SD=1. The questionnaire items were divided into two sections: section A consists of personal data such as sex, age, marital status, qualifications and occupations. While section B formed the body of the questions. The wards selected for the study include Abo, Alankwu, Beebo/Bumaji and Boje ward. Table 1 explains the distribution of questionnaires to respondents, and their percentages (males 72 and females 48). Table 2 showed the age difference in the distribution of questionnaires and percentages. The age range from 18 and above with corresponding frequencies. Table 3 represent the distribution of Questionnaires to respective respondents base on educational attainment and there percentages. 22% people that had no formal education, those that acquire formal education pose with GCE, FSLC, WAEC/NCE, SSCE and TC II 29%, 28% of the people possessed NCE/OND and first degree and post-graduate 21% respectively. There was no significant difference between the numbers of married and single. Table 4 illustrates questionnaires distribution based on occupation. Business group were the highest with 44 individuals and students the least with 18. The different between each occupation explain their variation.

Data collection

Data collection was done via administration of questionnaires in six political wards randomly selected comprises of business people, civil servants and students. The questionnaires were collected from the respondents upon completion and data collected for analysis.

Sex	Frequency	Percentage
Male	72	60%
Female	48	40%
Total	N = 120	100%

Table 1: Sample distribution by gender.

Age	Frequency	Percentage
18 – 23	50	42%
24-29	20	17%
30-35	15	13%
36-40	18	15%
41-45	10	8%
46 and above	7	5%
Total	N = 120	100%

Table 2: Sample distribution by age.

Qualification s	Married	Single	Total	%		
None formal	7	3	12	4	26	22%
FSLC, WAEC/NECO, SCCE, GCE & TCII	8	6	5	16	35	29%
NCE/OND & 1 st Degree	13	9	8	4	34	28%
Post-graduate	10	4	6	5	25	21%
Total	28	22	31	29	N = 120	
%	32%	18%	26%	24%		

Table 3: Sample distribution by marital status and educational qualification.

Occupation	Frequency	Percentage
Business	44	37%
Residents	35	29%
Civil servants	23	19%
Students	18	15%
Total	N=120	100%

Table 4: Sample distributed by occupation.

Data preparation

The data coding was adopted. This involved the use of simple percentage method to code for data. The total responses for each item were summed. A total score was assigned accordingly for computation. These scores were collected from each group of respondents according to selected variables summarized to aid data analysis, hypothesis and statistical instrument for the justification of the hypotheses.

Statistical analysis

The statistical methods used in this research consist of descriptive statistics of frequency count, percentage, mean and standard deviation. Other statistical methods employed included, t-test and Pearson product moment correlation Coefficient in order to determine the significant difference or relationship between human attitude to solid waste management in Boki residents and background variables, level of awareness and practices of solid waste management. Responses to the questionnaire were pooled and scored. Nominal values were assigned

to the items according to scales. The data were examined based on the formulated hypothesis.

Results

Hypothesis one

Environmental awareness has no significant effects on attitude to solid waste management. Independent Variable- Environmental awareness.

Dependent Variable–Attitude to solid waste management.

Hypothesis two: There is no relationship between attitude and the practice of solid waste management.

Independent Variable-Attitude.

Dependent Variable-Actual practice of solid waste management.

Statistical Analysis-Pearson’s Moment Correlation Coefficient.

Hypothesis three: No significant difference in the level of education and solid waste management.

Independent Variable-Level of education.

Dependent Variable-Solid waste management.

Statistical Analysis-Analysis of variance.

Analysis of data (hypothesis with comparison hypothesis)

Hypothesis one: Environmental awareness has no significant effect on attitude to solid waste management.

In table 5, the calculated R-value is 1.960 and was tested for significance by comparing critical R-value 1.960 at $p \geq 0.05$ level of significant with 118 degree of freedom. This result shows the calculated R-value is greater than the critical R-value and translates to significant. The hypothesis that environmental awareness has no significant effect on attitude to solid waste management is rejected at $p \geq 0.05$ level.

Hypothesis two (HO₂)

There was no relationship between attitude and practice to solid waste management. From table 6, the result presented shows that the calculated R-value 1.960 is greater than the critical R-value of 1.960 at $p \geq 0.05$ levels with 118 degree of freedom. Hence, the result is significance and result indicated significant relationship between attitude and practice to solid waste management. The hypothesis that there is no significant relationship between attitude and practice to solid waste management is rejected at $p \leq 0.05$ level of significant.

Hypothesis three

No significant difference in the level of education and solid waste management. From the table 7 the calculated t-value of 2.33 is greater than the critical t-value of 1.980 at $p \geq 0.05$ level with 118 degree of freedom. This implies that the level of education is significance in attitude to solid waste management. Hence, the hypothesis that no significant difference in the level of education and solid waste management is rejected.

