

ASSESSMENT OF WASH IN RIVERINE PRIMARY SCHOOLS IN OJO LOCAL GOVERNMENT AREA OF LAGOS, NIGERIA

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Abstract: Adequate water, sanitation, and hygiene in schools are vital to achieving conducive learning and well-being of pupils. The study assessed WaSH conditions in Riverine primary schools in Ojo Area of Lagos, Nigeria. The study employed field observation and administration of questionnaires to 256 pupils using purposive sampling techniques to obtain information on WaSH facilities in private and public primary schools. The data were analysed using descriptive and Chi-square statistics while the study area map and WaSH attributes were plotted using ArcMap and Excel software respectively. The results show that 92.7% of the pupils from the public school are acquainted with WaSH. Most of the schools have adequate water and handwashing facilities. The ratio of boys and girls to toilet facilities exceeded UNICEF standard while learning material on WaSH program was generally poor. The greater percentage of the pupils from public schools indicate their satisfaction with accessibility and the quality of service derived from WaSH facilities while the adequacy of WaSH facilities was rated below average. The majority of the pupils affirmed that adequate WaSH provisions will improve their academic performance. The test statistics show a significant relationship between WaSH attributes, academic performance, and the school type. The study serves as baseline information for policymakers and school management authorities for interventions in areas of greatest WASH needs. We concluded that private schools indicate some deprivation in WaSH conditions. We recommended adequate learning aids on WaSH, toilets, handwashing materials, and waste bins for optimum academic performance and well-being of the pupils with greater priority in the private schools.

Key words: Hygiene, primary school, Riverine, sanitation, water.

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INTRODUCTION

Water, sanitation, and hygiene (WASH) in schools or non-household settings refer to a combination of technical (hardware) such as drinking water, hand washing, and toilet facilities around the school compound and human development (software). Software is components that are

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necessary to produce a healthy school environment for the development or support of appropriate health and hygiene behaviors such as activities that promote conditions within the school and the practices of children and teachers that help to prevent water and sanitation-related diseases infestation (Kendall & Snel, 2016; Antwi-Agyei, et al., 2017). The provision of adequate WaSH facilities in school settings is critical because of its role in technical support from various levels of government such as; local, national and international organizations, e.g., WHO and UNICEF, through policy and financing (Cronk, Slaymaker, & Bartram, 2015). Similarly, providing adequate WASH facilities for students and teachers is vital to achieving a conducive working and learning environment (Hsan, Naher, Griffiths, Shamol, & Rajman, 2019). It also plays a crucial role in policy formulation and strategies to benchmark service quality to guarantee international standards (Bradley & Bartram, 2013). Proper provision of WASH amenities is essential because it serves to advance human rights and attain Sustainable Development Goals (SDGs) 3 and 6 (UNICEF, 2012a; UN Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation, 2012; Jordanova, et al., 2015; WHO & UNICEF, 2015). Adequate WASH interventions can significantly reduce both the severity and prevalence of diarrhea, infectious diseases, and some vector-borne diseases and decrease child mortality rates around the globe (Prüss-Üstün, Bos, Gore, & Bartram, 2015; McGinnis, et al., 2017). The provision of improved WASH facilities offers tremendous economic benefits by reducing medical treatment costs, mortality reduction, and increased productivity (Prüss-Üstün, Bos, Gore, & Bartram, 2015). According to Hutton (Hutton, 2012), it is estimated that investment in WASH facilities can lead to economic returns of \$5.50 and \$2 for every dollar spent on sanitation and water, respectively. Globally, approximately one-third of schools do not have access to adequate water supply, while more than 44% lack access to adequate sanitation as of 2015 (WHO & UNICEF, 2015). Poor access to WASH is of significant concern in schools due to the potential impacts of disease transmission among children (WHO & UNICEF, 2015). Lack of improved WASH in schools may contribute to a decline in school attendance (Pearson & McPhedran, 2008) with a significant impact on pupils' academic performance, rise in the number of drop-outs, and delays in academic and social development (Lamdin, 1996). Studies have shown a relationship between WASH and school absenteeism, especially among girls who require facilities for personal hygiene (Pearson & McPhedran, 2008; Freeman, și alții, 2012; Freeman, et al., 2014; Mooijman, 2012; WHO & UNICEF, 2015).

In developing countries, poor access to WASH in non-household settings, such as schools, health care centers, workplaces, and dislocated populations, have a significant impact on the health, education, welfare, and productivity of the populace (Guerrant, Deboer, Moore, Scharf, & Lima, 2013; Jordanova, et al., 2015; Cronk, Slaymaker, & Bartram, 2015; Antwi-Agyei, et al., 2017). These impacts inflict severe effects on specific people, such as physically challenged persons. These people are faced with stiffer physical and social barriers in accessing WaSH with dire consequences such as poor attendance at school, especially among girls due to lack of water and separate toilets (Groce, Bailey, Lang, Trani, & Kett, 2011; WHO, 2011; Adukia, 2013). According to Adukia (Adukia, 2013), the lack of gender-separated toilets in school settings impacts girls' attendance significantly. Inadequate access to WaSH amenities in schools can adversely affect student health, educational performance, and teacher satisfaction (Cronk, Slaymaker, & Bartram, 2015). It was observed that approximately 15% of the disabled persons that make up the global population are confronted with physical and social barriers in accessing WaSH are often prevented from using public services and utilities (Groce, Bailey, Lang, Trani, & Kett, 2011; WHO, 2011).

