

# Assessment of the Sanitation Status in a Tertiary Institution in Southeastern Nigeria

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## ABSTRACT

Sanitation is practiced to promote hygiene and prevent disease among people through the provision of potable water and adequate sanitation facilities. The objective of this study was to assess the sanitation status of hostels in Federal University of Technology Owerri, in Southeastern Nigeria. The study adopted a descriptive cross-sectional survey design to assess the environmental sanitation in school hostels. The survey was designed with the use of questionnaire and checklist which were administered to a sample size of 390 participants. The collected data was uploaded into Statistical Package for Social Sciences (SPSS) Version 21.0 and analyzed using Pearson Chi square and descriptive statistical analysis. The relationship between variables were determined with chi-square statistical test and the findings showed that 378(96.9%) of the participants reported that they utilized available sanitary facilities which included refuse waste bin, toilet, water, hand washing and drainage system. Twenty eight (7.1%) out of 390 respondents agreed that the sanitary facilities were adequate. Three hundred and fifty (89.7%) said they have access to functional school sanitary facilities. Out of 390 respondents, 249(63.8%) had knowledge of water supply as the potential source of contamination and 230(58.9%) reported diarrhea and typhoid fever as the major disease conditions prevalence. In conclusion, the findings showed available and functional sanitary facilities but they did not meet the required standards set by the WHO guidelines. It was recommended that the management of tertiary schools should ensure that they meet public health standards in environmental sanitation.

**Keywords:** Sanitation, Hygiene, Hand washing, Waste disposal, Excreta disposal

## INTRODUCTION

Sanitation is one of the greatest problems facing developing countries due to inadequate facilities, poor funding, and poor implementation of policies as well as wrong lifestyle. [1] Sanitation is vital to health and it generates economic benefits and contributes to dignity and social development of any nation. Sanitation is the promotion of hygiene and prevention of disease through the provision and access to safe water and adequate sanitation facilities; and good individual hygiene practices. Traditionally, sanitation refers to the provision of facilities and services for the safe disposal of human

urine and feces. It is also explained as the hygiene means of promoting health through prevention of human contact with hazard of wastes. It involves the maintenance of hygienic conditions, through services such as garbage collection and waste disposal. However, the modern application of sanitation includes such other preventive interventions like food, drinking water and building construction. [1] Environmental Sanitation is the principle and practices of effecting healthful and hygienic conditions in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment. It is also a

range of intervention, designed to improve the management of excreta, sullage, drainage and solid wastes. [2,3] Environmental Sanitation can be regarded as the control of all factors in man's physical environment that exercise or may exercise a deleterious effect on his physical development, health and survival. Sanitation can also be regarded as a way of life, a quality of living that is expressed in the clean home, the clean farm, the clean business, the clean neighborhood and the clean community. Being a way of life, it must come from and practiced within the people. It is nourished by knowledge and growing as an obligation and as an ideal in human relation. Amadi [2] described sanitation as activities aimed at improving or maintaining the standard of basic environmental conditions affecting the wellbeing of people. These definitions suggest that sanitation involves both behaviors and facilities which work together to form a hygienic environment. That is, there must be essential facilities available for use, the correct understanding and positive attitude and indeed the application of the facilities correctly to attain the desired sanitary state.

Environmental Sanitation is the principle and practice of effecting healthful and hygienic conditions in the environment to promote public health and welfare, improve quality of life, reduce poverty and ensure a sustainable environment. [4] The Federal Ministry of Environment [5] stated that this definition is quite appropriate within the parlance of this discuss, as it sees environmental sanitation as improvement in hygienic conditions directed not only to the improvement of health and welfare but also productivity i.e., reduction in poverty and ensuring sustainable development. According to the United Nations, [6] sanitation is vital to health; it generates economic benefits and contributes to dignity and social development. There is high morbidity and mortality related to poor sanitation, lack of water and poor hygiene globally, with the developing countries

bearing the greatest load. Sanitation related diseases debilitate and kill one million Africans every year. The number of people without improved sanitation facilities globally stands at 2.6 billion, and of these 533million is in sub-Sahara Africa. [7]

