

Availability, Adequacy and Usage of Sanitation Facilities and Equipment in Public and Private Universities in Osun State, Nigeria

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Abstract

This study examined the availability, adequacy and usage of sanitation facilities and equipment among female students in public and private universities in Osun States Nigeria. Sampled size of 120 female students each from public and private university were drawn using accidental sampling technique. Self-structured questionnaire validated and reliable at 0.85 level of significant was used for the study. The questionnaire consisted of two sections, Section A was designed for the bio-data while section B was used to elicited information for the study. The data collected were analyzed descriptively using simple percentages and inferential statistics. The findings revealed that there were various types of sanitation equipment and facilities made available and were adequately distributed in both the private and public university students' hostels. Respondents still littered papers and also defecated anywhere around the hostels. The findings further revealed a significant difference in the adequacy and usage of equipment and facilities in private and federal universities and that the usage of sanitation facilities and equipment available will significantly influence the health status of the students negatively. Based on findings, enforcement and enlightenment programmes on proper usage of equipment and facilities should be mounted by the university authority through seminar.

Key Words: Availability, Adequacy, Usage, Sanitation Facilities and Equipment, Public and Private Universities, Students' Hostels

Introduction

To have a healthy environment, sanitation facilities and equipment should be available in the environment and these should be adequate and effectively used. Wastes are supposed to be collected and properly disposed in a covered waste bin, dust bin, or waste container, in order to make the environment free from all hazards. One of the risky threats to man's health is ineffective disposal of waste (Ajala 2003). Generating households' wastes in dhaka city was significantly affected by household size, income,

concern about the environment and readiness to separate the wastes (Rafia, Kesuke and Rabaah 2010). In a study conducted by Onuzulike (2007), it was observed that students have negative approach towards waste disposal method, and that unwholesome disposal of wastes do lead to spread of diseases. Unsuitable use of sanitary facilities and equipment usually make people to be infected of various diseases.

In a study conducted by Adio-Moses (2012), it was observed that most schools used had inadequate

water supply, no sanitation and no wastes disposal facilities. Nwankwo (2004) revealed that unhygienic disposal of solid waste creates serious threat to complete environmental sanitation and human health. Ekpu and Archipong (2007) stated that Nigerians generally generates wastes, which may be difficult to get rid of, particularly when it involves indiscriminate throwing away of wastes. WHO (2006), reported that in spite of the progress reported worldwide in recent decades about sanitation, over 2.3 billion people still live without access to sanitation facilities and are incapable of practicing basic hygiene such as washing hands with soap and water. While Onuzulike (2007) reaffirmed that inappropriate use of sanitary facilities and equipment commonly make people to be unhygienic. According to Rematta, Dennis and Phillip (2014) in a study conducted reported that 83% of the respondents were aware that unsuitable wastes management brings about infections and that 39% of the respondents stated that they emptied their wastes into the drainage, streets, holes and nearby bushes.

Kalesanwo, Oke, and Okufuwa (2013) also reported that market women in Ijebu Ode Township were not knowledgeable of the health magnitudes of indiscriminate waste disposal. Ifegbesan (2012) reported that there stands indiscriminate and illegal dumping of wastes in undesignated city areas such as road verges, open spaces and alleys. Onibokun (2007) also noted that housing, water, electricity and waste disposal facilities are totally inadequate in the principal areas in Nigeria. In a study conducted by Onuzulike (2007) it was revealed that major solid waste disposal habits in the campus among students include littering the hostels and classrooms

with wastepaper (54.2%), while an appreciable number of (58.3%) respondents agreed that they littered the college environment with polythene bags and sachet water packs.

Aibor and Olorunda (2010) identified the various method used in solid waste disposal as follow; open dumps, sanitary landfill, incineration, dustbin, composition, disposal to the sea, burning, hog feeding, pulverisation, and pyrolysis. In the same vein Ekpu et al (2007), Moronkola and Okanlawon, (2003) and Briggs (2010) asserted that four common ways of disposing solid wastes are: Open dumping method, controlled tipping or sanitary landfill, Incineration, and Decomposition. According to Adio-Moses (2013), safe and good school environment should offer healthful conditions to the school; therefore there should be students/teacher relationships that are favourable to the optimum welfare for all. According to Njagi, Ireri, Njagi, Akunga, Afullo, Ngugi, Mwanzo and Njaji (2013), Kadhodeki villagers were found to have inadequate knowledge about the health risks that occur as a result of indiscriminately dumping of wastes.

