

## **INFLUENCE OF ENVIRONMENTAL SANITATION ON THE HEALTH OF SECONDARY SCHOOL STUDENTS IN OBUDU LOCAL GOVERNMENT AREA, CROSS RIVER STATE, NIGERIA**

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### **Abstract**

Sanitation is a practice that allows the protection of health of the people and the environment. Environmental sanitation leads to a healthy environment and stimulates good health and productivity. This study therefore, examined “influence of environmental sanitation on the health of secondary school students in Obudu Local Government Area of Cross River State, Nigeria”. To achieve this purpose of the study, two specific objectives and research questions were raised to guide the study which was transformed into two hypotheses. Literature was reviewed in line with the variables of the study. The study design used for the study was survey research design. A total population of 7, 431 comprising of 21 public secondary schools were used for the study (Ministry of Education, Cross River State, 2016). A total sample size of 743 respondents was used obtained from 10% of the total population. The instrument used for the study was the questionnaire; which was validated by experts in Measurement and Evaluation Department, University of Calabar. Test-retest method was used to determine the reliability of the instrument with reliability coefficient ranges from 0.59 to 0.68. The data were analyzed using chi-square statistical tool. The findings of the study revealed that poor solid waste disposal significantly influence the health of secondary school students and dirty school environment significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State respectively. The study recommended that adequate efforts should be put in place towards ensuring proper handling and disposal of solid waste by the government and the school authorities.

**Keywords:** Environmental Sanitation, Health, School, Students, Waste.

### **Introduction/Background**

Sanitation is basically a hygienic cleaning of the environment in a sanitary manner or proper disposal or recycling of waste. It is also considered as a practice that allows the protection of the environment and individual's health with the help of hygienic measures (UNESCO, 2003). Environmental sanitation is a basic and powerful driver of human development as it affects quality of life. It cuts across all sectors of the economy including those that concern health, environmental protection, improvement of human settlements and services, and general productivity of all sectors of the economy (Nguyen,

2011). Environmental sanitation is a very vital tool when it comes to the maintenance of better-quality and healthy living (Giusti, 2009). Environmental sanitation is an essential factor that leads to a healthy environment and consequently stimulates good health and productivity and also secures peoples' well-being. The environment provides the basis for humans' existence and its destruction ultimately leads to biotic extermination (Christopher, 2004). Accordingly, environmental sanitation is viewed as a major pillar for survival. Environmental sanitation issues have increasingly become a matter of concern in Nigeria. Various Governments have initiated different strategies to control the problem of poor sanitation especially in the major cities of the country. Given the pace of development with respect to basic environmental sanitation, there is no way the country can achieve the set Millennium Development Goals in the nearest possible time.

Nigeria is confronted with public health concerns such as poor sanitation and various forms of environmental pollution. The situation is evidenced by unsanitary conditions such as unauthorized dump sites and obstructed drains, leading to the outbreak of epidemics such as cholera, typhoid and diarrhea (WHO, 2009). Chioma (2015) pointed out that poor sanitation had both direct and indirect health effects which lead to excessive breeding of vermin and agents of diseases such as rats, flies and mosquitoes.

The importance of environmental health education such as promotion and creating awareness on healthy sanitation of the students cannot be overemphasized since the school is the key important place of learning. Promotion of personal hygiene and environmental sanitation in schools will help students to adopt good habits during their formative years (Henewa, Kolawole and Ameyaw, 2014). However, the learning potential of many students in schools is compromised by conditions and behaviours that undermine the physical and emotional well-being that make learning possible.

In Nigeria for instance, it can be observed that some schools do not have enough space to cite some basic facilities thereby making the area to be overcrowded. Students especially in developing countries such as Nigeria, often come in contact with both hazardous and non-hazardous wastes as they move about and play. Some of them can be observed playing with discarded electronic gadgets which are very detrimental to their health. These facilitate the spread of micro-organisms that cause diseases and sometimes may result to death. Inadequate sanitary disposal facilities in secondary schools including careless disposal of waste, poor sanitation habits, lack of ventilation, and inadequate management of school wastes cause infections through contaminated water, food and infected hands (Adam, Bartram and Chartier, 2008). Lesley (2003) observed that sanitation conditions in some schools in the rural areas of Nigeria are poor thereby leading the students to suffer from infectious diseases such as dysentery and cholera.