The available statistics on the performance of the WASH sector in Nigeria are relatively poor (Akpabio & Rowan, 2021). Akpabio and Rowan (2021) noted that around 2000, the proportion of the population with access to water on-premises in Nigeria was 17%, while only 29% had access to improved sanitation. The poor indicators on the WASH sector can be linked to several factors such as; inadequate financing and budgeting, lack of data on the overall status for WASH in school settings, lack of awareness, government policies. Other factors include; cultural values and religious beliefs, competition and poor bureaucracy, unreliable water supply due to erratic power supply,

overpopulation of latrine-to-student ratios, neglect, poor maintenance, and corruption, among others, have significantly impacted the WASH conditions in most schools in Nigeria (Egbinola & Amanambu, 2015; McGinnis, et al., 2017; Akpabio & Rowan, 2021). Despite the challenges confronting the WASH sector in Nigeria, some proactive steps have been made in the National Water, Sanitation, and Hygiene Capacity Building and Research Programme to strengthen human capacity for sanitation and universal access to water and sanitation by 2030. In addition, the recent declaration of a 'State of Emergency in Nigeria's water and sanitation sector by the President in 2018 shows the political will on the part of the Federal government to address Nigeria's water and sanitation crisis (The Nation, 2018; Richard, Dan, & Thomas, 2019).

CONCEPT AND LESSON LEARNED FROM PREVIOUS STUDIES

Theoretical concepts that can be employed to explain this study abound. Among such concepts include; the concept of adequacy and the health belief and trans-theoretical models. According to Obute (2017), the concept of adequacy is viewed as a means of quality and quantity under any given condition. It can be likened to the idea of satisfaction on basic human needs which is crucial for the welfare of an individual. Obute (2017), noted that satisfaction is a feeling of happiness when someone gets what he or she wanted. Obute (2017) observed that satisfaction is a feeling of pleasure because one has achieved something hence, service providers can render specific services to the target population to satisfy their needs. He opined that if the expected level of quality service is obtained, the beneficiaries are satisfied. Obute (2017) inferred that quality service delivery of potable water supply and sanitation enhance the efficacy of productivity and contribute significantly to the standard of living of the populace. He argued that an adequate and satisfactory water supply has socio-economic benefits which can be viewed from the consumptive value, availability and utilization. The health belief model is a way of explaining the preventive and curative health behaviour, to explain the failure of people to participate in preventive health programmes that would protect them from diseases and health-related problems. The model is comprised of four major components namely; perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Rosenstock, Strecher, & Becker, 1994). The trans-theoretical model is also an important concept that is relevant to this study. It is one of the most influential models of behavioural change. The theory holds that an individual passes through six logical stages of the decision-making process such as; pre-contemplation, contemplation, preparation, action, maintenance, and termination before adopting a particular health behaviour (Velicer, Prochaska, Fava, Norman, & Redding, 1998; Obute, 2017). They argued that the position of the stages of behaviour in the theory allows individuals to weigh dangers associated with a health problem in respect of water and sanitation-related diseases.

Studies abound on WaSH practices across the globe. For example, (Aremu, 2012; Biran, et al., 2012; Babalobi, 2013; Freeman, et al., 2014; Antwi-Agyei, et al., 2017). Others examined WASH conditions in rural schools and vulnerable communities (Waddington, Snilstveit, White, & Fewtrell, 2009; Alexander, et al., 2014; Prüss-Ustün, et al., 2014; Jordanova, et al., 2015; Celia, 2019). Similarly, Biran et al. (2012), Philips et al. (2015), and Hsan et al. (2019) assessed WASH as it affects human health and student performance. Rabie and Curtis (2006), Gottfried (2010), Talaat et al. (2011), Lau et al. (2012), Joshi and Amadi (2013), Freeman et al. (2014) analyzed WASH in refugee camps, while Acha-Anyi (2020) examined the relationship between recreation activities and mental health and noted that, participation in recreation activities could stimulate a snowball effect of positive community relations. Previous studies by Lidonde (2004), WHO (2005), Kirk and Sommer (2006) noted high drop-out rates among pubescent-age girls in many schools across the world due to the absence of sanitation/latrines facilities. Also, Lundblad and Hellstrom (2005) opined that the absence of a school latrine might cause children to refrain from eating or drinking, which may cause severe consequences on educational outcomes. Adukia (2013) argued that school sanitation substantially increases enrollment of pubescent-age girls in schools with sex-specific school latrines. Scott and Vanick (2007), Lopez-Quintero et al. (2009) observed that schools with

