

## Assessment of Toilet Facilities in Selected Secondary Schools within Maiduguri Metropolitan, North Eastern Nigeria

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### Abstract

Toilet facilities among other things, is considered a basic requirement in every school environment to cater for both emotional and physical needs of the students. This study aimed to assess toilet facilities in selected public and private secondary schools within Maiduguri Metropolis, Borno state. Ten secondary schools (5 public and 5 private) were purposively sampled for the study. An interview schedule comprising of thirty (30) structured questionnaires was administered in each of the sampled schools making a total of three hundred (300) respondents. The findings of the study reveals that most of the schools especially the privately owned schools have a high number of students-toilet ratio, with schools such as MCS and FBS having as high as 1:387 and 1:295 respectively which is above the required standard of 1:30 of the Nigerian Federal Ministry of Education. All the schools have the necessary inventory expected in a normal school setting even though not in sufficient quantity, except lighting which was only available in ECIT. It was further observed that most of the students (61.7%) practice the habit of hand washing with soap/detergent after toilet use. Similarly, majority of the students (60.7%) mostly from the boarding schools were practicing open defecation. Student T-Test was carried out to compare the toilet facilities between the public schools and the private schools. The result showed a value of (0.086) which is not significant at p value of <0.005. It was concluded that both public and private schools in Maiduguri do not have sufficient toilet facilities. It is thus recommended that the Federal Ministry of Education should put effort towards ensuring schools meet the minimum standard set out by the ministry.

**Keywords:** Toilet, facility, Secondary school, Maiduguri, Nigeria

### 1.0 INTRODUCTION

Secondary Schools, especially public schools in Nigeria, experience a number of infrastructural challenges, one of which is poor/inadequate toilet facilities (Weidner, 2009; Agbo et al., 2012; Shehu et al., 2013). Provision of toilet facilities is considered a privilege rather than a necessity by most school authorities, which leads to failure in their roles to promote the health and safety of the students. Most attention is directed toward academic pursuits of the students despite the health consequences associated with poor toilet infrastructures. These health implications could be physical, emotional or psychological in nature, which eventually results in disease conditions such as Soil Transmitted Helminths (STH), typhoid fever, dysentery, diarrhoeas, cholera, hookworm, *ascariasis*, viral hepatitis, *schistosomiasis*, genito-urinary tract infections and depression among others (Burton, 2013; Nock, Duniya, & Galadima, 2003; Curtis et al., 2000; Bern et al., 1992; Black et al., 1989).

The lack of adequate, well fitted and segregated sanitation facilities at schools discourages a number of Nigerian girls from attending full time education system, which consequently affect their academic performance and perpetuate gender inequity (Save the Children, 2009; Herz and Sperling, 2004; Lidonde, 2005). In 2001, the Federal Ministry of Health and the Federal Ministry of Education in collaboration with WHO took the initial step by conducting a Rapid Assessment of School Health Systems in Nigeria to ascertain the status of school health. The assessment noted the several health problems among learners, the lack of health and sanitation facilities in schools, and the need for urgent action in school health (Federal Ministry of Education, FME, 2006). In line with this, the following standards were set for schools, which include: the toilet facilities shall be gender sensitive for learners and staff, constructed compartmentalized Ventilated Improved Pit (VIP) latrines, where appropriate, Water Closet (WC) facilities is encouraged. There should be at least a toilet compartment for every 30 learners, and schools shall provide fitted urinal for boys. Adequate and separate bathrooms for males and females especially in boarding schools must be adequately provided. It is also expected that toilet and bath be kept clean, disinfected and controlled against pests at all times (Federal Ministry of Education, FME, 2006).

A previous study in this field was by Njodi et al., (1992), which revealed that boarding secondary schools in Borno State of Nigeria have a student-toilet ratio which goes as high as a toilet facility to ninety (90) students. This reveals inadequacy in toilet facilities when compared to the required standard of Nigerian Federal Ministry of Education. Lighting and adequate ventilation was also found to be a major problem in the secondary schools which has severe consequence on teaching learning process. This study on the other hand attempts to bridge a gap, by exploring the current situation of the schools' toilet facilities and comparing facilities between public and private secondary schools in the study area.