Inadequate sanitary disposal facilities, lack of clean water supply as well as safe disposal of domestic waste water, solid waste and unhygienic practices in the school environment posed serious sanitation problems (UNICEF, 2015). It is therefore important that environmental sanitation, proper hygiene and well-kept hygienic facilities be put in place to ensure a good clean healthy school environment for students' development. Safe and hygienic schools and effective environmental sanitation require the participation of community members, parents, teachers and above all, the students themselves. At all ages, students can be engaged actively in learning experiences that enable them to practice basic sanitation and advocate it at home and in their communities. This study therefore examined influence of environmental sanitation on the health status of secondary school students in Obudu Local Government Area of Cross River State, Nigeria.

**Specific Objectives**

1. To examine the extent to which poor solid waste disposal influences the health of secondary school students in Obudu Local Government Area of Cross River State.
2. To determine the influence of dirty school environment on the health of secondary school students in Obudu Local Government Area of Cross River State.

**Research Questions**

1. To what extent does poor solid waste disposal influences the health of secondary school students in Obudu Local Government Area of Cross River State?
2. To what extent does dirty school environment affect the health of secondary school students in Obudu Local Government Area of Cross River State?

**Research Hypothesis**

1. Poor solid waste disposal does not significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State.
2. Dirty school environment does not significantly affect the health of secondary school students in Obudu Local Government Area of Cross River State.

**Methods**

The research design used in the study was descriptive survey design. This design explained the circumstances and present issue and condition that exist in the research study. The design is more suitable for this study because it explores into the present situation as it concerned environmental sanitation and its influence on the health status of secondary school students in Obudu Local Government Area of Cross River State. The research area is Obudu Local Government Area in the Northern Senatorial District of Cross River State, Nigeria.

The population of the study was 7,431 comprising of students from 21 public secondary schools located in Obudu Local Government Area of Cross River State. The sample for the study was gotten using the stratified and simple random sampling technique; a total of 743 respondents were used for the study which was achieved by computing 10% of the population of the study and obtaining the total sample size as shown in table 1. According to Odu (2013), stratified sampling involves dividing a population into strata from which samples are drawn. It is also ideal when the population consists of sub-groups which need to be represented in the sample. The sample was arrived at by dividing the population into strata, each constituting of students in the selected secondary schools after which 10 percent of each stratum was computed to arrive at the total sample for the study.

**Table 1: Sample size for the study**

| S/N          | Name of schools selected      | Location     | Population  | Percentage from each school | Sample     |
|--------------|-------------------------------|--------------|-------------|-----------------------------|------------|
| 1.           | Begiading Sec. Grammar School | Ohong        | 402         | 10%                         | 40.2       |
| 2.           | Alege Comm. Sec. School       | Alege        | 303         | 10%                         | 30.3       |
| 3.           | Community Sec. School         | Ubang        | 286         | 10%                         | 28.6       |
| 4.           | Girl's Sec. School            | Obudu        | 800         | 10%                         | 80.0       |
| 5.           | Community Sec. School         | Utugwang     | 382         | 10%                         | 38.2       |
| 6.           | Community Sec. School         | Ukpe         | 317         | 10%                         | 31.7       |
| 7.           | Anyiaba secondary school      | Okorshie     | 160         | 10%                         | 16.0       |
| 8.           | Government Sec. School        | Obudu        | 1014        | 10%                         | 101.4      |
| 9.           | Ukpada Comm. Sec. School      | Utuwang      | 414         | 10%                         | 41.4       |
| 10.          | Bedia Sec. Comm. School       | Bedia        | 259         | 10%                         | 25.9       |
| 11.          | Community Sec. school         | Bebuawhan    | 368         | 10%                         | 36.8       |
| 12.          | comprehensive Sec. School     | Okworogun    | 325         | 10%                         | 32.5       |
| 13.          | comprehensive High school     | Kutiang      | 321         | 10%                         | 32.1       |
| 14.          | Comprehensive High School     | Igwo         | 220         | 10%                         | 22.0       |
| 15.          | Kagbong Sec. Comm. School     | Ipong        | 642         | 10%                         | 64.2       |
| 16.          | Model Comp. Sec. School       | Begiaba      | 202         | 10%                         | 20.2       |
| 17.          | Community Sec. School         | Kubong-betie | 183         | 10%                         | 18.3       |
| 18.          | Comprehensive Sec. School     | Ukwel-Obudu  | 274         | 10%                         | 27.4       |
| 19.          | Bebuatsuan Comm. Sec. School  | Ipong        | 232         | 10%                         | 23.2       |
| 20.          | Government Science School     | Ipong        | 149         | 10%                         | 14.9       |
| 21.          | Community Sec. School         | Betukwel     | 178         | 10%                         | 17.8       |
| <b>TOTAL</b> |                               |              | <b>7431</b> | <b>10%</b>                  | <b>743</b> |

