ASSESSMENT OF SANITATION PRACTICES AMONG THE STUDENTS IN SELECTED PUBLIC SECONDARY SCHOOLS IN PORT HARCOURT, NIGERIA

ABSTRACT

Poor sanitation in the learning environments puts children of school age under threat of contracting infectious diseases as well impact on their overall development. This problem threatens the right to education for children in developing countries. Thus, this study aimed at assessing sanitation practices among selected secondary schools in Port Harcourt, Rivers State, Nigeria. A descriptive cross-sectional survey was used in this study. Students from government-owned schools were randomly selected for this exercise. The study showed that many of the students were knowledgeable about hand washing and practiced hand hygiene, particularly after visiting the toilet. The majority of the schools had storage containers for waste, toilets, potable water supply, and soap for hand washing, but no hand towel or tissue for cleaning hands after washing. The students were also knowledgeable about waste management, which was taught to them by their schools. The solid waste management practice of the school was generally satisfactory as wastebaskets were available and placed close to the classrooms, and disposed of daily. It is strongly recommended that water used in schools should be compulsorily treated periodically to eradicate waterborne diseases.

Keywords: Sanitation, hygiene, learning environment, school age, infectious diseases

1. INTRODUCTION

Potable water and sanitation culture are worth prioritizing among secondary school students, as it impresses on their health and development [1]. It can be argued that sanitary practices and inadequate potable water can affect the health of students in our secondary schools. Hand washing alone and in concert with good hygiene affects public health and can cut down the mortality figures from diarrheal diseases, which is ranked among the top ten in adolescents [2,3]. As a recommendation, Caruso *et al*. [4] explained that the statistics can be brought down through improved learning, awareness, and health practices among schools.

Hand washing was introduced in a public health facility as a precursor to help reduce the spread of diseases among public schools [3]. Documents made available show, schools play an important role in decreasing diseases generated by sanitation and hygiene [2,5] as infections, gastrointestinal disorders, and neurocognitive and psychological sicknesses were gotten from schools where public health amenities were inadequate most especially in developing countries [6].

UNICEF [1] documented that approximately a third of the world's population lacks adequate sanitation with about a quarter of that figure not privy to portable water supply, which is the cause of death of nearly 800 children worldwide. Water provision and cleanliness programs helped in the reduction of the COVID-19 outbreak, which suggests that ensuring the provision of conditions is crucial in managing the outbreak as it relates to the virus [7].

Poor hygiene can affect children learning through absenteeism in schools following exposure to diarrheal diseases, chemical contamination in water, malaria parasites, and other waterborne-related diseases [1]. The WASH program was established as an international intervention body to help control disease outbreaks in communities. Fuelled by water and sanitation inadequacies, the programis not doing well in Nigeria. Several researchers have

pointed out that the program is not getting the proper attention and implementation has been abysmal [6,8]. The governments of this nation at all tiers are still battling with the basic provision of water and sanitation issues, and even with interventionist programs put in place to remedy the situation, the condition does not seem to be improving, as our population keeps escalating proportionate to our poverty level.

The government of Rivers State invested so much in upgrading public school infrastructures between 2007 and 2015. The intent of the massive investment according to the government was to make government in the state standard models. It is not known, however, how modernizing the schools have impacted the learning environment as regards sanitation. This study purposes to ascertain the sanitation practices in public secondary schools situated in Port Harcourt.

2 MATERIALS AND METHODS

2.1 Research Design

Descriptive cross-sectional research was adopted to study the sanitation practices among students in sampled secondary schools situated in Port Harcourt, Rivers State.

2.1.1 Exclusion Criteria

1. Government-owned schools established more than 5 years ago
2. Students who have stayed more than a term in the school
3. Students that were originally admitted into the school from JS 1 to SS3

2.1.2 Exclusion Criteria

Students from transfer to the school were excluded

2.2 Study Area

Port Harcourt is the capital city of Rivers State, situated in the southernmost part of Nigeria, in the delta plain of the River Niger. Port Harcourt is a comparatively young city established only about 100 years ago. It is famous as a center of commerce and industry in the south-south, predominated by oil refineries and petroleum-producing companies. It is also a cultural center with plenty of libraries, parks, theaters, vivid nightlife, and an expanse of shopping facilities. The population of Port Harcourt is about 2 million inhabitants, with the community being multi-national, multi-cultural, and multi-religious.

2.3 The Study Population

The study population is secondary school students from the 683 Private and 36 Government schools in Port Harcourt – Obio Akpor and Port Harcourt Local Government Area according to the Rivers State Ministry of Education.

