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Survey of water, sanitation, and hygiene (wash) among primary schools in Sokoto State, Nigeria

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Abstract
Water, sanitation, and hygiene (WASH) in schools are very vital components that help in giving children their rights and facilitates achievement of sustainable development goals (SDGs). Particularly, learning and development of children can only be best when the environment is providing improved accessible water, sanitation, and proper hygiene. This paper examined the level of WASH among primary schools in Sokoto state, Nigeria. A descriptive survey was used. Three hundred schools were visited and inspected using structured questionnaire and convenience sampling technique. Some participants were interviewed. At the end, the data was managed using thematic analysis to yield descriptive parameters. The level of various WASH components were revealed and they were poor. Thus, the government should put more efforts, health providers, advocates, educators, and relations should rise with advocacy to mobilise action and community participation.

Keywords: water, sanitation, hygiene, open defecation, toilets, diseases, primary schools

Introduction

Water, Sanitation and Hygiene (WASH) refers to the provision of safe water for drinking, washing and domestic chores, the safe removal of waste and health promotion actions to encourage protective healthy behavioral practices in the affected population (WHO, 2011) [17]. It is an acronym meaning, Water, Sanitation, and Hygiene (European Union, 2011).WASH is very important. Most diarrhea is caused by unclean water, and lack of sanitation and hygiene. Thus, leading to sick children that abstain school and learning. Children with parasites suffers malnutrition. Also, the girls requires WASH to cater for their menstrual management (WaterAid, 2018) [16].

One of the world's urgent concern is lack of safe water, sanitation and hygiene. Water related improvements are essential to meet up the development goals. Therein, reduce (child) mortality and improve health sustainability (United Nations-Water Decade Program on Advocacy and Communication, n.d).2.5 billion people lack access to improved sanitation, 748 million people lack access to an improved drinking water, and 1billion people engage in open defecation. Also, half the countries did not report an access to adequate sanitation in schools or healthcare centers, and 34% of primary schools are bereft of improved sanitation facilities (Glass, 2012) [4].

Similarly, 2.2 million children below the age of five die every year because of unsafe water, inadequate sanitation and lack of hygiene. Diarrhea kills 1.5 million children below the age of five every year. Diarrhea kills morethan AIDS in relation to younger ones (Hazel, 2011).To curtail the unfortunate WASH trending issues, the sustainable Development Goals (SDGs) were reserved.One goal says" Ensure availability and sustainable management of water and sanitation for all". In this goal, there are targets related to WASH, viz:

- By the year 2030 end, the epidemics of AIDs, Tuberculosis, malaria, and neglected tropical diseases (NTDs) and combat hepatitis, waterborne diseases, and other infectious diseases
- By the end of year 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination
- By the year 2030 achieve universal and equitable access to safe and affordable drinking water for all
- By the year 2030 expand internet cooperation and capacity building support to developing countries in water and sanitation related activities and programs including water harvesting, desalination, recycling and reuse technologies
- Support and strengthen the participation of local communities for improving water and management (Open Working Group, 2014) [10].

Schools are very important environs that requires WASH, because children and staff spend their whole day there, five or six days per week. It is a densely populated arena full of vulnerable young ones. Children requires safe and clean school. It is their entitled right (USAID Hygiene Improvement Project, 2010) [15]. Physical environment and cleanliness of school can greatly impact on the health and wellbeing of children. Too often, schools are places where China contract diseases (UNICEF, 2012) [13].

A strategy to include the schools in provision of safe water, sanitation and hygiene was incorporated in the overall WASH. This new strategy is known as WASH in schools. It tend to fulfil children's right to health, education and participation. WASH in schools promote hygiene and increase access to quality education, support national and local interventions. Invariably,

poor sanitation, water scarcity, unimproved water are harmful to children and mostly cause mortality and morbidity in under five kids (UNICEF, 2012) [13].

WASH in schools include: Sustainable, safe water supply points, hand washing and sanitation hardwares,outreach to families and communities, fully integrated life skills education, key hygiene behaviors using participatory teaching (UNICEF, 2012) [13]. A wash-friendly school is one, which its community is:

- Using improved sanitation (facilities)
- Washing hands with soap after toilets and before heating
- Has improved drinking water (USAID Hygiene Imrovement Project, 2010) [15].

Inadequate WASH can lead to an increased risk of infection and diseases especially in children,such as: diarrhea, typhoid, hepatitis A, cholera, shigella dysentery, intestinal helminthis, malaria, and trachoma. Inadequate management of human waste can lead to contamination of water (WHO, 2011) [17]. Children have right to sanitation, good health, and quality education. It is an SDG commitment to give them these rights. But 620 million of the world children do not have decent toilets. This situation forced them to run home during break in order to defecate (relieve), run to bushes or school field or miss lessons because of sickness (WaterAid, 2018) [16].One in three schools around the world don't have improved toilet. One out of five primary schools don't have toilets at all (WaterAid, 2018) [16].