Source: Cross River State Ministry of Education, 2016

The instrument used for the study was environmental sanitation on the health of secondary school students in Obudu questionnaire (ESHSSSQ). The instrument contained two sections, A and B. Section A dealt with information on demographic variables while section B provided information on the variables of the study. The instrument was constructed by the researcher and was validated by experts in Measurement and Evaluation Department to ensure that the item represents the subject of interest and it is

accurate. The test-retest method of reliability was used in enhancing reliability of the instrument. The reliability coefficient ranges from 0.59 to 0.68 which means that the instrument was reliable. The researcher administered the instrument personally to the respondents and obtained data from them which was used for the analyses of the study. The instrument was scored using 4 likert scale options. Seven hundred and forty-three (743) copies of the questionnaire were administered to the 743 sampled students and all the 743 copies were returned representing 100%.The data collected were first presented in a tabular form to show the various questions from which the data were collected. After that, it were statistically presented in percentages, and analyzed with Chi-square to reveal the respondents views on each question.

**Results**

Here, the data collected were first presented in a tabular form and thereafter, analyzed using the chi-square statistic to present the true picture of the respondents’ views on the subject matter as shown in table 2. Table 2 revealed that 410 respondents representing 55.2% “Agreed” while 333 respondents representing 44.8% “Disagreed” to question 1 which states: Poor solid waste disposal influences the health of secondary school students in your school. In question 2, 283 respondents representing 38.0% “Agreed” while 460 respondents representing 62.0% “Disagreed” to the question 2 which says: Dirty school environment affect the health of secondary school students in Obudu Local Government Area.

**Table 2: Response from the questionnaire**

| S/N | Questions  | Agree | Disagree | Total |
|-----|--|-------|----------|-------|
| 1.  | Poor solid waste disposal influences the health of secondary school students in your school            | 410   | 333      | 743   |
| 2.  | Dirty school environment affect the health of secondary school students in Obudu Local Government Area | 283   | 460      | 743   |

Sources: Questionnaire, 2017.

**Hypothesis One**

Poor solid waste disposal does not significantly influences the health of secondary school students in Obudu Local Government Area of Cross River State.

**Table 3: Chi-square analysis showing influence of poor solid waste disposal on the health of secondary school students in Obudu Local Government Area of Cross River State**

| Category | Observed frequency(O <sub>f</sub> ) |     | Expected frequency(E <sub>f</sub> ) |     | Residual (O-E) |    | o – e <sup>2</sup> |      | o – e <sup>2</sup> / e |      |
|----------|-------------------------------------|-----|-------------------------------------|-----|----------------|----|--------------------|------|------------------------|------|
|          | A                                   | DA  | A                                   | DA  | A              | DA | A                  | DA   | A                      | DA   |
| Male     | 328                                 | 174 | 277                                 | 225 | 51             | 51 | 2601               | 2601 | 9.4                    | 11.6 |
| Female   | 82                                  | 159 | 133                                 | 108 | 51             | 51 | 2601               | 2601 | 8.5                    | 24.1 |
| Total    | 410                                 | 333 | 410                                 | 333 |                |    |                    |      | 17.9                   | 35.7 |

Source: Questionnaire, 2017

$$\begin{aligned} &\text{To get expected frequency} \\ &= \text{CT} \times \text{RT} = 502 \times 410 = 277 \\ &\quad \text{GT} \quad \quad 743 \end{aligned}$$

Therefore to test the 1<sup>st</sup> hypothesis using 5% level of significance

$$\begin{aligned} (r - 1) & \quad (c - 1) \\ 2 - 1 & \quad 2 - 1 \\ 1 & \quad 1 = 1\text{df. at } .05 = 3.84 \end{aligned}$$

$$X^2 \text{ calculated value} = 17.9 + 35.7 = 53.6$$

**Decision:** Since Chi-square ( $X^2$ ) calculated value of 53.6 is greater than the Chi-square ( $X^2$ ) tabulated value of 3.84, needed for significance. Hence, the alternative hypothesis is accepted. Therefore, Poor solid waste disposal significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State.

### Hypothesis Two

Dirty school environment does not significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State.