In regard to school sanitation, it is a kind of sanitation that is practiced in the school to promote hygiene and prevent disease among school children through the provision of and access to safe water and adequate sanitation facilities. If poorly practiced, it can highly affect the health, academic performance and retention rates of pupils. Studies indicate that an estimated 400 million children have diminished learning abilities due to intestinal worm infestation; [8] while according to the International Resource Centre on Water and Sanitation, [9] 75% of adolescent girls in marginalized areas drop out of school due to the lack of adequate private sanitation facilities in school. Some of such sanitary facilities like pit latrines are utilized as an effective and convenient method of on-site human waste disposal in areas not served by a sewerage system. They also serve to encourage prevention of disease, better sanitation practices and to deter open defecation. It is estimated that globally four thousand children less than five years die daily from diarrheal diseases alone, and millions of others are made sick, weakened or disabled by diarrhea and other water-and-sanitation-related diseases. [10]

Studies indicated that 2.6 billion people (approximately 39% of the global population), lack access to improved facilities for the disposal of human excreta, such as a basic pit latrine, toilet connected to a septic tank or sewer system or a composting toilet. [10] In several parts of the developing world, sanitation lags behind in all infrastructure development. In sub Saharan Africa, 66% of the population had no access to basic sanitation services in 2008. [10] This study was carried out to assess sanitation status in a tertiary institution situated in Southeastern Nigeria.

## MATERIALS AND METHODS

This study was a descriptive study carried out in the hostel of students of Federal University of Technology, Owerri, located in Southeastern Nigeria. Three hundred and ninety students were selected through stratified random sampling technique. Data on the availability and utilization of sanitary facilities was collected using a harmonized checklist and a well-structured questionnaire. The Statistical Package for Social Sciences (SPSS) version 21 using the Pearson Chi Square at 5% level of significance was used for data analysis.

## RESULTS

The availability of sanitary facilities was presented in table 1. The table showed that 378(96.9%) said yes to having available sanitary facilities (refuse waste bin, toilet, water, hand washing facility) in the hostels while 12(3.1%) do not have. Also 195(50%) reported toilet facility as the most common

the sanitary facilities in the school followed by refuse waste bin with 105(26.9%), water facility with 60(15.4%) and 30(7.7%) for hand washing facility. For the type of toilet facilities in the school; 290(74.3%) reported they have flush/pour-flush toilet, 91(23.3%) reported Ventilated Improved Pit latrine (VIP) and nobody reported pit latrine/pit latrine with slab, bucket latrine and pit latrine without slab/open pit. Out of 390 respondents; only 28(7.1%) reported the school sanitary facilities adequate enough while 362(92.8%) said no. On utilization of sanitary facilities in the school; 380(97.4%) said they utilized it and only 10(2.6%) said no. Figure 1 presented the main water source in the hostel; highest percentage (53.8%) of the students reported hand pump followed by borehole with 30.7% and 15.4% for tap water while there was no response on well water, rain water and spring water.

Table 1: Availability of Sanitary Facilities

Variable	n	%
Utilized available sanitary facilities in your hostels		
Yes	378	96.9
No	12	3.1
Total	390	100.0
If yes, the sanitary facilities that is most common to you		
Toilet	195	50.0
Water	60	15.4
Hand washing facility	30	7.7
Total	390	100.0
Type of toilet facilities in the schools hostels		
Pit latrine/pit latrine with slab	-	-
Ventilated Improved Pit latrine (VIP)	91	23.3
Flush/pour-flush toilet	290	74.3
Bucket latrine	-	-
Bush/ field	9	2.3
Pit latrine without slab/open pit	-	-
Total	390	100.0
Are the school sanitary facilities adequate enough?		
Yes	28	7.1
No	362	92.8
Total	390	100.0
Do you utilize sanitary facilities in the school?		
Yes	380	97.4
No	10	2.6
Total	390	100.0

The results in table 2 showed the functionality of sanitary facilities. Three hundred and fifty (89.7%) said yes they have access to functional school sanitary facilities (refuse waste bin, toilet, water,

hand washing facility) in the hostels while 40(10.0%) said no. Out of 390 respondents, 358(91.8%) reported they have access to functional water supply and the most common water supply was hand pump with