scarce supplies for handwashing such as water provision, soap, or towels reported less handwashing practices among pupils. Rosen et al. (2006) noted that there is no significant change in rates of communicable illness or absenteeism among pupils despite sustained handwashing behavior after six months. Similar studies by Bowen et al. (2007) and Talaat et al. (2011) on handwashing intervention in schools reported statistically significant declines in illness and absenteeism. Barnes and Maddocks (2002) and Lundblad and Hellstrom (2005) argued that most school pupils avoid toilets due to overcrowding, smelly and unclean nature, and lack of privacy. Durán-Narucki (2008) observed that WASH conditions in schools are related to students' academic success and school attendance. Abrahams et al. (2006) and Sommer (2010) identified travel distance to and fro school during menses, fear of sexual attacks in school toilets far away from school premises, and inadequate WASH facilities as factors affecting school attendance. A similar study by UNICEF (2005) and Birdthistle et al. (2011) also noted that poor school sanitation facilities impede girls' access to quality education. Vernon et al. (2003), Fujiwara-Pichler et al. (2006), and Perez (2010) also noted that lack of adequate sanitation facilities in school poses a significant risk of gastrointestinal and communicable infections to school pupils. Koopman (1978) reported a significant causal relationship between adequacy of (toilets, water, cleanliness, and provision of toilet paper, soap, and towels) and diarrhea and vomiting in the schools, while Rajaratnam et al. (1992) opined that students who used toilets for defecation in school are more likely to develop Hepatitis A due to inadequate sanitation facilities.

Despite the robust studies on WASH conditions in non-household settings both at the local and international levels, there is insufficient knowledge on WASH conditions in riverine private and public primary schools in the study area. To fill this knowledge gap, we examined WASH conditions of public and private primary schools in the riverine communities of Ojo Local Government Area of Lagos, Nigeria, using international standards to assess WASH amenities to strengthen the WASH sector in the study area. The study is significant because it will serve as baseline information to advise policymakers, regulatory agencies, and management authorities for planning and interventions in areas with the greatest WASH needs for improved WASH services that promote personal hygiene and environmental sanitation within the school setting.

STUDY AREA

The study site is situated in Ojo Local Government Areas (LGA) of Lagos State. It is located approximately on Longitudes 20°55'W and 20°12'W to Latitudes 40°15'N and 40°17'N. Amuwo-Odofin and Alimosho LGAs bound the area to the East and North, respectively, Badagry Creek to the South and Badagry LGA in the West. The LGA occupies about 158 Km² of land with about 598,071 people (NPC, 2006). The LGA is comprised of ten wards. Five of these wards, namely; Irewe, Tafi, Etegbin, Idoluwo, and Sabo, are located in the riverine areas. About 30% of its landmass is occupied by a water body comprised of Riverine settlements (Figure 1).

The regulatory body in charge of primary schools in the state i.e. Lagos State Universal Basic Education Board (LASUBEB) is geared towards ensuring that every child has access to quality elementary education, quality teaching, and learning. The state government has made many investments to ensure that the vision and mission of LASUBEB are achieved. Most of the riverine communities in Ojo are confronted with a series of challenges. These challenges can hinder the realization of the vision and mission of LASUBEB. For example, access to school in the area is a huge task due to the riverine nature of the location. The majority of the pupils spent on average six hours to and fro for an average transport fee of about N300 (\$1) per trip. Apart from the time and cost implications, the water mishaps such as boat capsizes have further compounded the problems of the high rate of out-of-school children in the area. While most public-owned schools have undergone some rehabilitation and provision of basic amenities, the majority of the private schools still lack major WaSH facilities that will improve the pupils' learning environment. Thus, this situation brings to bear the challenges of basic amenities such as water, sanitation, hygiene facilities confronting the pupils in accessing quality education in the Riverine area.

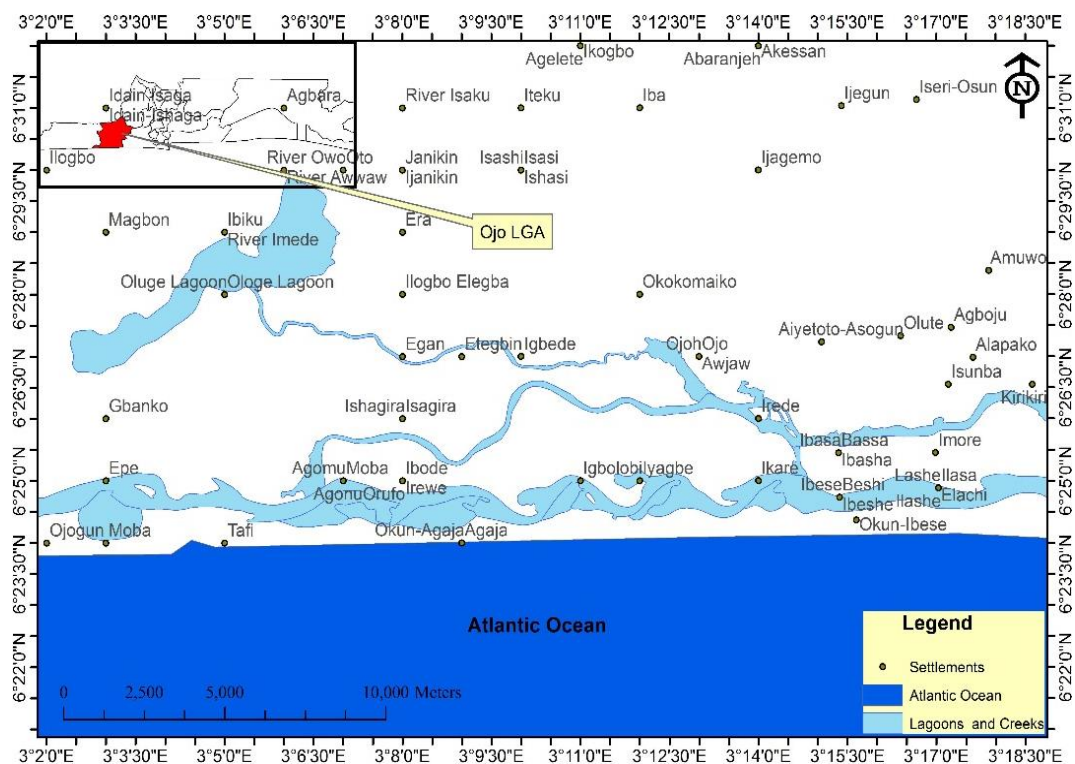


Figure 1. Study area
(Source: Author's, 2019)