2.4 Samples Size

The sample of this research was calculated by using the Taro Yamane formula with a 95% confidence level. The sample size of 500 was selected based on the sample size computation.

Participants were gotten from selected public secondary schools within Port Harcourt City as shown in Table 1.

Table 1: Sampled population from various schools

Secondary School	Population	Questionnaire
Government Secondary School Apara, Nkpolu	7800	100
Government Girls Secondary School Rumuokwuta	7160	100
Federal Government College Port Harcourt	8900	100
Government Secondary School Borokiri	7400	100
Holy Rosary Secondary School Ogbunabali	7740	100

2.5 Method of Data Collection

Questionnaires for the study were administered to students from the selected schools from Junior Secondary 1 – Senior Secondary 3, to solicit information on socio-demographic characteristics, potable water and sanitation practices, solid waste management, toilet facilities, and sanitation practices.

2.6 Ethical Approval

2.6.1 Ethical Clearance

Ethical clearance for the study was obtained from the COHSE Centre.

2.6.2 Permission

Permission was obtained from School principals before the research was conducted.

2.6.3 Informed Consent

Written consent was obtained from each partaker by asking them to tick a consent box.

2.7 Statistical analysis

Data were presented using frequency tables. Chi-square was employed to establish relationships between variables.

3. RESULTS

Out of the 500 questionnaires administered, all 500 were also returned although with varying degrees of missing entries in them. The results as presented in the table below covers responses retrieved from the questionnaire in line with the study objectives.

3.1 Socio-demographic characteristics

The socio-demographic characteristics of the respondents are presented in Table 2. Students aged 11-13 (37.8%) preponderate, while those aged 7-9 were the least (0.6%), so also the female gender at 59.4%, against 37.8% male population. Studentsin JS3 preponderate at 32.6%, with those in JS 1 tailed at the extreme at 0.4%. The dominant religion practiced by them was Christianity (96.2%), whilst other religions record the lowest at 1%. A larger number of them reside with both parents (70.8%), while a smaller number (0.4%) live with others not listed.

Table 2: The Socio-demographic Characteristics of the respondents

Demographics		Frequency	% Frequency
Age	7-9	3	0.6
	9-11	30	6.0
	11-13	189	37.8
	13-15	168	33.6
	15-17	84	16.8
	17-19	4	0.8
	Total	478	95.6
Sex	Female	297	59.4
	Male	189	37.8
	Total	486	97.2
Class	SS1	51	10.2
	SS2	66	13.2
	SS3	82	16.4
	JS3	163	32.6
	JS2	133	26.6
	JS1	2	0.4
	Total	497	99.4
Religion	Christianity	481	96.2
	Islamic	12	2.4
	Others	5	1.0
	Total	498	99.6
	Residential Status		
	Reside with both parents	354	70.8
	Reside with Mother only	41	8.2
	Reside with Father only	12	2.4
	Reside with Guardian	50	10.0
	Reside with other Family relatives	29	5.8
	Others	2	0.4
		488	97.6

Total

3.2 Potable Water and Sanitation Practices

Tables 3 and 4 show the responses on potable water and sanitation practices among the students. The preponderance of the students answered in the affirmative on awareness of hand washing (99%), with the greatest fraction (36%) informed by the health center and the least (2%) by other channels not listed. Again, preponderance (96.6%) affirmed the practice of hand hygiene, of which 51% (majority) admitted to doing so after visiting the toilet while 6% (minority) did so after the break. The preponderance of the pupil answered in the affirmative to having portable water in school, potable water being easily accessible in school or at home, availability of hand washing facility in school, and having soap to wash hands in school at 89.4%, 86.8%, 94.2% and 94% correspondingly. On how often they wash hands while at school, preponderance (59.2%), said they do so for less than 30 minutes and the least number (12.8%) do so for an hour or more. On the reason for not washing hands, the preponderance of the students (58.2%) reported forgetfulness, while the least reason was no time at 17.4%(Table 3).

3.3 Solid Waste Management/Sanitation

Table 4 shows the responses on solid waste management/sanitation. The preponderance of pupils reported that they have heard of waste management (86%), and have been educated on proper waste disposal by your school (91.6%). The schools generate paper and carton waste the most and glass waste the least. The wastebasket was used the most (84.6%) for waste collection and the old bucket the least (3%). On the frequency of emptying waste containers, 80% (majority) reported once a day, and 3.6% (minority) reported once in two days. The usual place where the collected waste was disposed of was in the public bin (84.6%) most times and by the road or street side (5.4%), the least. The preponderance of the pupil (62.8%) admitted that the waste bin was positioned close to your classroom.