230(58.9%) followed by borehole with 38.4%), tap water recorded 10(2.6%). In the studied hostels, 342(87.7%) said they had three fixed functional toilets for boys, 47(12%) said it was two fixed functional toilets. Also, 382(97.9%) said they had three fixed functional toilets for girls while the least 3(0.8%) reported one fixed toilet for girls. Table 3 presented the hygienic conditions of sanitary facilities. Out of the 390 students, 160(41%) said yes they have hand washing point in the hostels while

230(58.9%) said no. On the duration of hand washing in the hostel; 158(40.5%) reported always, 147(37.7%) said before eating in the school, 83(21.2%) said only after toilet use and 2(0.5%) reported sometimes. For the provision of soap for hand washing, 123(31.5%) said yes while 267(68.5%) said no. On the same note, 235(60.3%) said water, sanitation and hygiene play a role in Schools while 155(39.7%) said no.

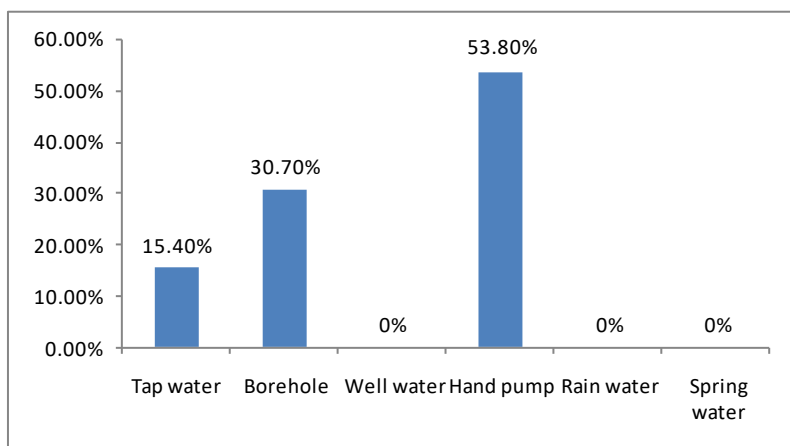


Figure 1: Main water source in the hostel

Table 2: Functionality of Sanitary Facilities

Variable	n	%
Do you utilize functional school sanitary facilities (refuse waste bin, toilet, water, hand washing facility)		
Yes	350	89.7
No	40	10.0
Total	390	100.0
Access to functional water supply		
Yes	358	91.8
No	32	8.2
Total	390	100.0
Functional water sources in your hostel		
Borehole	150	38.4
Tap water	10	2.6
Well water	-	-
Hand pump	230	58.9
Rain water	-	-
Spring water	-	-
Total	390	100.0
Number of fixed functional toilets for boys		
One toilet	1	0.3
Two toilets	47	12.0
Three toilets	342	87.7
None	-	-
Total	390	100.0
Numbers of fixed functional toilets for girls		
One toilet	3	0.8
Two toilets	5	1.3
Three toilets	382	97.9
None	-	-
Total	390	100.0

The results in table 4 showed the sanitation and health related diseases; 249(63.8%) said that the water supply a potential source of contamination while 141(36.2%) said no to it. The major prevalence of sanitary related diseases was according to the students was 230(58.9%) for diarrhea and typhoid fever, 78(20%) for Malaria due to mosquito breeding site and 77(19.7%) said cholera due to poor hygiene. Attributes to the occurrence of sanitation-related diseases was 238(61%) for poor sanitation, 85(21.8%) for personal hygiene and 65(17.4%) for water quality. SPSS analysis using Pearson Chi-Square showed that there was a strong association between gender and utilized available sanitary facilities [P (0.002)<0.05]. There was also a strong association between year of study and utilized available sanitary facilities [P (0.00)<0.05].

Table 3: Hygienic Conditions of Sanitary Facilities

Variable	n	%
Presence of hand washing points		
Yes	160	41.0
No	230	58.9
Total	390	100.0
If yes, how often do you wash your hand in the school?		
Always	158	40.5
Sometimes	2	0.5
Only after toilet	83	21.2
Before eating in the school premises	147	37.7
Total	390	100.0
Do hostels provide soap for hand washing?		
Yes	123	31.5
No	267	68.5
Total	390	100.0
Do water, sanitation and hygiene play any role in Schools?		
Yes	235	60.3
No	155	39.7
Total	390	100.0

