

# Availability and adequacy of WASH facilities in secondary schools in Lagos State, Nigeria

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**Abstract.** The curtailment of infectious diseases is facilitated through observance of good hand hygiene, a habit which tends to be low less observed in developing countries. This paper investigated the level of availability and adequacy of water, sanitation and hygiene (WASH) materials in secondary schools in Lagos State, Nigeria. The sample size is made up of 620 respondents, selected through a combination of purposive, stratified, and simple random sampling methods. Research instruments adopted included questionnaires, focus group discussion guide, document observation, and unobtrusive observation. Quantitative data were analyzed through the Statistical Package for Social Sciences (SPSS). The study showed that the majority of the respondents (87.4%) admitted that the most typical type of toilet facility is a water closet, followed by pit latrine (13.7%) and open space (1.6%) for defecation. A majority of the respondents considered the provision of a wash hand basin as grossly inadequate. Therefore, researchers recommended improvement of structures, facilities, and materials relating to WASH in schools across Lagos State, Nigeria.

## 1 Introduction

This study investigates the level of availability and adequacy of WASH materials associated with hand hygiene (HH) among secondary school students in Lagos State, Nigeria. The acquisition of enduring healthy habits is most crucial and most accessible at the childhood and adolescent life stages because these groups are the most susceptible to infections gained from unwashed hands [1]. Proper handwashing is imperative before, during, and after preparing food or eating; before and after caring for the sick; before and after treating a cut or wound; and after using the toilet [either to defecate or urinate]. Other instances when hand hygiene is needful are after changing diapers or cleaning up a child who has used the toilet; after blowing your nose, coughing, or sneezing; after touching an animal, animal feed, or animal waste; after handling pet food or pest treats; after touching garbage; and when a person comes into contact with a corpse or dead animals and after handling any form of chemicals [2]. Health promotion enhances public awareness of need for HH. Health promotion strategies require the combined efforts of public health educators, government officials, community members, and the media. The messages must be adequate, attractive, accessible, culturally

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relevant, and convincing. This also requires the creative use of repetition, also called redundancy [3].

Significant studies are dealing with hand hygiene practices [4, 5, 6]. However, none of these studies specifically addressed the availability and accessibility to WASH facilities in secondary schools in Lagos State, Nigeria. A notable study [4] investigated the level of hand-washing behavior (HWB) and hand-washing with soap (HWWS) compliance among school children in the multi-ethnic rural area of northern Vietnam. The study was conducted in six primary and secondary schools and the homes of four ethnic villages in northern Vietnam. Quantitative methods were added to face-to-face interviews and demonstration of the hand-washing protocol to 319 school children in first, fourth, and seventh grades. Qualitative methods included structured observations at six schools and 20 homes comprising 24 children. The study [4] reveals that among the 319 school children interviewed, 66% reported HWWS. However, through the demonstration protocol, only 10 out of 319 school children performed HWWS satisfactorily. There is, therefore, a huge gap between the actual practice of hand-washing with soap and awareness of the practice. The percentage of students who washed their hands at recommended times [30–60 sec] was 58%. This proportion increased by grade [from 34% among grade 1 to 67% among grade 7;  $p < 0.05$ ]. All 20 homes of school children visited had soap and water, but none of the six schools had soap for hand-washing. The study describes poor compliance of school children with HWWS in a multi-ethnic population in Vietnam. The study concludes that education on hand-washing needs to be prioritized among multi-ethnic children at school. Nigeria is an ethnically and religiously diverse country similar to the Vietnamese situation, a country that, like Nigeria, has also experienced civil war and mistrust among its ethnic compositions.

In a related study [5] in Mereb-Leke District, Tigray National Regional State, factors influencing hand hygiene practice among pupils were investigated, with a total of 528 pupils who were randomly selected. The instruments used included structured questionnaire and observation guide. The study established that 326 [61.7%] of the pupils exhibited positive hand hygiene; and 95 % exhibited a high degree of awareness on water handling matters. The study also established that students' membership of hygiene and sanitation clubs positively influenced good HH practice, just as parental influence and training on hygiene and sanitation. In sum, the study shows that knowledge, awareness, and training are not necessarily equal to actual practice or performance of new behaviour.