METHODS

Study design

A survey questionnaire was designed with on-the-spot observation to assess the status of WaSH amenities in private and public primary schools in Riverine communities of Ojo LGA of Lagos, Nigeria (Table 1).

Table 1. Summary of the statistics of primary schools and distribution of questionnaires across the settlements
(Data source: Author's fieldwork, 2019)

| Name of School | Settlement | School Type | No of Reg. pupils | Female | Male | Total No of pupils surveyed | Total No of females surveyed | Total No of males surveyed |
|--|------------|-------------|-------------------|--------|------|-----------------------------|------------------------------|----------------------------|
| Local Authority Nursery & Primary School | Alaguntan | Public | 116 | 57 | 59 | 49 | 29 | 20 |
| Local Authority Nursery & Primary School | Okolundu | Public | 102 | 59 | 43 | 34 | 21 | 13 |
| Local Authority Nur & Pry School | Irewé | Public | 250 | 154 | 96 | 68 | 42 | 26 |
| Life Anchor Nursery & Primary School | Irewé | Private | 80 | 40 | 40 | 30 | 18 | 12 |
| Saved By Grace Nursery & Primary School | Agaja | Private | 87 | 52 | 35 | 38 | 21 | 17 |
| New Destiny Nursery & Primary School | Olomometa | Private | 64 | 36 | 28 | 37 | 19 | 18 |
| Total | | | 699 | 398 | 301 | 256 | 150 | 106 |

A total sample size of 699 was designed to yield a representative sample of 256 pupils in the study area using the Yamane (1973) formula stated in equation 1.

$$n = N/1 + N(e)2 \quad \text{Eq. 1}$$

where,

n = the sample size,

N = the finite population,

e = level of significance (or limit of tolerable error) (0.05) and

1 = unity (a constant).

Sampling technique

Pupils from primary four to six were selected for this study using a purposive method because of their ability to read and write and their consent to participate in the survey. An on-the-spot assessment on the availability of WaSH facilities was carried out in each of the schools. The observation showed that private schools had more WaSH facilities than public-owned schools. It was also discovered that more significant proportions of the WaSH facilities in the public schools were in a poor state due to several years of neglect and poor maintenance. A pilot test was conducted with 25 pupils each from the public and private schools in the study area in November 2019. The survey covered five weeks to collect information from primary school pupils on their awareness, adequacy, accessibility, and satisfaction level on how adequate WASH facilities can improve pupils' academic performance. Data acquired through the survey were inputted into the IBM Statistical Package for Social Sciences (SPSS) version 22 software. Frequency, percentages, and Chi-square statistics were employed to analyze the data. The map of the study and WaSH attributes were plotted using ArcGIS software versions 10.3.1 and Excel software, respectively. The coding measures/scale of the variables is presented in (Table 2).

Table 2. Coding measures and scale of variables
(Data source: Author's fieldwork, 2019)

| S/n | Variable | Measure/scale | Options |
|-----|--|---------------|---|
| 1 | Awareness about WaSH, availability of water/sanitation and hygiene facilities, availability of soap for handwashing, teaching/learning materials on WaSH, separate toilet for male and female pupils, and availability of waste bin facility | Binary | 0=No 1=Yes |
| 2 | Available and functional numbers of WaSH facilities, numbers of girls and boys to toilet | Continuous | |
| 3 | Frequency of cleaning toilets was measured on three point scale as | 3-point | 1= once/week, 2 = twice/week & 3 = every day |
| 4 | Time taken to access toilet | 3-point | 1= within school premises, 2 = less than 1000m & 3= above 1000m |
| 5 | Source of water supply | 6-point | 1= River/stream, 2= open dug well, 3= protected dug well, 4= borehole, 5= Public water supply and 6= water vendor |
| 6 | Time spent to obtain water from the main source | 3-point | 1= less than 30 minutes, 2 = 30-60 minutes & 3 = more than 1 hour |
| 7 | Sources of toilet facilities | 10-point | 1= connection to septic system, 2 = pour-flush latrine with connection, 3= simple pit latrine, 4= ventilated improved pit latrine, 5= public or shared latrine, 6= open pit latrine, 7= |