Santha (2012) stated that improper disposal of solid and liquid waste can result to vector-borne and waterborne diseases such as diarrhea, malaria, polio, cholera and typhoid. Famuyiwa and Onawola (2017) in a study conducted stated that respondents did not practice modern wastes disposal methods but throw their wastes with careless attitude through burning, into stream and streets. According to Kofoworola (2007), appropriate controlling of solid wastes is an ultimate part of environmental maintenance that ought to be observed by individuals and companies universally. Awareness and attitudes towards waste generation and controlling is very important in the determination to

respond to the waste management challenges.

Purpose

The purpose of the study was to examine the type of sanitation facilities and equipment available for students' use in the hostels, availability and adequacy of environmental sanitation facilities and equipment and if the usage will significantly influence the students' health. The study therefore:

1. identify the types of sanitation facilities and equipment available in public and private universities in Osun States Nigeria;
2. determine the adequacy of sanitation facilities and equipment in public and private universities in Osun States Nigeria;
3. examine the usage of sanitation facilities and equipment in public and private universities in Osun States Nigeria;
4. examine the influence of usage of sanitation facilities and equipment available on the health of the students in public and private universities in Osun States Nigeria.

Research Methodology

The descriptive survey design was adopted for the study. The population of the study comprised of all the students in public and private universities in universities in Osun State. A total of 240 female respondents consisting of 120 female respondents from public and 120 respondents from private university were used for this study. Female respondents were purposively selected as sample size due to fact they are used to preparing foods more constantly than male respondents, so they are more likely to generate more solid wastes than their male counterparts. Accidental sampling

technique was used to select the female respondents. The self-developed instruments used for data collection was 'Availability, Adequacy and Usage of Sanitation Facilities and Equipment' tagged (AASSFE). This questionnaire contained two sections. The first section was for the demographic variables such as university, age, religion, and sex. The second section was divided into sub-sections to elicited information on availability Adequacy and Usage of Sanitation Facilities and Equipment of students in public and private universities. Sub-section B(i) was developed to elicit information on the types of sanitation facilities and equipment available. Sub-section B(ii) was for adequacy of sanitation facilities and equipment available. Sub-section B(iii) was for the usage of sanitation facilities and equipment available. Sub-section B(iv) was for the usage of sanitation facilities and equipment available on the health of the students. B(v) was for the influence of usage of sanitation facilities and equipment available on the health of the students. The questionnaire was given to two relevant research experts for content validity and subjected to a test-retest reliability index of 0.88 and found reliable. The researchers visited both the private and public universities to administer the instrument with the help of four trained research assistants. Descriptive statistics which involved frequency count with simple percentage and inferential statistics of t-test was used to analysis the data collected.

Research Question1: What are the types of sanitation facilities and equipment available in public and private universities in Osun State Nigeria?

Table 1: Descriptive analysis of the respondents in the types of sanitation facilities and equipment available in public and private universities Osun State

S/ N	Items	Public university (120)		Private university (120)	
		S A	S D	S A	S D
1.	Waste basket in front of the rooms	95 (79.2)	25 (20.8)	70 (58.3)	50 (41.7)
2.	Covered waste bin in the hostels	110 (91.7)	10 (8.3)	108 (90)	12 (10)
3.	Refuse disposal van	90 (75)	30 (25)	70 (58.3)	50 (41.7)
4.	Water supply (Tap)	51 (42.5)	69 (57.5)	54 (45)	66 (55)
5.	Toilets (Water system)	120 (100)	0 (0)	120 (100)	0 (0)
6.	Overhead tank	120 (100)	0 (0)	120 (100)	0 (0)
7.	Good sewer (a drain for carrying sewage)	120 (100)	0 (0)	94 (78.3)	26 (21.7)
8.	Stationed trunk for refuse solid wastes	100 (83.3)	20 (16.7)	75 (62.5)	45 (37.5)

NB: Percentage responses are enclosed in parenthesis.