3.4 Toilet Facility and Sanitation Practice

Table 5 shows the responses on toilet facilities and sanitation practices. On the availability of toilet facilities, the preponderance of students (88%) answered in the affirmative, of which the majority was water cistern (90%). On the frequency of washing the toilet, the preponderance of the students (70.6%) reported daily while monthly was the least at 4%, of which water, disinfectant, and detergent were mostly used (86.8%) and water only was the least at 5%. The preponderance of the students answered in the affirmative about washing of hands after using the toilet, drying mopping the toilet after washing, and having a ventilated toilet at 96% 82.4%, and 87% respectively.

Table 3: The Responses on Potable Water and Sanitation Practices

Variables	Response	Freq.	% Freq.
Are you aware of hand washing?	Yes	495	99.0
	No	2	0.4
If Yes, where did you hear of hand washing?	Parents	151	30.2
	Peers	11	2.2
	Media	142	28.4
	Health Center	180	36.0
	Others	10	2.0
Do you practice hand hygiene in school?	Yes	483	96.6
	No	7	1.4
If Yes, how often do you practice hand hygiene?	Before eating	182	36.4
	After eating	16	3.2
	After visiting the toilet	255	51.0
	After break	30	6.0
Do you have potable water in school?	Yes	447	89.4
	No	49	9.8
Is the potable water easily accessible in school or at home?	Yes	434	86.8
	No	37	7.4
Do you have hand washing facility in school?	Yes	471	94.2
	No	21	4.2
Do you have soap to wash hands in school?	Yes	470	94.0
	No	25	5.0
How often do you wash your hands while at school?	Less than 30 minutes	296	59.2
	30 minutes	139	27.8
	1 hour or more	64	12.8
Do you have hand towel or tissue for cleaning hands after washing in school?	Yes	208	41.6
	No	285	57.0

What is the reason for not washing hands?	Forgetfulness	291	58.2
	No time	87	17.4
	Classroom far from the sink	109	21.8

Table 4: The Responses on Solid Waste Management/Sanitation

Variables	Response	Frequency	% Frequency
Have you ever heard of solid waste management?	Yes	430	86.0
	No	61	12.2
Have you ever been educated on proper waste disposal by your school?	Yes	458	91.6
	No	22	4.4
What type of solid waste comes out from your school?	Paper and carton	286	57.2
	Plastics/bottles	71	14.2
	Food waste	131	26.2
	Glass waste	7	1.4
In what type of container do you collect waste?	Carton	34	6.8
	Wastebasket	423	84.6
	Old bucket	15	3.0
	Plastic bags	24	4.8
How often is the waste container emptied?	Once a day	400	80
	Once in two days	18	3.6
	Once in three days	22	4.4
	Once a week	49	9.8
Where do you usually put away collected waste?	In the public bin	423	84.6
	By the road or street side	27	5.4
	On an open space	47	9.4
Is the waste bin positioned close to your classroom?	Yes	314	62.8
	No	174	34.8

Table 5: The Responses on Toilet Facility and Sanitation Practice

Variables	Response	Frequency	% Frequency
Do you have a toilet facility?	Yes		
	No	440	88.0
		53	10.6
What toilet facility do you have on the school premises?	Pit toilet	39	7.8
	Water cistern	450	90.0
How often do you wash your toilet?	Daily	353	70.6
	Weekly	122	24.4
	Monthly	20	4.0
Do you wash your hands after using the toilet?	Yes	480	96.0
	No	9	1.8
What do you use in washing the toilet?	Water only	25	5.0
	Water & Disinfectant only	30	6.0
	Water, Disinfectant & Detergent	434	86.8
Do you mop to dry the toilet after washing?	Yes	412	82.4
	No	80	16.0
Is toilet ventilated?	Yes	435	87.0
	No	59	11.8

The chi-square test shows a significant relationship between having portable water and easy access to potable water in school or at home.

The chi-square test shows a significant relationship between having a hand-washing facility in school and access to soap for hand washing in school.

The chi-square test shows a significant relationship between having a safe storage container in school and a tap on the container for the collection of water in school.

The chi-square test shows a significant relationship between having a toilet facility in school and washing hands after using the toilet.

4 DISCUSSION

This study ascertained the level of sanitation compliance and practices in selected public schools in Rivers State, Nigeria. Generally, public schools in Nigeria lack basic infrastructure and are mostly attended by children from poor homes that struggle with basic needs [9]. The socio-demographic characteristics of the respondents showed that students aged 11-13 (37.8%) were preponderate, and were mostly female (59.4%).According to UNESCO [10], gender, geographic location, and poverty are important factors in the pattern of educational marginalization in Nigeria, and the girl child suffers more in the absence of sanitation facilities in the school.