## 2.0 AIMS AND OBJECTIVES

Based on the above background, this study aims to comparatively assess the state and nature of toilet facilities in public and private schools located within Maiduguri, Borno State, Nigeria. The specific objectives are to take inventory of the toilet facilities, examine the characteristics and functionality of the toilets, determine the number of students that use the toilet facilities and compute student-toilet ratio, assess the usage and hygiene practices of the students and finally compare the toilet facilities between public and private schools.

## 3.0 METHODOLOGY

**3.1 Study Design and Area** - This study adopted a quantitative cross-sectional survey design using interview schedule comprising of structured questionnaires and participant observation. The participant observation was only done to ascertain the nature of the toilet facilities. The study was conducted in Maiduguri, the capital and biggest city of Borno state in the north east geopolitical zone of Nigeria.

**3.2 Population and Sampling** - The population of the study area is 546,016 out of which 282,409 are male and 257,607 are females. Its residents are mostly Muslims including Kanuri, Shuwa Arab, Bura, Marghi and Fulani ethnic groups. (National Population Commission, NPC. official Gazette, 2009). There are a total of fourteen (14) public and twenty eight (28) registered private secondary schools within the study area. The data for this study was derived from ten (10) secondary schools within Maiduguri Metropolis (Figure 1). A purposive sampling technique was used to select (5) public and (5) private secondary schools. The coordinates obtained for each school was infused into the Maiduguri township map using Arc View Geographical Information System (GIS) software version 10.2. Figure 1 shows a map of the study area indicating the location of the sampled schools with the public school represented by yellow dots while the private schools represented by green dot.

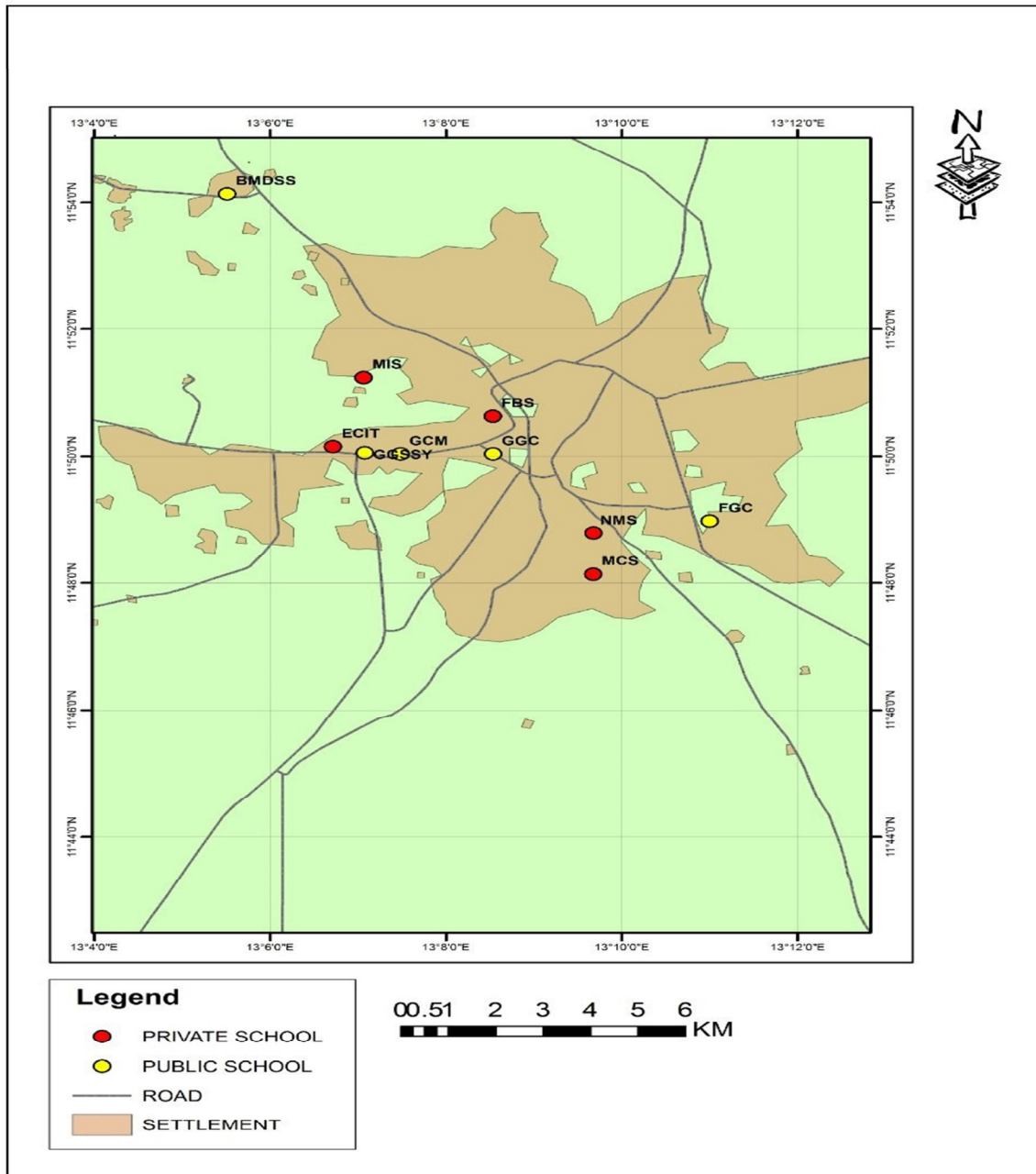
**3.3 Data Collection** - Each of the sampled school has a population of over five hundred (500) students. A total of thirty (30) questionnaires representing an estimated 5% of the school population were administered in each of the schools in equal proportion to both male and female students, bringing the total number of respondents to three hundred (300). The questionnaires were filled in the presence of the investigator and under the coordination of the school teachers. Table 1 shows the sampled schools for the study which were allocated codes for easy identification.