S A- Strong Agreed. S D- Strong Disagreed

The table 1 above shows that a total of 95 (79.2%) out of 120 (100%) public university female respondents and 70 (58.3%) out of 120 (100%) private university female students signified that they had waste basket in front of the rooms. A total of 110 (91.7%) out of 120 (100%) public university female respondents and 108 (90%) out of 120 (100%) private university female students said that they had covered waste bin in the hostels. As regards toilets (water system) and overhead tank, all female students of 120 (100%) both from public and private university signified to this respectively. Concerning good sewer (a drain for carrying sewage)

and stationed trunk for refuse solid wastes, no female respondent from public university and 26 (21.7) out of 120 (100%) respondents from private university identified that they never had good sewer (a drain for carrying sewage). The results of the table above showed that there were various types of sanitation facilities and equipment available for students use in public and private universities in the study areas.

Research Question 2: What are the adequacy of sanitation facilities and equipment available in public and private universities in Osun States Nigeria?

Table 2: Descriptive analysis of the adequacy of sanitation facilities and equipment available in public and private universities

S/ N	Items	Public university (120)				Private university (120)			
		S A	A	D	S D	S A	A	D	S D
1.	Waste basket in front of the rooms	120 (100)	0 (0)	0 (0)	0 (0)	62 (51.7)	10 (8.3)	14 (11.7)	34 (28.3)
2.	Covered waste bin in the hostels	80 (66.7)	10 (8.3)	10 (8.3)	20 (16.7)	65 (54.2)	18 (15)	21 (17.5)	16 (13.3)
3.	Refuse disposal van	84 (70)	15 (12.5)	08 (6.7)	13 (10.8)	73 (60.8)	15 (12.5)	11 (9.2)	21 (17.5)
4.	Water supply (Tap)	120 (100)	0 (0)	0 (0)	0 (0)	65 (54.2)	41 (34.2)	01 (0.3)	13 (10.3)
5.	Toilets (Water system)	120 (100)	0 (0)	0 (0)	0 (0)	120 (100)	0 (0)	0 (0)	0 (0)
6.	Overhead tank	80 (72.6)	21 (17.5)	08 (6.7)	11 (9.2)	54 (45)	21 (17.5)	12 (10)	23 (19.2)
7.	Sewer (a drain for carrying sewage)	103 (85.8)	07 (5.8)	0 (0)	10 (8.3)	60 (50)	32 (26.7)	16 (13.3)	12 (10)
8	Stationed trunk for refuse	75 (62.5)	18 (15)	17 (14.2)	10 (8.3)	45 (37.5)	36 (30)	29 (24.2)	10 (8.3)

NB: Percentage responses are enclosed in parenthesis.

S A- Strongly Agreed. A- Agreed. D- Disagreed. S D- Strong Disagreed

The table 2 above shows that a total of 120 (100%) public university female respondents and 62 (51.7%) private university female students signified that they strongly agreed that waste basket in front of the rooms were adequate. A total of 120 (100%) public university female respondents and 65 (54.2%) private university female students said that they strongly agreed that Water supply (Tap) was adequate, As regards toilets (water system) all female students of 120 (100%) both from public and private university signified to this respectively. Concerning good sewer (a drain for carrying sewage) 103 (85.8) female respondent from public university and 60 (50%) respondents from

private university identified that they strongly agreed to good sewer (a drain for carrying sewage). A total of 75 (62.5%) public university female students and 45 (37.5%) private university female students said that they strongly agreed to having stationed trunk for refuse solid wastes This indicated that sanitation facilities and equipment were adequate both in public university hostels, but were more adequate in public universities than the private universities.

Research Question 3: Are the sanitation facilities and equipment available effectively used in public and private universities in Osun States Nigeria.