| | | | |
|----|--|---------|---|
| | | | bucket latrine, 8= pour-flush latrine without connection, 9= surface water & 10= open field space |
| 8 | Materials for handwashing | 6-point | 1= none, 2= water only, 3= soap and water, 4= soap only and 5= sanitizer & 6= disinfectant |
| 8 | Type of waste bin | 4-point | 1= piled within the premises, 2 = open drum, 3 = sack & 4 = covered drum |
| 9 | Method of waste disposal | 6-point | 1= burning, 2= burying, 3 = dumping inside the drain, 4 = dumping along the road side, 5 = through vision scape/PSP & 6 = through LAWMA |
| 10 | Frequency of waste disposal | 4-point | 1= once/day, 2 = once every three days, 3 = once/ week & 4 = every fortnight |
| 11 | Satisfaction on accessibility to WaSH facilities was measured on a four point scale as | 4-point | 1= not accessible, 2 = difficult to access, 3 = accessible & 4 = very accessible |
| 12 | Adequacy of WaSH facilities | 3-point | 1= inadequate, 2 = fairly adequate & 3 = very adequate |
| 13 | Satisfaction on quality of WaSH facilities | 4-point | 1= not satisfactory, 2 = fairly satisfactory, 3 = satisfactory & 4 = very satisfactory |
| 14 | Impact of WaSH facilities on academic performance of pupils | 5-point | 1=strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree & 5= strongly agree |

RESULTS

Awareness, availability of WaSH facilities, and teaching/learning material

Table 3 presents the awareness, WaSH facilities' availability, and teaching/learning material in the study area. The result shows that 61.3% of the pupils know about the WaSH program. The disparity across the school shows that a more significant percentage of the pupils from the public school, representing 92.7%, have knowledge of WaSH services compared to only 16.2 % from the private school (Table 3). In addition, the availability of WaSH facilities in the study area shows that 58.2% of the pupils claimed they have WaSH facilities in their school. In addition, the variations across the school indicate that the public schools recorded the highest numbers of available WaSH facilities compared to 35.2% from the private school (Table 3).

Regarding the availability of water and toilet facilities, both the public and private schools have appreciable water and toilet facilities. However, the availability of handwashing facilities indicates that a more significant percentage representing 72.3% of the pupils have handwashing facilities in the study area. The variations show that public schools recorded the highest percentage (77.5%), while private schools recorded 64.8% (Table 3).

Availability of soap for handwashing indicates that approximately 53.1% have soap for washing hands in the study area. The disparity revealed that private schools recorded the highest proportion with about 64.8%, while only 45.0% was obtained from the public schools, as shown in Table 3. The provision of teaching/learning materials on WaSH services revealed that only 40.6% of the pupils claimed they have teaching/learning materials on WaSH in the study area. The variations show that 68.9% of the pupils from the public school have teaching/learning material, in contrast to the private schools where there are no provisions for teaching/learning material on WaSH. The provision of separate toilets for boys and girls shows that all the schools have separate toilets in the study area. Though the schools made provision for a separate toilet for the male and female gender, the ratio of boys and girls to toilet shows that it exceeded the recommended guidelines of 1 hole for 50 boys and 25 for girls (UNICEF, 2012b). The toilet compartment ratio for boys is 1:150, while the ratio of 1:199 was obtained for girls. The provision of waste bin facilities shows that only 38.3% of the pupils claimed they have a waste bin in the study area. The variation indicates that 45.0% and 28.6% have public and private schools waste bin facilities, respectively (Table 3).

Table 3. Awareness, availability of WaSH facilities, and teaching/learning material
(Data source: Author's fieldwork, 2019)

| Characteristics | Categories | School type | | Total |
|--|------------|---------------|----------------|---------------|
| | | Public | Private | |
| Awareness of WASH | No | 11 (7.3) | 88 (83.8) | 99 (38.7) |
| | Yes | 140 (92.7) | 17 (16.2) | 157 (61.3) |
| Availability of WaSH facilities | No | 39 (25.8) | 68 (64.8) | 107 (41.8) |
| | Yes | 112 (74.2) | 37 (35.2) | 149 (58.2) |
| Availability of Water | No | - | - | - |
| | Yes | 151 (100) | 105 (100) | 256 (100) |
| Availability of toilet facilities | No | - | - | - |
| | Yes | 151 (100) | 105 (100) | 256 (100) |
| Availability of Handwashing facilities | No | 34 (22.5) | 37 (35.2) | 71 (27.7) |
| | Yes | 117 (77.5) | 68 (64.8) | 185 (72.3) |
| Availability of soap for Handwashing | No | 83 (55.0) | 37 (35.2) | 120 (46.9) |
| | Yes | 68 (45.0) | 68 (64.8) | 136 (53.1) |
| Availability of teaching/learning material on WaSH | No | 47 (31.1) | 105 (100.0) | 152 (59.4) |
| | Yes | 104 (68.9) | 0 (0) | 104 (40.6) |
| Separate toilet for male and female | No | - | - | - |
| | Yes | 151 (100) | 105 (100) | 256 (100) |
| Availability of waste bin facilities | No | 83 (55.0) | 75 (71.4) | 158 (61.7) |
| | Yes | 68 (45.0) | 30 (28.6) | 98 (38.3) |

Sources of water, toilet/waste bin types, handwashing material, and waste disposal methods

The primary water supply source in the study area is a borehole with about 73.8%, while an open dug well is the least with about 11.7% in the study area (Figure 2). The public school recorded the highest for borehole while private schools have the highest proportions for River/Stream and open dug well. The primary source of toilet facility is the connection to a septic system, with about 73.4% in the study area. Across the school, the public schools have full access to septic connection systems, while pour-flush latrine predominates in the private schools (Figure 2). The dominant handwashing materials in the study area include soap and water. The variations show that 64.8% of private schools use soap and water while most (55.0%) use only water in public schools (Figure 2).