**Table 1: Sampled schools**

Public Schools	Code	Private Schools	Code
Government College Maiduguri	GCM	Maiduguri Capital School	MCS
Government Girls College	GGC	Foundation Bilingual School	FBS
Government Girls Sec Sch. Yerwa	GGSSY	Maiduguri Innovative School	MIS
Federal Government College	FGC	Namu Model School	NMS
Brigadier Maimalari Day Sec. Sch.	BMDSS	El-kanemi College of Islamic Theology	ECIT

**3.4 Ethical Consideration** – The study was first approved by University of Maiduguri research and ethical committee. Thereafter, a formal permission was obtained from each of the selected secondary school and an informed consent was sought from each participants before proceeding the study. Anonymity and confidentiality of information was maintained throughout the study.

**Figure 1: Maiduguri Metropolis Showing the Sampled Schools**



Source: Fieldwork, 2015

## 4.0 RESULTS

### 4.1 Demographic Characteristics of Respondents

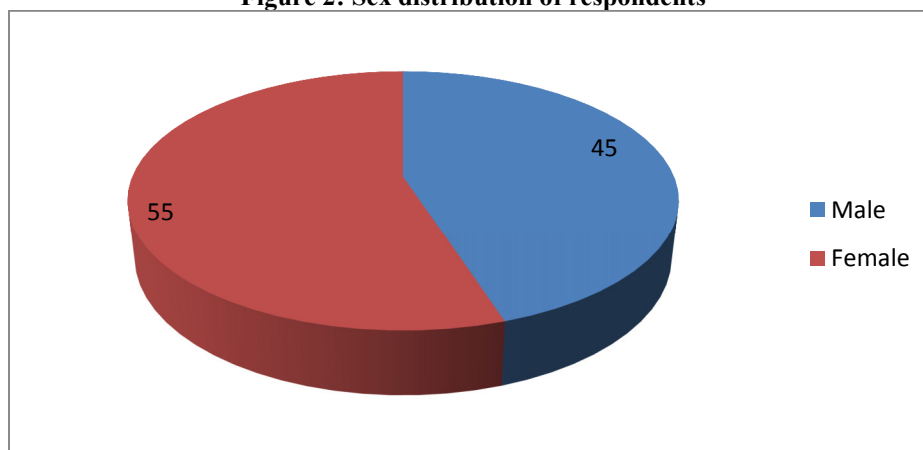
The demographic characteristics of the respondents considered in this study includes their age (Table 2) and sex (Figure 2), this is due to the fact that the study sample comprises of secondary school students. Table 2 shows the demographic characteristics of the respondents out of which 99 are between the ages of 10-14 years, which represent 33.0%, those between the ages of 15-19 are 122 and represent 40.7% while those who are 20 years and above are 79 and represents 26.3% respectively. Male to female ratio is 1:1.2, which could be as a result of the fact that some of the schools such as GGC and GSSY are exclusively for females.