Table 3: Descriptive analysis of the usage of sanitation facilities and equipment available in public and private universities

	Items	Public university (120)				Private university (120)			
		S A	A	D	S D	S A	A	D	S D
1.	I use the waste basket in front of the rooms	102 (85)	08 (6.7)	02 (1.7)	08 (6.7)	36 (30)	40 (33.3)	20 (16.7)	24 (20)
2.	I use the covered waste bin in the hostels	80 (66.7)	13 (10.8)	11 (9.2)	16 (13.3)	32 (26.7)	38 (31.7)	22 (18.3)	28 (23.3)
3.	I do use the sewer (a drain for carrying sewage)	64 (53.3)	10 (8.3)	12 (10)	34 (28.3)	50 (41.7)	35 (29.2)	20 (16.7)	15 (12.5)
4.	I do get water supply from the Tap	60 (50)	15 (12.5)	28 (23.3)	17 (14.2)	24 (20)	30 (25)	40 (33.3)	26 (21.7)
5.	I use the Toilet (Water system)	60 (50)	30 (25)	20 (16.7)	10 (8.3)	33 (27.5)	34 (28.4)	26 (21.7)	27 (22.5)
6.	I use to litter papers around the hostels.	50 (41.7)	20 (16.7)	15 (12.5)	35 (29.2)	30 (25)	35 (29.2)	33 (27.5)	22 (18.3)
7.	I defecate anywhere around the hostel	60 (50)	13 (10.8)	30 (25)	17 (14.2)	54 (45)	27 (22.5)	26 (21.7)	13 (10.8)

NB: Percentage responses are enclosed in parenthesis.

S A- Strong Agreed. A- Agreed. D- Strong Agreed. S D- Strong Disagreed

The table 3 above shows that a total of 102 (85%) public university female respondents strongly agreed that waste basket in front of the rooms was used by them, While a total of 64 (53.3%) public university female respondents and 50 (41.7%) private university female students strongly agreed that they used the sewer (a drain for carrying sewage) in their hostels. As regards toilets (water system) 60 (50%) public university female respondents strongly agreed that they used the toilet (Water system), while 50 (41.7%) public university female respondents strongly agreed that they used to littered papers around the hostels.

Response to defecating anywhere around the hostel showed that 60 (50%) public university female students and 54 (54%) private university female students strongly agreed to this statement. From the table above, it implied that despite the fact that some of the facilities and equipment were effectively used; some of the respondents still littered papers and also defecated anywhere around the hostels.

Hypothesis 1: There is no significant difference in the adequacy of sanitation facilities and equipment available for student's use in public and private universities in Osun State

Table 4: t-test of significant difference in the adequacy of sanitation facilities and equipment available for student's use in public and private universities in Osun State

Variables	No	Mean	Sd	Df	t-value	P	Sig
Public	120	15.880	2.432	94	1.535	0.184	Sig
Private	120	15.284	2.643				

P < 0.05

The above table 4 shows the t-test analysis of adequacy of sanitation facilities and equipment available for

student's use in public and private universities. To test if the difference observed between the respondents by

their location (public and private) was statistically significant, t-test analysis was used. The data analysis showed the t-test value 1.535, $p = 0.184$, $p < 0.05$ alpha level. The null hypothesis was then rejected. Therefore there was a significant difference in the adequacy of sanitation facilities and equipment

available for student's use in public and private universities in Osun State

Hypothesis 2: There is no significant difference in the usage of sanitation facilities and equipment available for students' use in public and private universities in Osun States.

Table 5: t-test of significant difference in the usage of sanitation facilities and equipment available for students' use in public and private universities in Osun States

Usage	N	Mean	Sd	Df	t-value	P	Sig
Public	120	12.694	1.963	94	3.237	1.984	Sig
Private	120	12.246	1.978				

$P < 0.05$.

The result on the above table 5 showed that the hypothesis which stated that there is no significant difference in the usage of sanitation facilities and equipment available for students' use in public and private universities in Osun States was rejected. This was shown by the t-value 3.237, $P = 1.984$, $P < 0.05$. Therefore, there was a significant difference in the usage of sanitation

facilities and equipment available for students' use in public and private universities in Osun States

Hypothesis 3: The usage of sanitation facilities and equipment available in public and private universities hostels Osun State will not significantly influence the health status of the students negatively.