Nigeria is the most populated country in Africa. Half of schools have no adequate toilets for students. Thus leading to sanitation and hygiene problems that cost the lives of 59,600 children every year. That is why President Buhari declared emergency over the matter.52% of schools are without toilets, 24% of children dont complete primary education (WaterAid, 2018) [16].Consequently, this paper aimed to determine how improved the water, sanitation and hygiene (WASH) facilities are in primary schools in Sokoto state, Nigeria

Materials and Methods

Study design

The type of study design used in this work was descriptive survey. It is useful in studying a crossection of population at a given time and descriptive parameters were yielded.

Therein, visual inspection of public primary schools were carried out to check the level of their water, sanitation, and hygiene (WASH), with the aid of a prepared questionnaire adapted from WHO basic indicators for WASH (USAID Hygiene Improvement Project, 2010; WaterAid, 2018) [15, 16]. Whereas, the method of sampling was convenience one.

Sample size and Sampling technique

In a descriptive qualitative study, the sample size need not to be very large provided that the study population is homogenous (Sarkingobir, 2017) [9]. For this study, three hundred primary schools were visited in Sokoto state using convenience sampling, the three senatorial zones were surveyed.

Data collection and management

Data for this study was gathered using questionnaire as a data collection tool.One is for interview of key informants, and the other type is for empirical data collection (of toilet facilities, water facilities, and surrounding premises).Therein, the data collected was managed using thematic networks.

Results

Table 1: Basic drinking water questions

	Frequency	Percentage
Pump water supply	30	10
Protected well	0	0
Unprotected well	30	10
Container water	60	20
Package bottle water	30	10
Well (not functional)	30	10
No water source	120	40
Water availability		
Is the water available?		
Yes	90	30
No	210	70
Is drinking water accessible to those with problems (eg small children and disabled) ?		
Yes	240	80
No	60	20
How many drinking water points are there ?		
One	90	30
Is the water safe		
Yes	90	40

Table 2: Basic sanitation questions

	Frequency	Percentage
Type of toilet		
Flush	0	0.0
Pit latrine with slab	210	70.0
Pit latrine without a slab	0	0.0
No toilet latrine	90	30.0
How many toilets are usable at the time of survey ?		
Six	250	93.3
Five	30	10.0
Two	30	10.0
Are there separation toilets for males and females (boys and girls)?		
Yes	90	30.0
No	210	70.0
Are there handwashing facilities at school ?		
Yes	60	20.0

No	240	80.0
Are there soap and water at the toilets or it's premises?		
Yes	90	30.0
No	210	70.0
How are the toilets?		
Clean	60	20.0
Somewhat clean	30	10.0
Not clean	120	40.0
Are there separation of toilets for staff and students?		
Yes	90	30.0
No	210	70.0
Number of persons per toilet		
25 persons/toilet	30	10.0
40 persons / toilet	60	20.0
>40 persons/ toilet	120	40.0
Are toilets covered from the side ?		
Yes	290	90.0
No	10	3.3
Are the toilets covered from the roof ?		
Yes	300	100.0
No	0	0.0

Table 3: Other sanitation and hygiene questions

	Frequency	Percentage
Nature of the school compound		
Main premises were clean	300	100
Not clean	0	0.0
Extreme premises		
Clean	60	20
Not clean	240	80

Table 4: Open defecation in the school premises

Are there visible excreta (feces) in the premises?		
Yes	240	80
No	60	20
Is there anybody defecating in the field at the time of the survey?		
Yes	60	20
No	240	80
One	60	20
More than two	240	80

Discussion

The result of WASH survey among primary schools in Sokoto state was presented in the tables above. From table 1, the water parameters were shown.40% of the schools were not having water source.10% have unprotected wells as the potential sources of water.Then,50% of the schools have protected source of water, that is a cumulative of 10% piped water, 20% container water, and 10% packaged water.

Interms of availability, only 30% have available water supply. 70% of the water is not accessible to the people with issues (like disabled and very small children).40% of the water source / supply is safe, and method of treatment is 20% (ultraviolet) UV, and 10% others. The survey showed that in 30% of the schools, the water was enough for basic needs.Schools should have safe and available water for all. WHO recommends 5 liters per student per day (USAID Hygiene Improvement Project, 2010) [15].

Pertaining hygiene, 80% of the toilets or schools have no handwashing facilities. 70% of them have no soap (or water or both) at the toilets or its near premises for hygiene. In all the visited schools, there were no provision for taking care of girls menstrual management. Handwashing materials such as basin or container, water, soap and relations should be placed in the toilets or it's premises and in the school (Musa, 2015) [6].