Similarly, one study [7] sought to ascertain the practice of hand hygiene among students of All Saints University of Medicine, Dominica, through the administration of a questionnaire on 170 respondents. The aim was to find out how often respondents engage in the washing of hands with soap and water before eating, after urinating or defecating, and after using the cadaver room and laboratory. The study revealed that 62% of the respondents wash hands with soap and water after urinating, while 68% do the same after defecating. This shows that the practice of handwashing after defecation is more popular than after urinating. Moreover, 55% of respondents wash their hands with soap and water after using the laboratory, while a mere 4 percent always wash their hands after visiting or working in the cadaver room. Factors respondents consider responsible for not always washing hands with soap and water include time factor; some consider the act not necessary; others cited non-availability of hygiene or WASH materials. The study recommended hand hygiene education and alcohol gel sanitizer provision to help improve hand hygiene among medical practitioners. In our case, secondary school students, rather than medical students at the university level, were investigated in the present study. However, some aspects of the present study's questionnaire also examine students; HH practices after urinating, defecating and emerging from practical laboratory sessions.

Against the above backdrop, the following questions arise: How adequate are WASH related facilities in secondary schools in Lagos State, Nigeria? What is the perception of

students on the adequacy of available WASH facilities in selected secondary schools in Lagos State? This paper aims to investigate the level of availability and adequacy of WASH materials in secondary schools in Lagos State, Nigeria. The specific objectives are to: find out the categories of WASH facilities available in Secondary Schools in Lagos State, Nigeria, and investigate the perception of students on the level of adequacy of available WASH facilities in selected secondary schools in Lagos State.

## **2 Method**

This study investigated the availability and adequacy of WASH materials in secondary schools in Lagos State, Nigeria. All the secondary 235, 352 schools [8] in 20 federally recognized local councils in Lagos State formed the study population. The fieldwork took place between January and October 2019. The study was delimited to students in Junior Secondary School 3 [JSS3] and Senior Secondary 3 [SS3] students, [aged between 13 and 17 years] in Lagos State; schools in both urban and rural settings, government- and privately-owned were investigated. The descriptive and analytical survey design was executed through research closed and open-ended questionnaire, focus group discussion guide, unobtrusive observational guide, and documents generated from Online newspaper reports on Handwashing campaigns in Nigeria during the period of study. The research thus involved quantitative and qualitative data.

A total of 650 respondents were selected through a combination of purposive, stratified, and simple random sampling methods. Through stratified random sampling, the Lagos State was divided along the existing three senatorial zones. Two local government areas were selected from each of the three senatorial zones. Moreover, through purposive sampling, two secondary schools were selected from each local government, with one of them being government-owned and the other privately owned. Two classes or secondary education levels were selected from each participating school, using a purposive sampling method. The two classes selected were Junior Secondary 3 (JS 3or Basic 9), and Senior Secondary 3 [SS3].

The researchers developed a questionnaire that has five subsections on demographic data; awareness of messages on hand-washing; sources of information; the level of accuracy of knowledge; and hand hygiene practice. Focus group discussion and document observation guides were also developed. The questionnaire was first subjected to an internal validation process through inputs from scholars in health communication in the School of Communication, Lagos State University. It was subsequently trial-tested on a group of secondary school students in a Local Government Area in the state that was excluded from the selected schools. Based on feedback through the pre-test, some items on the questionnaire that seemed ambiguous were amended for clarity. To ensure that the questionnaire is reliable, it was subjected to the Cronbach Alpha test. The calculated Cronbach Coefficient of 0.88 was obtained, which is far above the threshold value of 0.7. This is an indication that the questionnaire is reliable.

Research assistants involved in data gathering were trained on the objectives of the research, target population, method of sampling of respondents, questionnaire administration techniques, and how to carry out non-obtrusive observation of hand hygiene facilities and handwashing practices in schools. Questionnaire data were collected, cleansed, collated, and analyzed through the Statistical Package for Social Scientists [14th Edition], to test the research hypotheses, through Chi-square and Analysis of Variance [ANOVA]. Data are presented through tables, pie charts, bar charts, histograms, and other relevant formats. Discussion of findings focused on research questions and hypotheses.

## **3 Results and discussion**

### 3.1 Descriptive analysis of questionnaire data

A total of 672 copies of the questionnaire were administered. Although all the copies were returned, a total of 620 [92. 2%] was found usable and adopted for the research report. About 33.1% of the 620 respondents were drawn from schools situated in Lagos west; 38.1% from Lagos East; and 28.9% of respondents attend schools located in Lagos Central. Based on local government areas, 14.0% of the respondents attend the schools located in Ikeja; 19.2% in Badagry; 18.9% in Somolu; 19.4% in Epe; 11.0% in Surulere; while 17.7% of the respondents attend school situated in Mainland. Therefore, a majority [56.1%]of the secondary school students are based in rural areas. Besides, 55.5% of the students attend government-owned secondary schools, while 44.5% attend privately-owned secondary schools. Respondents' age group include: 10 – 12 age bracket [15.2%]; 13 – 15 age bracket [54.5%]; 16- 18 age range [29.5%]while respondents aged 19 years and above represent the least group (0.8%). About 50.2% of the respondents were junior secondary school students [precisely, JSS3]. In comparison, 49.8% were senior secondary school students, with near parity gender distribution [50.2%] males and 49.8% females), which may reflect the gender distribution at the national level.