Table 6: chi-square analysis of significant influence in the usage of sanitation facilities and equipment available for students' use on their health status in public and private universities in the study areas negatively

Variables	S A	A	D	S D
Fe	60	60	60	60
Fo	96 (40%)	74 (30.8%)	42 (17.5%)	28 (11.7%)
	2.21	2.03	1.14	1.06

$P < 0.05$

$X^2 = 6.34$, Critical value = 3.315, $df = 1$

The result on the above table 6 showed that the hypothesis which stated the usage of sanitation facilities and equipment available in public and private universities hostels Osun State will not significantly influence the health status of the students negatively was rejected. This was shown by $X^2 = 6.34$, Critical value = 3.315, $df = 1$, $P < 0.05$. Therefore, the usage of

sanitation facilities and equipment available in public and private universities hostels Osun State will significantly influence the health status of the students.

Discussion

One of the findings showed that there were various types of sanitation facilities and equipment

available in public and private universities in Osun State Nigeria. This implied that the university authorities did provide various types of sanitation facilities and equipment for their students.

Another finding showed that sanitation facilities and equipment were adequate both in public and private university hostels. This negates the study conducted by Adio-Moses (2013) that most schools used did have inadequate water supply, no sanitation and no wastes disposal facilities.

Another finding of the study showed that some of the facilities and equipment were effectively used. This opposes the study conducted by Onuzulike (2007) that students have negative approach towards waste disposal method.

Another finding revealed that some of the respondents still littered papers and also defecated anywhere around the hostels. This favours the study conducted by Onuzulike (2007) who revealed that majority of the solid waste disposal habits in the campus among students include littering the hostels and is inappropriate use of sanitary facilities and equipment and Ifegbesan (2012) who reported that there stands indiscriminate and illegal dumping of wastes in undesignated city areas such as road verges, open spaces and alleys.

It was also revealed that there was a significant difference in the adequacy of sanitation facilities and equipment available for student's use in public and private universities in the study areas. This showed that the proportion at which the public and private universities had adequacy of sanitation facilities and equipment for students' use differed.

The study further revealed that there was a significant difference in the usage of sanitation facilities and

equipment available for student's use in public and private universities in the study areas. This also presented that the ratio at which the public and private universities female students used the sanitation facilities and equipment available varied.

One of the results also showed that the usage of sanitation facilities and equipment available in public and private universities hostels Osun State significantly influenced the health status of the students. This supports the report by Onuzulike (2007), which stated that unwholesome disposal of wastes do lead to spread of diseases and unsuitable use of sanitary facilities and equipment usually make people to be infected of various degrees, Nwankwo (2004) who revealed that unhygienic disposal of solid waste creates serious threat to complete environmental sanitation and human health and Santha (2012) who stated that improper disposal of solid and liquid waste can result to vector-borne and waterborne diseases such as diarrhea, malaria, polio, cholera and typhoid.

Conclusion

The following conclusions were made:

- There were various types of sanitation facilities and equipment available for students use in public and private universities in the study areas
- The sanitation facilities and equipment were adequate both in private and public university hostels, but were more adequate in public universities than the private universities.
- Despite the fact that some of the facilities and equipment were effectively used; some of the respondents still littered papers and also defecated

- anywhere around the hostels in the study areas.
- There was a significant difference in the usage of sanitation facilities and equipment available for students' use on their health status in public and private universities in Osun States.
 - There was a significant difference in the adequacy of sanitation facilities and equipment available for student's use in public and private universities in Osun State
 - The usage of sanitation facilities and equipment available in public and private universities hostels significantly influenced the health status of the students negatively.

Recommendations

The following recommendations were drawn:

- Enlightenment programmes on correct/proper usage of equipment and facilities should be mounted by both the public and private university authorities through seminar.
- Enforcement agency should be mounted by both the public and private university authorities through the environmental officers.
- Environmental health officers' should inspect the university particularly the hostel accommodation very often.
- The various types of facilities and equipment provided should be adequate in both the public and private university authorities
- The Standardize and modern facilities and equipment should be embraced by both the public and private university authorities.

- Good sanitation should be applied to the hostels to reduce or possibly eliminate diseases among the students by the university authorities.
- Health Education should be increased to create awareness and importance of environmental health among the university respondents by the authority.

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