With regards to toilets cleanliness, 20% of the available toilets were clean, 10% were somehow clean and 40% were not clean.70% of the available toilets, there were no segregation between male and female tolites or staff and students.10% of them can be paired with 25 persons,20% of then were 40 persons per toilet, and 40% more than 40 persons per toilet.Each school should have enough toilets for girls, for boys, and for female and for male staff. WHO recommends, one toilet per 25 girls, and one for female staff, and one toilet for 50 boys and one for male staff (WHO, 2009) [19]. Sanitation is vital for human health.It is beneficial economically, contributes to dignity and social development, and help environment (United Nation General Assembly, 2008; Musa, 2015) [6].

All the schools have visible feces in the extreme premises. In 30% of them, there were atleast one person defecating in the extreme premises of the schools visited. The main premises of all the schools were clean, but 80% of the extreme ones were not.This is bad, one gram of feces contains 10 million viruses, 1 million bacteria, and 1000 parasite cysts. This content can directly or indirectly harm the living (Mariwah, n.d).

Water, sanitation and Hygiene (WASH) beyond the household, particularly in school environment is very important to the health and education of children. Children spend a considerable part of their day at school.This underscores the need for WASH in schools. WASH services can improve educational opportunities and diseases transmission between students and public Considering the significance of WASH in schools, it was explicitly and implicitly captured in the SDGs. Two SDGs goals says: " 6. Ensure availability and Sustainable management of water and sanitation for all. 4. Ensure inclusive and equitable quality education and promote lifelong learning oppotunities for all." Under these two goals, targets were set and WASH in Schools (WiNs) is an indicator for them (WHO, 2016).

Most of the time water and other related materials for cleaning (of private parts) are being ignored in the toilets or around it's premises. This forced users or cleaners (children) to gather

stones, leaves, sticks etc and ultimately end up in disposing them in the toilet pits or floor or just outside. This could cause the easy filling up of the toilets or making it unclean and inconvenient. These problems underscored the need for water source, cleansing materials in or around the toilets premises.

Shortage or absence of facilitaties for sanitation can force the children to look elsewhere (to other places) in order to relieve their selves, and forget or become unable to wash (clean) their private parts or or hands, and this is harmful to hygiene.

Uncovered toilets are easily accessible by flies, which transmit diseases. Also, mosquitoes that transmit malaria and dengue fever can breed there.Insects too can dwell in an uncovered toilet.

Cleaning (especially of hands) with water, soap or ashes or mud is required to prevent the transfer of pathogens after using the toilet (Jaap and Annemarieke, 2005).

Living without toilet is a threat to health, safety and education of millions of children and youngsters around the world.

Diarrhea caused by dirty water and poor sanitation, and intestinal infection altogether kills 140, 000 children (of age 5-14) ever year. Toilet, water, and soap can be helpful to abate many of these deaths. Children frequently battling with diarrhea can become malnourished.

Safety of children is threatened by lack of WASH in schools. Girls, disables and young children are being affected by violence (rape, humiliation, bullying etc) because of lack of safe toilets.

Education of children too is affected by lack of improved WASH in schools. Because of lack of toilet and sanitation at school, many children face threat to complete their education. They frequently miss schools. Particularly, girls requires WASH in order to properly and safely manage menstruation and relieve themselves. Failure to get it can cause many of them to stay at home or abscond schools frequently (WaterAid, 2018) [16].

One of the goals determined by United Nations (UN) is to achieve universal access to water and sanitation. Therein, open defecation will be put to stop and universal access to sanitation at school and workplace should be attained. It set aside 19th of November as the world toilet day, in order to ginger a and actions that will lead to saving lives of millions of people. This is required to curb the scourge of open defecation that harm public health. Many infections and diseases are transmitted via the open defecation. For example, polio, trachoma, hepatitis, diarrhoea are among the diseases that are facilitated by open defecation (OD) (Sarkingobir and Sarkingobir, 2017) [8].

Children are the most affected by open defecation. They crawl, walk, and play with soil and other contaminated items. Their inability to maintain proper hygiene can pose a threat to their health because of open defecation. Girls and women are in a more risk because of open defecation. They risk been rape, humiliated, violated due to open defecation. OD also is harmful to environment. During OD, feces is decomposed to yield greenhouse gas, which in turn promote global warming (climate change) (Centre for Legislative Research and Advocacy, 2013).

In summary, WASH is needed at schools because of the followings:

- Girls miss schools because of poor hygiene facilities
- Sick children miss critical days of school
- Sick children with parasites are malnourished
- Diarrhea is due to dirty water and lack of sanitation and good hygiene
- Diarrhea is costly (USAID HIP,2010) [15].

Conclusion

Based on the findings of this study a conclusion can be drawn. There are shortage of water facilities, toilet facilities, hygiene facilities and problem in the sanitation of primary schools in Sokoto state.

Recommendations

Provison of water, sanitation and hygiene is largely on the neck of government. It has to take more actions on that. Philanthropists, and donors should be mobilized to help ensure WASH thrives in our schools. Lastly, the community should be made aware to take responsibilities in ensuring and maintaining adequate WASH in their destinations.

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