The main waste collection bin in the study area is an open drum. The disparity across the school shows a similar pattern of waste collection bin with about 71.4 and 67.5% representing private and public schools using open drum waste collection method respectively (Figure 3). The

predominant waste disposal method in the study area is through burning technique. The technique is reflected across the school, with the private school recording the highest (Figure 3).

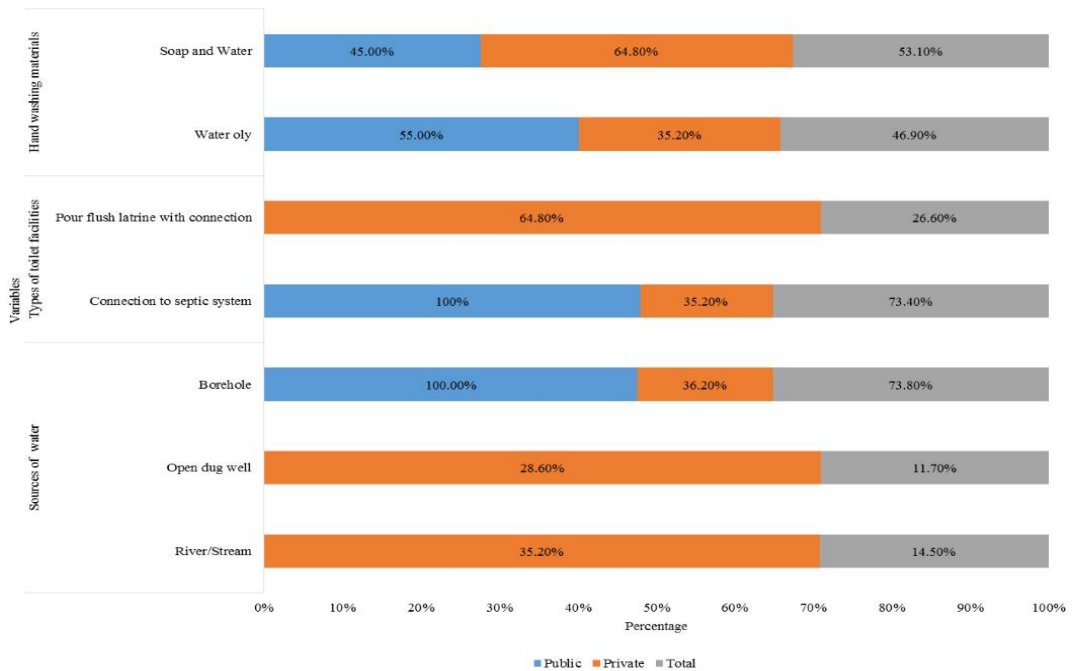


Figure 2. Sources of water supply, types of toilet facilities, and handwashing materials (Source: Author’s, 2019)

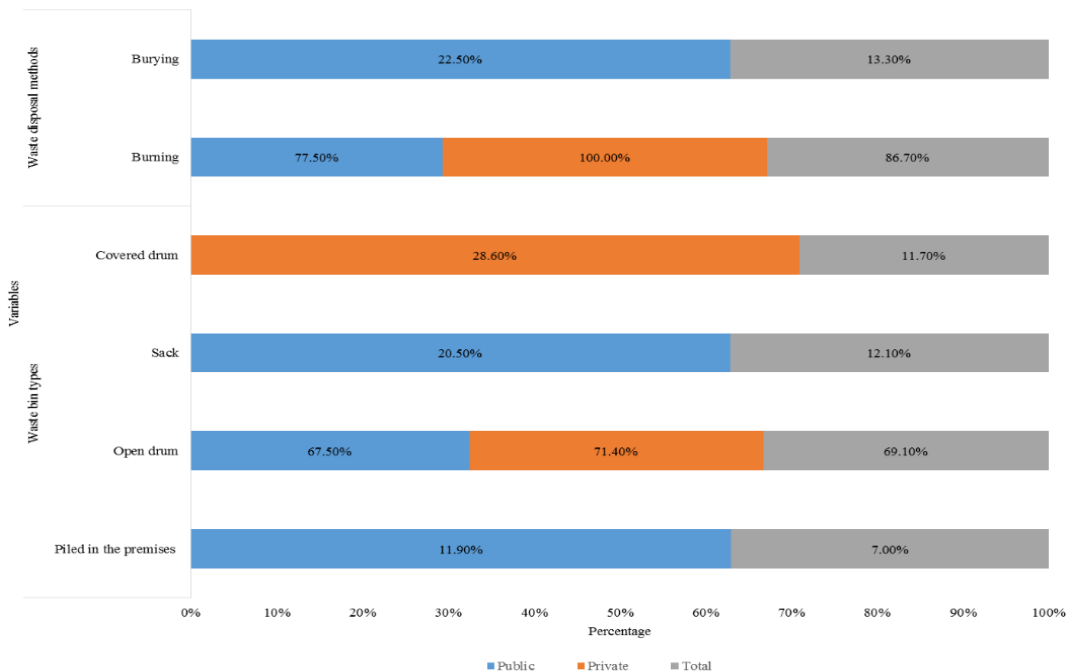


Figure 3. Waste bin types and waste disposal methods (Source: Author’s (2019))