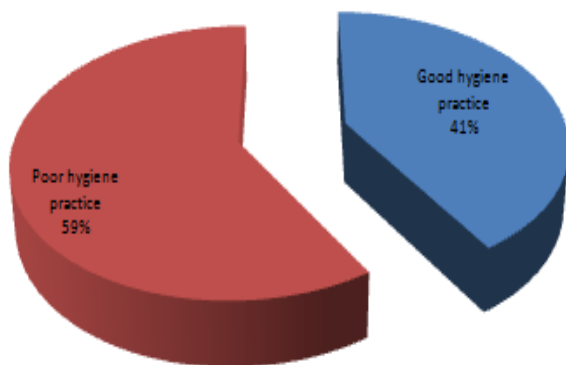


Figure 2: Distribution of level of hygienic practice

Table 4: Sanitation and Health Related Diseases

Variable	n	%
Knowledge of water supply as potential source of contamination		
Yes	249	63.8
No	141	36.2
Total	390	100.0
If yes, which one is major prevalence to you?		
Diarrhea and typhoid fever due to dirty environment	230	58.9
Malaria due to mosquito breeding site	78	20.0
Cholera due to poor hygiene	77	19.7
Others (dysentery, helminthes infections etc.)	5	1.2
Total		100.0
Attributes to occurrence of sanitation-related diseases		
Water quality	65	17.4
Poor sanitation	238	61.0
Personal hygiene	85	21.8
Others	2	0.5
Total	390	100.0

## DISCUSSION

The findings in this study gave a realistic depiction of the sanitation status of the school hostels as they truly appear. The study showed that majority of the students utilized the available and functional sanitary facilities (refuse waste bin, toilet, water, hand washing facility) in the school hostels. Sanitation remained the most basic of health issues in every society and school management still have a lot to do in terms of water supply and sanitary maintenance. In developing countries, some studies indicate that 272 million school days are lost annually due to diarrhea [11] and 400 million school children and 47% of younger year are affected by worms. [8] These factors lead to poor academic results in affected people as the train and flow of learning is interrupted when lessons are missed. More importantly a helminthes burden is associated with reduced cognitive function and this may cause long term poor retentive memory lost and future academic prospects. From the findings of this study, it was observed that hand pump was the major source of water supply compared to other source of water supply in the school hostels and students have access to all the available and functional sanitary facilities. On the same note, flush/pour-flush toilet was the most common available and functional sanitary facility. In the study, presence of drainage system was noted and cleaning

does take effect on monthly basis. Most of the toilets in the hostels were functional but lack doors. The inadequacy of the toilets leads to urination and defecation around and this becomes a breeding ground for faecal-oral diseases and helminthes infections. The lack of toilet and water for cleaning is particularly distressing to menstruating adolescent girls who exhibit frequent absenteeism due to infections. <sup>[9,12]</sup>

The proper way of waste disposal is imperative to prevent sanitation related infections and improve the quality of life for people in a given society. The availability of water and sanitation facilities in schools reduces diarrhea and hygiene related diseases and it was supported by Curtis et al. <sup>[13]</sup> and Pruss-Ustun et al. <sup>[14]</sup> In addition, adequate sanitation facilities create a conducive environment for studying and increases school retention rates and academic performance. <sup>[12,15,16]</sup>

In this study, the students understood that hygienic conditions of sanitary facilities play a role in sanitation related diseases. Hand washing facilities were not completely lacking as 41% of the schools had hand washing points and this is of very great importance as it reduces situation where students are vulnerable to contracting faecal-oral diseases. The poor sanitation as recorded in the study was a clear indication of risk of water and sanitation related diseases in the school which could be mainly contracted by the faecal-oral route. Such diseases include diarrhoea, dysentery, typhoid, and various helminth infections. The sanitation health related diseases have a significant relationship with the knowledge of students and their ages. Based on the personal assessment, the possible problems that can affect the state of sanitary facilities in the school hostels were expressed with dissatisfaction and frustration of school management neglect on implementing standard sanitary exercise in schools.

In conclusion, there was a moderate level of available and functional sanitary facilities in the hostels but they did not meet the required standards set by WHO

guidelines. The level of maintenance of sanitary facilities, hygienic conditions of sanitary facilities and knowledge on sanitation and health related diseases were relatively moderate. It was recommended that the management of tertiary schools should ensure that they meet public health standards in environmental sanitation.

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