### 3.2 Availability of hand-washing facilities in schools

RQ1: What categories of WASH facilities are available in Secondary Schools in Lagos State, Nigeria?

Data presented in Table 1 were generated through the questionnaire; qualitative data generated through a focus group, participant observation, and online newspaper items are embedded in the discussion of findings.

**Table 1.** Available hand-washing facilities in schools

	Item	Categories	Frequency	%
1	Type of toilet facilities	Water closet	525	84.7
		Pit latrine	85	13.7
		Open space	10	1.6
		Others	-	-
		<b>Total</b>	<b>620</b>	<b>100</b>
2	No. of sinks available around toilet area	Three or more	184	29.9
		Two	152	24.5
		One	111	17.9
		None	173	27.9
		<b>Total</b>	<b>620</b>	<b>100</b>
3	The school authority provides tablet/liquid soap along wash hand basin	Always	145	23.4
		Sometimes	155	25.0
		Rarely	71	11.5
		Never	249	40.2
		<b>Total</b>	<b>620</b>	<b>100</b>
4	Item	Categories	Frequency	%
		Always	82	13.2

The School authority also provides hand sanitizer along with the wash hand basin	Sometimes	115	18.5
	Rarely	103	16.6
	Never	320	51.6
	<b>Total</b>	<b>620</b>	<b>100</b>

Table 1 shows that a majority of the respondents [87.4%] admitted that the most typical type of toilet facility is a water closet, followed by pit latrine [13.7%] and open space [1.6%] for defecation. However, a majority of the respondents [about 42%] claimed that an average of between one and two wash hand basins existed around toilet areas in schools; followed by about 30 percent that admitted to the existence of three or more wash hand basins, while the rest 28 percent claimed that school authorities failed to provide wash hand basins. Thus the provision of wash hands basing around toilet areas is considered inadequate. Equally, most of the respondents [51.7%] claim that the school authorities never or rarely provide tablet/liquid soap along with wash hand basins; another 51.6% of the respondents claim that the school authorities never provide hand sanitizer around the wash-hand basin areas in schools.

Although modern toilet facilities are dominant in secondary schools in LAGOS State, Nigeria, pit latrines and open toilet is against the position advocated by the United Nations, which through the MDGs [2000-2015] strove to eliminate open defecation in every part of the world [8]. Failure to substantially implement WASH component of the MDG was one reason for the low level of achievement of the MDGs in Nigeria [8]. It was possibly in response to the rampant nature of open defecation in Lagos State that RB West Africa, through one of its brands, Harpic collaborated with the government of Lagos State to improve the standard of a total of 25 public toilet units in the State[9]. Prevalence of open defecation endangers public health.

There are ancillary facilities that go along with a well-functioning water closet toilet system. These include providing toilet papers, water basins/sinks, and soap along with hand sanitizers. But data reveals that most of the respondents [85.3%] admitted that wash-hand basins are not sufficient in schools, while school authorities rarely provide tablet/liquid soap and sanitizers. In a study, Doron et al. [10] found that strategic placement of hand-rub dispensers and information yielded an upsurge in hand hygiene compliance rates among medical doctors and nurses. The study identified factors contributing to the non-compliance of handwashing in the clinical setting, to include inconsistency and inadequacy of placement of sinks and hand sanitizer dispensers, insufficient reminders to clinicians from other staff, and deficits in clinician knowledge, attitude, and accountability. Another study [8] reported that the most typical reasons for not washing hands regularly were: being too busy and non-availability of soaps and water. The present study has shown the inadequacy of toilets and related WASH facilities in secondary schools in Lagos State, Nigeria. The study was conducted just before the outbreak of COVID-19, which shows that schools in Lagos State Nigeria were ill-equipped to handle the hand hygiene protocols that are considered essential for arresting the pandemic's spread. Despite the lessons learned in the state during the outbreak of EVD in Lagos, Nigeria, in 2014 [11].

### 3.3 Perception of students on the adequacy of WASH facilities in schools

RQ 2: What is the perception of students on the level of adequacy of available WASH facilities in selected secondary schools in Lagos State?