Accessibility, adequacy, and quality of WaSH facilities

The satisfaction level of accessibility to WaSH facilities shows that approximately 59.0% of the pupils rated it accessible in the study area, while 41.0% claimed WaSH facilities are not accessible. The disparity across the school shows that public schools recorded the highest satisfaction level while the majority of the pupils representing 64.8% from the private schools, rated it not accessible (Table 4). Based on the adequacy of WaSH facilities in the study area, only 10.4, 87.7, and 1.9% of the pupils rated it very adequate, fairly adequate, and inadequate, respectively (Table 4). The variations across the schools show a similar trend where more than three-quarters of the pupils rated WaSH facilities as fairly adequate (Table 4). Regarding the quality of service delivery of WaSH service, approximately 52.6% and 47.4% of the pupils rated it satisfactory and not satisfactory, respectively, in the study area. Across the school, about 65.8% of the pupils from the public school rated it satisfactory, while 89.2% rated it fairly satisfactory from the private schools (Table 4).

Impact of WaSH on the performance of pupils

The impact of adequate WaSH facilities on the academic performance of the pupils shows that a significant proportion of the pupils representing 82.0%, agreed that adequate WaSH facilities could improve their academic performance. In comparison, 18.0% of the pupils strongly disagree with this notion in the study area. A similar result was obtained across the schools with 91.4 and 68.6% of the public and private schools, respectively (Table 4). The test statistics result shows a significant relationship between accessibility, adequacy, quality of service delivery, and academic performance of pupils in school, as indicated in Table 4.

Table 4. Accessibility, adequacy, quality of service delivery of WaSH services and the impact of WaSH on pupils performance
(Data source: Author's fieldwork, 2019)

| Variables | Options | School type | | Total | Chi-square test |
|--|---------------------|---------------|---------------|---------------|-----------------------------------|
| | | Public | Private | | |
| Accessibility to WASH | Not Accessible | 36 (23.8) | 68 (64.8) | 104 (40.6) | $X^2=44.53$, df=3, p<0.001 |
| | Difficult to Access | 1 (0.7) | 0 (0.0) | 1 (0.4) | |
| | Accessible | 109 (72.2) | 37 (35.2) | 146 (57.0) | |
| | Very Accessible | 5 (3.3) | 0 (0.0) | 5 (2.0) | |
| Adequacy of WASH facilities | Inadequate | 3 (2.6) | 0 (0.0) | 3 (1.9) | $X^2=6.85$, df=2, p=0.032 |
| | Fairly Adequate | 98 (83.8) | 37 (100.0) | 135 (87.7) | |
| | Very Adequate | 16 (13.7) | 0 (0.0) | 16 (10.4) | |
| Quality of service delivery of WASH facilities | Not Satisfactory | 2 (1.7) | 0 (0.0) | 2 (1.3) | $X^2=36.53$, df=3, p<0.001 |
| | Fairly Satisfactory | 38 (32.5) | 33 (89.2) | 71 (46.1) | |
| | Satisfactory | 69 (59.0) | 4 (10.8) | 73 (47.4) | |
| | Very Satisfactory | 8 (6.8) | 0 (0.0) | 8 (5.2) | |
| Impact of WaSH facilities academic performance of pupils | Agree | 138 (91.4) | 72 (68.6) | 210 (82.0) | $X^2=21.88$, df=1, p<0.001 |
| | Strongly Agree | 13 (8.6) | 33 (31.4) | 46 (18.0) | |

DISCUSSIONS

The need for the proper orientation program, and enlightenment on WaSH practices, plays a significant role in hygiene practices and healthy living. Adequate knowledge or awareness of WaSH practices can improve sanitation and increase the rates of student hand-washing practices behaviors among school children after defecation with lower cases of open defecation, and reduce the risk of water and environmental related infectious diseases (Gottfried, 2010; Karon, Cronin, Cronk, & Hendwan, 2017). In this study, the level of awareness on WaSH was higher than the study conducted by Babalobi (2013), who reported a low level of awareness and knowledge about hygiene practices among primary school pupils in Makoko Lagos, Nigeria. The increased awareness of WaSH in the study area should be sustained and encouraged to achieve the desired result of SDG goal number 6. Availability and the integration of teaching aids on WaSH practices in the school curriculum are critical to equip pupils with decent living conditions. The provision of teaching/learning material on WaSH in school will improve primary school attendance, health, and cognitive development; more excellent girls' participation in school, positive hygiene behaviors, and appreciable equity in schools (UNICEF, 2012c).

The availability of teaching/ learning aids in the study area is below the required standards. However, there are appreciable teaching aids on WaSH in public schools. Non-availability of teaching/learning material on WaSH in schools has implications on safe drinking water, decent sanitary facilities, and hygiene habits of pupils. The observed high level of teaching aid in the public schools can be attributed to the sustained campaign on personal hygiene implemented by the Lagos State Government after the Ebola outbreak in 2014.