Discussions

This research was set out to investigate the influence of environmental awareness on human attitude to solid waste management in Boki Local Government Area of Cross River State. To achieve

Variables	N	$\sum x \sum y$	$\sum^2 x \sum y^2$	$\sum x y$	R x y	t
Environmental Awareness	60	1382	215834	494237	0.82	2.26
Practice	60	3312	152724			
$P \geq 0.05$; df = 118; Crit r = 1.960						

Table 5: Pearson’s moment correlation coefficient between environmental awareness and attitude Scores = 120.

Variables	N	$\sum x \sum y$	$\sum^2 x \sum y^2$	$\sum x y$	R x y	T
Attitude	60	6584	122546	247825	0.71	2.10
Practice	60	3326	112735			
$P \geq 0.05$; df = 118 Critical R = 1.960						

Table 6: Pearson’s moment correlation coefficient between attitude and actual practice score, N = 120.

Variables	N	X	SD	Cal-t
Educational level solid waste management	60	26.69	8.16	2.33
attitude	60	22,24	8.55	
$P \leq 0.05$; df = 118 Critical R = 1.980				

Table 7: Variables of solid waste management.

success in this investigation, a field survey was embarked upon see figure 5. Respondents of varying category were engaged with typeset questionnaires. There were received for descriptive and statistical analysis using Pearson’s Moment Correlation Coefficient. According to Cross River State Environmental Sanitation Enforcement (Urban Area) [16] defines domestic waste as waste from private dwelling, residential home or from tenement forming parts of university or other educational, establishment as well as forming parts of hospital or nursing home; industrial waste means waste from tenement used wholly or mainly for the purpose of trade, business, factory or industry and includes waste from any mine, quarry and refuse garbage, and other discarded solid materials resulting from domestic, industrial, commercial and agricultural operations [17]. Environmental awareness has significant effect on attitude to solid waste management. There is a relationship between attitude and the practice of solid waste management. The significant different is on the level of education and attitude to solid waste management. Results in table 5 shows that environmental awareness has a significant effect on attitude to solid waste management; the calculated R-value is 1.960 and was tested for significance by comparing with critical R-value 1.960 at $p \geq 0.05$ level of significant with 118 degree of freedom. This result shows that the calculated R-value is greater than the critical R-value and this translate to significant. Hence, the hypothesis that environmental awareness has no significant effect on attitude to solid waste management is rejected at $p \geq 0.05$ level of significance. This finding agrees in parts with the view of Nest [18] to the extent that general awareness on environment and its associated problems among the populace may help in creating the right attitudes, motivation and commitment to adopt healthy approaches in seeking livelihood. Rim-Rukel [4], suggested that environmental education involve the raising awareness, acquiring new perceptions, valued knowledge and skills, formal or informal processes to change behavior in favor of sustainable environment. The findings in table 6 show that the calculated R-value of 1.960 is greater than the critical R-value of 1.960 at $p \geq 0.05$ level of significance with 118 degree of freedom. The result is significance and indicated significant relationship between attitude and practice of solid waste management. The hypothesis that there is no significant relationship between attitude and the practice of solid waste management is rejected at $p \leq 0.05$ level of confidence. This is in line with the view of Anijah-Obi, Nwachukwu

[14,10] where the concept of attitudinal change aim at encouraging individuals to empathize and reverse the nationwide attitude of filthy cities and care to engender environmental friendliness. Inyang-Abia et al. [19] posited that for attitudinal change to occur, more than rehearsal and practice must be done where the individuals will undertake fresh thought on environmental management. The change in attitude, usually takes the form of altering the original mental state to conform to the acceptable behavior. The education influence on human attitude and behavior is eminent. As shown in table 5, those with higher educational qualifications are more positive in their attitudes towards solid waste management than those with no education. Table 7 shows that the calculated t-value of 2.33 is greater than the critical t-value of 1.980 at $p \geq 0.05$ level of significance with 118 degree of freedom. This implies that the level of education is significance in attitude to solid waste management. Hence, the hypothesis that no significant difference in the level of education and solid waste management is rejected. It is suggests that the level of education has a role in attitude to solid waste management. This indicates that a greater number of people with qualification such as FSLC, WAEC/NECO, GCE and TC II had 29%, NCE OND and BA. B.Sc, B.ED 28%, no educational 22% and those highly educated amount to 21%. Therefore, education will help to inform people to acquire knowledge, concern and awareness for effective handling of solid waste. In that case, disposal and management of solid waste will achieve the desire regulation and control.

Conclusion

Proper management of waste would not only lead to reduction of environmental hazards, but a business venture that will encourage social entrepreneurs with the mind set of providing innovation the will proffer lasting solutions to society most pressing needs. Proper orientation to residence on the need for proper waste disposal will greatly reduce the frequent stench and air pollution.

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