**Table 2: Age Distribution of Respondents**

Variables	Frequency	Percentage
<b>Age of Respondents</b>		
10-14 years	99	33.0
15-19 year	122	40.7
20 years and Above	79	26.3
<b>Total</b>	<b>300</b>	<b>100.0</b>

Source: Fieldwork, 2015

**Figure 2: Sex distribution of respondents**



Source: Fieldwork, 2015

#### 4.2 Student-Toilet Ratio

To determine the student toilet-ratio, the total number of students in each school was divided by the corresponding total number of toilet facilities available. Table 3 reveals that MCS and FBS were having the highest student toilet ratio with 2320 and 590 total number of students and a toilet ratio of 1:387 and 1:295 respectively. While FGC had the lowest student toilet ratio with a total of 840 students and a toilet ratio of 1:11, the rest of the school were having a toilet ratio a little above the ratio of 1:30. This is not in conformity with the standard of Federal Ministry of Education.

**Table 3: Ratio of Student to Number of Toilet Facilities Available**

Name of School	No. of Students	No. of Toilets	Ratio
GCM	6625	150	1:44
GGC	2806	98	1:29
GGSSY	1974	60	1:33
FGC	840	75	1:11
BMDSS	1200	17	1:71
MIS	651	6	1:109
MCS	2320	6	1:387
FBS	590	2	1:295
NMS	1150	25	1:46
ECIT	1500	35	1:43

Source: Fieldwork, 2015

#### 4.3 Inventory of Toilet Facilities

Table 4 and 5 shows a comprehensive list of the inventory of basic facilities expected in a normal school setting for both the public and private schools which includes; Doors, windows, lighting, wash hand basin /water container and soap/detergent. The result shows that all the schools both public and private have the necessary facilities required even though not in substantial quantity except for the lighting which is lacking in all the schools excluding ECIT which had a functional lighting facility installed in the toilets.

**Table 4 Inventory of Toilet Facilities in Public Schools**

Public Schools	Inventory						
	Doors	Windows	Lighting	Wash Hand Basin	Water Container	Soap	
GCM	✓	✓	•	✓	✓	✓	✓
GGCM	✓	✓	•	✓	✓	✓	✓
GGSSY	✓	✓	•	✓	✓	✓	✓
FGCM	✓	✓	•	✓	✓	✓	✓
BMDSS	✓	✓	•	✓	✓	✓	✓

Source: Fieldwork, 2015

**Table 5: Inventory of Toilet Facilities in Private Schools**

Private Schools	Inventory						
	Doors	Windows	Lighting	Wash Hand Basin	Water Container	Soap	
MIS	✓	✓	•	✓	✓	✓	✓
MCS	✓	✓	•	✓	✓	✓	✓
FBS	✓	✓	•	✓	✓	✓	✓
NMS	✓	✓	•	✓	✓	✓	✓
ECIT	✓	✓	✓	✓	✓	✓	✓