**Table 4: Chi-square analysis showing influence of dirty school environment on the health of secondary school students in Obudu Local Government Area of Cross River State**

| Category | Observed frequency( $O_i$ ) |     | Expected frequency( $E_i$ ) |     | Residual (O-E) |    | $o - e^2$ |      | $\frac{o - e^2}{e}$ |      |
|----------|-----------------------------|-----|-----------------------------|-----|----------------|----|-----------|------|---------------------|------|
|          | A                           | DA  | A                           | DA  | A              | DA | A         | DA   | A                   | DA   |
| Male     | 230                         | 210 | 168                         | 272 | 62             | 62 | 3844      | 3844 | 22.9                | 33.4 |
| Female   | 53                          | 250 | 115                         | 188 | 62             | 62 | 3844      | 3844 | 14.1                | 20.5 |
| Total    | 283                         | 460 | 283                         | 460 |                |    |           |      | 37                  | 53.9 |

Source: Questionnaire, 2017

$$\begin{aligned} &\text{To get expected frequency} \\ &= \text{CT} \times \text{RT} = 440 \times 283 = 168 \\ &\quad \text{GT} \quad \quad 743 \end{aligned}$$

Therefore to test the 1<sup>st</sup> hypothesis using 5% level of significance

$$\begin{aligned} (r - 1) & \quad (c - 1) \\ 2 - 1 & \quad 2 - 1 \\ 1 & \quad 1 = 1\text{df. at } .05 = 3.84 \end{aligned}$$

$$X^2 \text{ calculated value} = 37 + 53.9 = 90.9$$

**Decision:** Since Chi-square ( $X^2$ ) calculated value of 90.9 is greater than the Chi-square ( $X^2$ ) tabulated value of 3.84, needed for significance. Hence, the alternative hypothesis is accepted. Therefore, dirty school environment significantly affect the health of secondary school students in Obudu Local Government Area of Cross River State.

### Discussion of Findings

Finding from hypothesis one revealed that poor solid waste disposal significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State. This finding is supported by Nguyen (2011), who opined that cities are the engines of economic growth, but the environmental implications of such growth need to be assessed and managed better. The critical and most immediate problems facing

developing countries and their cities are the health impact of urban pollution that are derived from inadequate water services, poor urban and industrial solid waste management, as well as air pollution, especially from particulates which constitutes part of solid waste. Christopher, (2009) also is in agreement with the finding by stating that city officials (environmental health officers) are unable to enforce and combat unlawful and haphazard dumping of hazardous commercial and industrial wastes which are a clear violation of the Clean Air and Health Edicts in our environmental sanitation laws, rules and regulation.

Findings from hypothesis two indicated that dirty school environment significantly influence the health of secondary school students in Obudu Local Government Area of Cross River State. This finding is in line with the study of Chioma (2015), who asserted that improperly disposed solid waste has both direct and indirect health effects on students and staff working in the school environment. The direct health effects arise from excessive breeding of vermins and agents of diseases such as rats, flies and mosquitoes. Apart from infectious diseases, improper disposal of refuse will also result to food poisoning, leachate and contamination of ground water and this can result in poisoning of bore holes. The bottom line is that bad waste management practices can result in land and air pollution and can cause respiratory problems and other adverse health effects on the students as contaminants are absorbed from the lungs into other parts of the body which in most cases students tend to be victims of such adverse effects. Lesley (2003) stated that with the increase in the population of public schools and the rising demand for education and other essential sanitary and infrastructures in schools, there has been a rise in the amount of waste being generated daily around the school environment. This waste is carelessly been thrown around the school and due to poor and ineffective management of this waste, the school environment turns to be source of environmental and health hazards to the students in the vicinity of such environments. To him, this makes the school environment to become the students' sources of contamination due to the incubation and proliferation of flies, mosquitoes, and rodents. Adam, Bartram and Chartier (2008) also reported that inadequate sanitary disposal facilities in secondary schools including careless disposal of waste, poor sanitation habits, lack of ventilation, and inadequate management of school wastes cause infections through contaminated water, food and infected hands.

### **Conclusion**

Based on the findings made in the course of this study, it was concluded that poor solid waste disposal and dirty school environment influence the health of secondary school students in Obudu Local Government Area of Cross River State. Conclusively, it suffices to say that there is utmost need for the Government, State Ministry of Health and the administration of public secondary schools in Obudu Local Government Area of Cross River State, as a matter of urgency make every effort to identify and proffer solution to the problems and shortcomings associated with environmental sanitation in Obudu Local Government Area of Cross River State.

### **Recommendations**

The following are the recommendations made for the study:

1. Sufficient efforts should be put towards ensuring proper handling and disposal of solid wastes by the Government and the school authorities so as to prevent students from contacting infections in schools.

2. Adequate awareness of environmental sanitation should be carried out so as to create the state of consciousness in the minds of the students about cleanliness and personal hygiene.
3. Adequate sanitary facilities should be made available to public schools so as to enhance personal hygiene and aesthetic outlook of the school environment.
4. The Ministry of Education and other supervisory agencies should ensure that the learning environments of public schools are kept clean in order to curtail the breeding and spread of pathogens and infectious diseases amongst students.

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