The awareness level of students on hand washing (99%) and the practice of hand hygiene (96.6%) were nearly perfect with a great fraction of the students admitting to having been taught by the school and by health centers, which is a testimony to the effectiveness of school and community-based enlightenment campaign on personal hygiene, particularly in the wake of COVID-19 pandemic. This was also helped by the fact that the schools had portable water, which is easily accessible, and hand washing facilities including soap. This is in agreement with the report of Temitayo [11] for students in Ile-Ife, Osun State, and Oluwole *et al*. [12] for students in Somolu, Lagos State. Ghanim *et al*. [13] likewise reported an agreeable knowledge and practice of personal hygiene amongst students in Sharjah, UAE, which was attributed to the role of teachers and parents. Ezeaka *et al*. [14] similarly reported high awareness of hand washing amongst students in Anambra State however that did not translate to better practice. Dajaan *et al*. [15] reported moderate hand-washing knowledge and practices among students attending government schools in Kintampo, Ghana. Nofiu *et al*. [16] reported poor knowledge of water sanitation among students attending boarding schools in Kaduna State. Jasper *et al*. [6] averred that in schools where students were exposed to inadequate water cum sanitation infrastructure, they tend to experience high rates of gastrointestinal, infectious, psychological, and neuro-cognitive illnesses**.**Onthe reason why students do not wash their hands after using the toilet, preponderance (58.2%) of them blamed it on forgetfulness, similar to the report by Oluwole *et al*. [12] with a frequency of 49.8%.The Chi-square test showed that there is a statistically significant relationship between having the awareness of hand washing and where the awareness came from; between knowing how to practice social hand washing in school and the need to wash hands for at least 15 seconds; between knowing how to practice social hand washing in school and the need to remove ornaments such as watches and rings before washing; likewise between practicing hand hygiene in school and how often it is practiced.

The awareness of waste management by the students and the solid waste management practice of the schools were satisfactorily high, as the majority of them had storage containers for waste, which they emptied daily. It could be because the schools are situated within the city center and with previous investments by past governments to transform such schools to model schools, they could reasonably be equipped with sanitation and toilet facilities to meet that description, aside from the fact that Port Harcourt dubbed the garden city is relatively clean. This supports the claim by Daramola [17] and Daramola [18] that environmental sanitation is influenced by socio-economic elements like the place of residence, so it would be better in a city than in rural settings. Again, the schools played a role in creating awareness and ingraining the practice into the students, which supports the position of Oluwole *et al*. [12] and Iyam [19] on the role of education in building the right attitude towards sanitation. There exists a statistically significant relationship between awareness of solid waste management in this study and having been educated on proper waste disposal by the school. Contrary to this study, studies in Ibadan the capital city of Oyo State showed moderate practice in schools in Adeolu *et al*. [20], while Ana *et al*. [21], reported poor waste management practice among secondary schools and inadequate waste management facilities

and Egbinola and Amanambu [22] a worrying statistics of students to toilet ratio as high as 510:1 in the government-owned schools in the city.

A good number (88%) of the schools had toilets connected to water supply for hand washing and flushing, and they were regularly cleaned. For government-owned secondary schools, that is an impressive number. Agbo *et al*. [23] reported that about 40% of government schools sampled in Jos, Plateau State, had no toilet facilities. Among the infrastructural challenges facing public secondary schools in the country, inadequate/poor toilet facilities rank tops ([22-24].The major priority for most schools is just academic goals with little or no regard for toilet facilities despite the obvious health consequences. Ebong [25], established that even with knowledge of environmental hygiene without adequate and proper sanitation facilities such as adequate water supply and good toilet facilities, it becomes counterproductive. The Chi-square showed that there is a statistically significant relationship between having a toilet facility in school and washing hands after using the toilet. Toilet facilities help to promote hygiene among students and should be adequately provided in school settings [26].

CONCLUSION

The study showed that the majority of students attending public schools in Rivers State, Nigeria were knowledgeable about hand washing and practiced hand hygiene, particularly after visiting the toilet. The majority of the school had storage containers for waste, toilets, potable water supply, and soap for hand washing, but no hand towel or tissue for cleaning hands after washing. The students were also knowledgeable about waste management, which was taught to them by their schools. The solid waste management practice of the schools was generally satisfactory as wastebaskets were available and placed close to the classrooms, and disposed of daily.

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