Source: Fieldwork, 2015

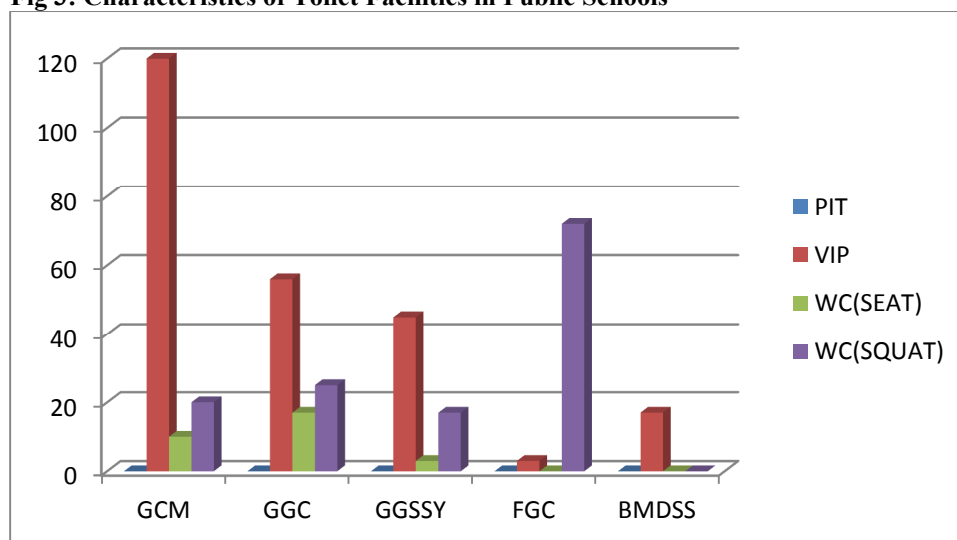
**KEY**

Yes	✓
No	•

#### 4.4 Characteristics of Toilet Facilities

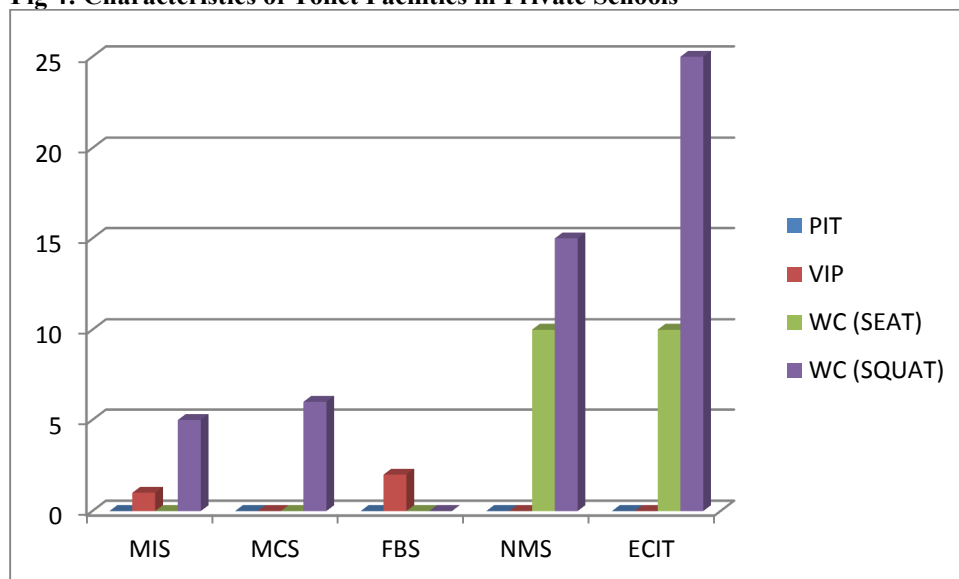
From the findings of this study, the characteristics of toilet facilities available in the schools were identified. This comprises of the different type of toilet facilities expected in a normal school setting. The result of the findings is presented in figure 3 and 4 for both public and private schools respectively. The most commonly used type of toilet facility in the public schools is the Ventilated Improved Pit (VIP) followed by Water Closet (WC) Squat which were available in reasonable number in the public schools. This is because the two classes of toilet require just little amount of water to flush. On the other hand, findings from the private schools indicate that most schools use Water Closet (WC) squat as the most common type of toilet facility available, with schools such as ECIT having as much as 20 and TMC had a total number of 15. Next to Water Closet (WC) Squat is the Water Closet (WC) Seat which also had 15 available in ECIT and 5 in TMC respectively.

**Fig 3: Characteristics of Toilet Facilities in Public Schools**



Source: Fieldwork, 2015.

**Fig 4: Characteristics of Toilet Facilities in Private Schools**



Source: Fieldwork, 2015.

#### 4.5 Assessment of the Hygiene Practices of Students

This section covers questions on the personal hygiene practices of students, which includes; Frequency of visiting toilet, practice of open defecation, places used instead of the toilet and hand washing habit.

##### 4.5.1 Frequency of Visiting the Toilet

Table 6 shows how frequent the students visit the toilet on daily basis, it reveals that 25% of the respondents use the toilet only once in a day, while 38% go to the toilet twice a day, 28.3%, three times per day and finally only 8.7% of the respondents use the toilet four times in a day which represent the least percentage of response in this category and comprise of mostly the female students.