**Table 2.** Perception of Respondents on adequacy of hand-washing facilities in schools.

5	Item	Categories	Frequency	%
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	Which of the following is the correct situation in your School?	Wash hand basin with water in a bowl is provided in schools	130	21.0
		Running water along with the wash hand basin is provided in schools	359	57.9
		Each student buys water in a sachet for use	108	17.4
		There is no access to water	23	3.7
		<b>Total</b>	<b>620</b>	<b>100</b>
6	Which of the following is the correct situation in your school?	Hand towel along with the wash hand basin is provided in schools	62	10.0
		Tissue paper along with the wash hand basin is provided in schools	163	26.3
		Each student uses their own towel/tissue paper	387	62.4
		None	8	1.3
		<b>Total</b>	<b>620</b>	<b>100</b>
7	The School authority also provides hand sanitizer along with the wash hand basin	Always	82	13.2
		Sometimes	115	18.5
		Rarely	103	16.6
		Never	320	51.6
		<b>Total</b>	<b>620</b>	<b>100</b>

As shown in Table 2, a majority of the respondents [about 58%] are satisfied with the level of provision of running water along with the wash hand basin in secondary schools in Lagos State. In contrast, about 21% claim that schools only provide wash hand basin with water in a bowl while 17.4% reported that each student buys water in a sachet. Access to water in schools is therefore low. Investigation shows that 62.4% reported that each student uses their own tissue/ hand tower during visits to the toilet or wash hand areas. Additionally, a majority [68.2%] reported that schools either rarely or never provided hand sanitizer for students' use.

Data presented in Table 2 show that although a majority of respondents are barely satisfied with the level of provision of running water in secondary schools in Lagos State, a majority also considered the provision of wash hand basin as grossly inadequate, while also expressing dissatisfaction with non-provision of towel/tissue paper and hand sanitizers in schools. In an open-ended section of the questionnaire, respondents pointed out challenges in schools to include 'in-adequacy of water supply'; 'non-availability of soap and other hand washing facilities'; 'some respondents pointed out that they found handwashing practices stressful and tasking'; and 'inadequacy of information on the health benefits of handwashing.'

When participants during the focus group were asked to discuss the availability and adequacy of WASH facilities in their school, one of them [Participant E] said, "we don't have any of those facilities, the water closet in the toilet is broken, the basin in the toilet is not well channeled even the basins in the lab that is meant for scientific use, not for handwashing is

not working.” Another group member [Participant B] added: "the taps in the labs, I have never seen them running even when we have practice sessions. I don't see them running. We have to fetch water from the well to wash our hands" The inadequacies of handwashing facilities in the school is best captured by Participant K, who said "there are no effective facilities for washing hands in the school, even in the toilet there is no water, except you fetch from the well."

Participants in the private school gave more cautious responses to the availability of facilities in for handwashing. Participant N identified soap, water, and basin as useful materials for handwashing and all other participants agreed with her. Participant "O" however, revealed that "there are four wash hand basins in all, but there is no consistent running water, no soap, and no towels or hand sanitizers." Unobtrusive observation by our field officers confirms the claims of the FG members. In a field report submitted by one of the research assistants, it was noted that the school visited [a Millennium Secondary School in Lagos, Nigeria] "does not provide students with adequate handwashing facilities especially wash hand basins and soaps." In another school, the field staff reported that "the school did not provide adequate hand washing items as well as running water... students provided sachet water for own use. Also, each student uses own tissue paper". A similar situation was reported concerning the schools located in rural areas of the state participating in the research. The present study is in tandem with previous ones [4, 6,7], showing insufficient attention by authorities to the provision of WASH facilities, factors identified as hindrances to good hand hygiene in schools. Thus, although individuals may have a firm intention to engage in hand hygiene, the inadequacy of WASH facilities may hinder the practice, as is evident from the present study. People can be motivated to engage in desirable health behaviors and avoid social or interpersonal risks only if WASH facilities are available and adequate.

## **4 Conclusion**

This study demonstrates that available WASH facilities in schools are considered inadequate and insufficient for guaranteeing good hand hygiene practice in secondary schools in Lagos State, Nigeria. In effect, water closet toilets, wash hand basins, pipe-borne or running water, hand washing soap, sanitizers, and tissue paper are grossly inadequate. The existence of pit latrines and open defecation in some secondary schools in Lagos State was also confirmed. The study was conducted between January and July 2019. Our finding implies that secondary schools in Lagos State, Nigeria, were not well-positioned to cope with the hand hygiene protocols required for curtailing the spread of the COVID-19 pandemic. To tackle the problem of inadequacy and insufficiency of toilets and handwashing facilities in schools, government and school owners should increase funding to schools to improve the current state of WASH facilities in schools. Pit latrines and open defecation should be eradicated in schools in Nigeria. Finally, access to pipe-borne or treated water supplies should be expanded.

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