The provision of decent toilet facilities in schools helps to improve sanitation conditions. Even though most of the schools in the study area have separate toilets for the male and female gender, the limited availability of these facilities is a vital source of concern because it can compromise hygiene practices (Waddington, Snilstveit, White, & Fewtrell, 2009). The present study shows that the ratio of boys and girls to toilet exceeds the recommended guidelines according to UNICEF (2012b) of 1 drop hole separate for 50 boys and 25 for girls. The toilet compartment ratio for boys is 1:150, while the ratio of 1:199 was obtained for girls. The result is at variance with Alexander et al. (2014), who reported a higher proportion of girls and boys ratio per toilet in rural Kenya. Proactive steps should be put in place by the respective school management authority in collaboration with the parent teachers' association (PTA) and the local/host community as part of social responsibility to provide additional toilets that will serve the current pupils population according to the prescribed standard.

A conducive school environment that is clean and free from communicable or vector-borne diseases provides comfort and attracts students to concentrate on their learning activities (WHO, 2005). The present study results show that waste collection and disposal methods are adequate in the study area. The result does not agree with the findings of Correa and Pinheiro (2017), who reported the proliferation of garbage collection in the Brazilian Amazon. Despite the adequate waste collection bins and efficient disposal methods in the study area, there is the need to intensify more efforts at ensuring that the waste bins are maintained while ensuring adherence to sustainable waste disposal practices. Providing safe water, decent sanitation, and hygienic practices is a veritable tool that promotes improved health and education and contributes to inclusion and equity in schools (Celia, 2019). Adequate water supply in schools for drinking and handwashing plays a vital role in improving the health and education of pupils. For example, proper handwashing practices can prevent incessant sicknesses such as diarrhea and respiratory diseases (Rabie & Curtis, 2006; Bowen, et al., 2007; Waddington, Snilstveit, White, & Fewtrell, 2009; Aremu, 2012; Olukanni, 2013; Seid & Kumie, 2013). It was observed that access to improved WaSH facilities in the study area is relatively high. This study corroborates the findings of (Talaat, et al., 2011; Lau, et al., 2012; Phillips, et al., 2015; Antwi-Agyei, et al., 2017). The result also agrees with the findings of (Cronk, Slaymaker, & Bartram, 2015) who argued that sustained service intervention in schools' WaSH facilities improves pupils' WaSH behaviors and daily habitual handwashing practice. Studies have

revealed that adequate social amenities affect children's cognitive development and influence their academic performance. The role of suitable WaSH facilities on the academic performance of pupils is very high. This result supports the findings of Owwoeye and Yara (2011). Based on the relatively high access to improved WaSH amenities in the study area, a concerted effort should be made to ensure the sustainability of the WaSH infrastructure. The school management authority should make budget provisions to maintain infrastructure to avoid neglect and complete decay. The school can also partner with the community association or Non-governmental agencies (NGOs) to maintain WaSH infrastructure.

CONCLUSIONS

The present study examined the conditions of water, sanitation, and hygiene services in Riverine primary schools of Ojo Local Government Area of Lagos, Nigeria, to ascertain compliance with international standards. The study was motivated due to the challenges that may hinder the realization of the vision and mission of LASUBEB in ensuring that every child has access to quality elementary education, quality teaching, and a learning environment. The result shows that a significant percentage of the pupils from the public school representing 92.7 have knowledge about WaSH compared to only 16.2% from the private school. In addition, the availability of WaSH facilities in the school indicates that public schools recorded the highest availability compared to only 35.2% from the private school. In addition, the availability of water, and handwashing facilities in public and private schools were adequate. In addition, the availability of soap for handwashing in private schools is higher in public schools. In addition, the provision of teaching/learning material on WaSH is insufficient in the study area, and virtually all the private schools do not have teaching/learning material on WaSH. The ratio of boys and girls to the toilet exceeded the recommended UNICEF standard of 1 one hole for 50 boys and 25 for girls. In addition, the provision of waste bin facilities in the study area is generally low. Access to water shows that public schools relied on improved water sources (borehole) while the private schools relied on unimproved source (River/Stream and open dug well). All the schools have improved toilet facilities, with the dominance of septic connection system and pour-flush latrine in public and private schools, respectively. Handwashing practice revealed that private schools use soap and water while public schools use only water. The methods of open drum and burning predominate as waste collection and disposal, respectively. The majority of the pupils from public schools were satisfied based on accessibility to WaSH facilities, while the pupils from private were dissatisfied. More than three-quarters of the pupils rated the adequacy of WaSH facilities below average.

Similarly, the quality of service delivery was rated satisfactory and fairly satisfactory in public and private schools respectively. The impact of WaSH facilities on the academic performance of pupils shows that about 82.0% agreed that adequate WaSH facilities will improve their academic performance. The test statistics result shows a significant relationship between accessibility, adequacy, quality, academic performance, and the school type. The study serves as baseline information to advise policymakers, the regulatory agencies, and management authorities for future WASH programs in school. It will also help provide the necessary support for planning and interventions in areas of greatest WASH needs for improved WASH amenities that promote personal hygiene and environmental sanitation within the school setting. The study concluded that WaSH facilities in private schools are poor. Therefore, we recommend urgent intervention to provide teaching/learning aids on WaSH, toilets, handwashing materials, and waste bins for optimum academic performance and the well-being of the pupils.

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