**Table 6: Frequency of Visiting Toilet Facility**

Name of School	Once		Twice		Thrice		4 Times		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
GCM	7	23.3	11	36.7	10	33.3	2	6.7	30	100.0
GGC	7	23.3	11	36.7	10	33.3	2	6.7	30	100.0
GGSSY	8	26.7	12	40.0	6	20.0	4	13.3	30	100.0
FGC	10	33.3	12	40.0	6	20.0	2	6.7	30	100.0
BMDSS	4	13.3	10	33.3	14	46.7	2	6.7	30	100.0
MIS	8	26.7	11	36.7	9	30.0	2	6.7	30	100.0
MCS	8	26.7	12	40.0	7	23.3	3	10.0	30	100.0
FBS	10	33.3	11	36.7	6	20.0	3	10.0	30	100.0
NMS	7	23.3	12	40.0	9	30.0	2	6.7	30	100.0
ECIT	6	20.0	12	40.0	8	26.7	4	13.3	30	100.0
<b>Total</b>	<b>75</b>	<b>25</b>	<b>114</b>	<b>38</b>	<b>85</b>	<b>28.3</b>	<b>26</b>	<b>8.7</b>	<b>300</b>	<b>100.0</b>

Source: Fieldwork, 2015

#### 4.5.2 Practice of Open Defecation

Table 7 shows the practice of open defecation by students, whereby one hundred and eighty two (182) of the respondents (60.7%) admitted practicing open defecation. Of the students practicing open defecation, eighty nine (89) are male students representing 60.5% of the male respondents. While ninety three (93) are female students representing 60.8% of the female respondents. The students who admitted the practice of open field defecation attributed it to the dirty nature of the school toilets. Therefore they prefer to engage in open defecation.

**Table 7: Practice of Open Defecation**

Sex	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
Male	89	60.5	58	39.5	147	100.0
Female	93	60.8	60	39.2	153	100.0
<b>Total</b>	182	60.7	118	39.3	300	100.0

Source: Fieldwork, 2015

#### 4.5.3 Places of Open Defecation

Table 8 shows that out of the total number of students that practice open defecation, 16.5% of them use the school farm, while 33% goes behind the school toilets. 29% of the respondents usually go close to the school fence which is mostly practiced by the female boarding students because their schools are mostly fenced. Finally 21.4% of the students do such practice within the school premises, which is mostly practiced by the male students.

**Table 8: Places of Open Defecation**

Sex	School farm		Behind the toilet		School fence		School premises		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Male	24	27.0	23	25.8	10	11.2	32	36.0	89	100.0
Female	6	6.5	37	39.8	43	46.2	7	7.5	93	100.0
<b>Total</b>	30	16.5	60	33.0	53	29.1	39	21.4	182	100.0

Source: Fieldwork, 2015

#### 4.5.4 Practicing of Hand Washing after Toilet Use

Table 9 reveals the practice of hand washing after toilet use by the students. Majority of the respondents 61.7% agree they usually wash their hands with soap/detergent after using the toilet, while only 38.3% of the respondents admitted they do not usually engage in hand washing using soap/detergent after toilet usage which is a very important hygiene practice expected of every student to prevent the possibility of outbreak of diseases.

**Table 9: Practicing of Hand Washing after Toilet Use**

Schools	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
GCM	20	63.3	10	36.7	30	100.0
GGC	20	66.7	10	33.3	30	100.0
GGSSY	19	66.7	11	33.3	30	100.0
FGC	16	53.3	14	46.7	30	100.0
BMDSS	23	76.7	7	23.3	30	100.0
MIS	15	50	15	50	30	100.0
MCS	19	63.3	11	36.7	30	100.0
FBS	16	53.3	14	46.7	30	100.0
NMS	20	66.7	10	33.3	30	100.0
ECIT	17	56.7	13	43.3	30	100.0
<b>Total</b>	185	61.7	115	38.3	300	100.0

Source: Fieldwork, 2015

#### 4.6 Association between School Type and Student-Toilet Ratio

T- Test was used to compare the student-toilet ratio between public and private schools. P value of 0.05 was considered statistically significant.

#### 4.6.1: T-Test of Student-Toilet Ratio between Public and Private Schools

Public	Private
N: 5	N: 5
Mean: 37.6	Mean: 176
95%: (10.12 65.08)	95%: (-18.113 370.11)
Var.: 489.8	Var.: 24440
95% conf. for difference between means: (-24.428 301.23)	
Bootstrapped: (9.4 256)	

#### TESTS

F: 49.898	p (same): 0.0022857
t: -1.96	p (same): 0.085655
Uneq. var t -1.96	p(same):0.11882
Permutation t test (N=9999):	p(same):0.0471

#### Interpretation

There was no significant difference in student-toilet ratio of ( $p=0.086$ ) at 95% confidence level ( $p<0.05$ ). Where  $t = -1.96$  d.f = 8 and  $p = 0.086$

#### 5.0 DISCUSSION

From the findings of this study it was observed that the most commonly used type of toilet facilities are ventilated improved pit and water closet (squat), this is because it requires little amount of water to flush. This is in conformity with the recommendation of Federal Ministry of Education, FME, (2006), which stipulates that schools should have water-carriage system fitted with squatting bowl to facilitate easy flushing with small quantity of water. In schools such as GGC even though there are water closets (seat) available, students are mostly prevented from using them to avoid mismanagement. Findings of the study also revealed that only one of the schools FGC has a student-toilet ratio of 1:11 above the required standard. FBS and MCS which are privately owned have a toilet ratio of 1:295 and 1:387 respectively which is far below the recommended standard. This is a violation of the set standard of FME, which is in conformity with findings of Njodi *et al.*, (1992) that reveals inadequacy in toilet facilities in male and female boarding schools in Borno state over 2 decades ago. This means the inadequacy in toilet facilities in Borno state schools still exists with no improvement over the last 23 years. This is particularly prevalent in privately owned schools where very high level ratio of students to toilet facilities was observed.

The study also revealed that despite the presence of clean toilets, more than half of the respondents who are mostly from the boarding schools agreed to the habit of practicing open defecation, mainly due to poor nature of the toilet facilities. This is in agreement with the study of Shehu *et al.*, (2013) where they observed a high rate of helminth infections among students as a result of poor usage of the toilet facilities and practice of open defecation. It was further revealed that all the schools have the basic inventory expected in an average school setting, even though not in substantial quantity, except for lighting which is mostly non functional. This corroborates with the findings of Njodi *et al.*, (1992) where poor ventilation and lighting facilities were observed in most of the boarding schools in Borno state. Inadequacy in lighting and ventilation in school could be a push factor to open defecation especially at night as the open space could be more comfortable than a dark and poorly ventilated toilet facility.

On hygiene practice, it was observed that most of the students practice the act of hand washing with soap or detergent after toilet use. While some of them admitted not practicing hand washing after toilet use. The later can be attributed to inability of the schools to installed hand washing basins in the toilets, with only a few of them such as FGC, GCM, NMS and ECIT have them installed. The finding of the study also reveals a T-Test value of 0.086 for student-toilet ratio between the public and privately owned schools which shows a non significant difference at 95% level of significance. This means, in-terms of toilet facilities, both private and public schools operate at similar rates. However, those in the boarding schools could be at more disadvantages since they are dependant completely on what the school provided during the period of their study. Most of the public owned schools (GCM, GGC, FGC) are boarding as compared to private owned schools (ECIT), hence the Nigerian government need to do more on boarding schools in order to safeguard the lives of students. The major limitation encountered on the course of this study was from the privately owned schools, whereby quite a number of them initially declined to grant access to the researcher for the fear of exposing their weaknesses. However, this was surmounted by assuring the schools of strict confidentiality of their response of which will only be used for the purpose of this research. Another limitation was on the indefinite closure of the public secondary schools in the state due to intense civil crises affecting the state. This has brought about a great delay on the timely completion of the whole research process, as the researcher had to wait for the schools to resume.



## 6.0 Conclusion

Based on the findings of this study, it was concluded that basic toilet facilities exist in both private and public schools in Maiduguri metropolis, but are in poor condition and not in sufficient quantity. This encourages practice of open defecation which can predispose students to diseases outbreaks. It is thus recommended that the Nigerian Federal Ministry of Education should put more effort towards ensuring both public and private schools meet the minimum standard set out by the ministry.

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