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ASSESSMENT OF OPEN DEFECATION IN PRIMARY SCHOOLS IN SOKOTO STATE, NIGERIA

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Abstract

Open defecation is a threat to public health and the education of children at schools. This study assessed open defecation among primary schools in Sokoto Nigeria using a survey study. 300 questionnaires were filled during a random visit of primary schools in the Sokoto. The possible causes/ factors that led to open defecation in primary schools in Sokoto, Nigeria are: absence of water supply (40.0%), dilapidated toilets (40.0%), and untidy toilets; therewith, no school was found without toilet (0.0%). Regards to practice of open defecation in primary schools in Sokoto, Nigeria; in majority of the schools visited (80.0%), there was presence of feces in some parts of the schools' surroundings, and minority of the schools (20.0%) had no feces on their surroundings when visited. Mostly the feces found was dry (80.0%), and few are fresh (20.0%). Majority (50.0%) of the schools had no any water supply in their premises, 25.0% had protected water supply, and 25.0% had unprotected water supply at the premises. Possible solutions to control open defecation among students of primary schools were suggested: the majority of the respondents (41.7%) suggested provision of enough toilets, and guidance/ health education (33.3%); and minority among them (25.0%) suggested provision of clean water supply. Governments should provide enough water

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supply, enough toilets and related hardware, and there is need for cleaners and proper health ed8cation of students/ pupils on importance of hygiene and sanitation.

Keywords: Open Defecation, Education, Primary School, Toilet, Diarrhea

INTRODUCTION

Education is an agent for development of individuals, groups, states, and nations. It has an ability to transmogrify a human from being an ignorant to being a knowledgeable, from the state of misery to state of happiness and knowledge. It is a tool that changes a man in terms of mental, physical, and emotional states through the provision of environment, teaching, skills, behaviors, and attitudes, that help him to prosper in the society (Etor et al., 2013; Bello et al., 2017; Gado & Alkammawa, 2017).

Primary education is a foundation education given to children of about six to eleven or more years as a key element opening the path of further education to successes. At this stage of education children are taught based on elementary knowledge, and general science with a view to influence children to have literacy, numeracy, and communication abilities; to have a better thinking and scientific ability; to be better citizens, to have a sound molded character and behavior; to be able to thrive in a changing environment for development; to have opportunities and skills for better life; and to be prepared for further education stages (Etor et al., 2013; Kartal et al., 2016; Gado & Alkammawa, 2017; Wada et al., 2022).

However, for education to be acquired there is need for facilities such as amenities, structures, materials, land, building, conducive space, equipments, furniture, and relations that have to be in good form in terms of convenience, space, decency, and satisfaction (Kanayochukwu et al., 2020). Many problems are affecting the education system of this country especially in the public schools that in turn affect the quality of education been delivered, the health of the children/ students, and the public health. There is a concerted perception that nature of schools' facilities affects education and health of the school children or students (Yamma & Izom, 2018; Jiya et al., 2020; Kanayochukwu et al., 2020). Lack of toilets or proper toilets or water supply, that in turn lead to open defecation at schools; are among the factors that poised greater challenge in many schools in Nigeria. Since majority of the population of Nigeria are school students, there is need to analyze the

conditions of schools pertaining defecation and water, sanitation and hygiene (WASH) issues as an effort to harness knowledge, attitude, and practice of proper WASH. Children spend large part of their day hours at school indicating the need for better school environment for protecting the wellbeing, health, and growth of students (Olukami, 2013; Salihu et al., 2017; Yahaya et al., 2019; Sridhar et al., 2020; Yarima et al., 2021; Wada et al., 2022; Sarkingobir et al., 2023).

Open defecation (OD) is among the factors affecting children at many schools due to lack of toilet, lack of water, and other related issues (Makhfudli et al. 2017; Olatunji & Thomas, 2020). OD leads to poor health especially in children and girls because human stool is composed of several disease causing organisms (1g gram of human stool contains ten million viruses and one million bacteria) (Dahal et al., 2014; Charles, 2021). Schools without toilets or with inaccessible toilets give children an opportunity to miss classes whenever they want to defecate or clean themselves (Adjibolosoo et al., 2019). Other risks of open defecation are: stress, injury, animal or reptile biting, malnutrition, spread of infectious diseases, chronic diseases, release of greenhouse gases, etc (Azuogu et al., 2016; Kasarawa et al., 2017; Bello et al., 2022). Humans/ animals are susceptible to many infectious diseases. Infectious/ communicable diseases are contacted through the transmission of pathogen/ microbe by contacting a contaminated object or other biological being; therewith, these diseases contributed to a huge burden on public health systems across the world, especially in the low economic settings and vulnerable people such as children leading to deaths and injuries (van Seventer & Hochberg, 2017). However, infectious diseases can be properly managed through an understanding of factors that influences transmission of diseases (van Seventer & Hochberg, 2017). Considering the outraging effects of open defecation on children and the general public it is imperative to assess the practice of open defecation in primary schools in Sokoto state, Nigeria.

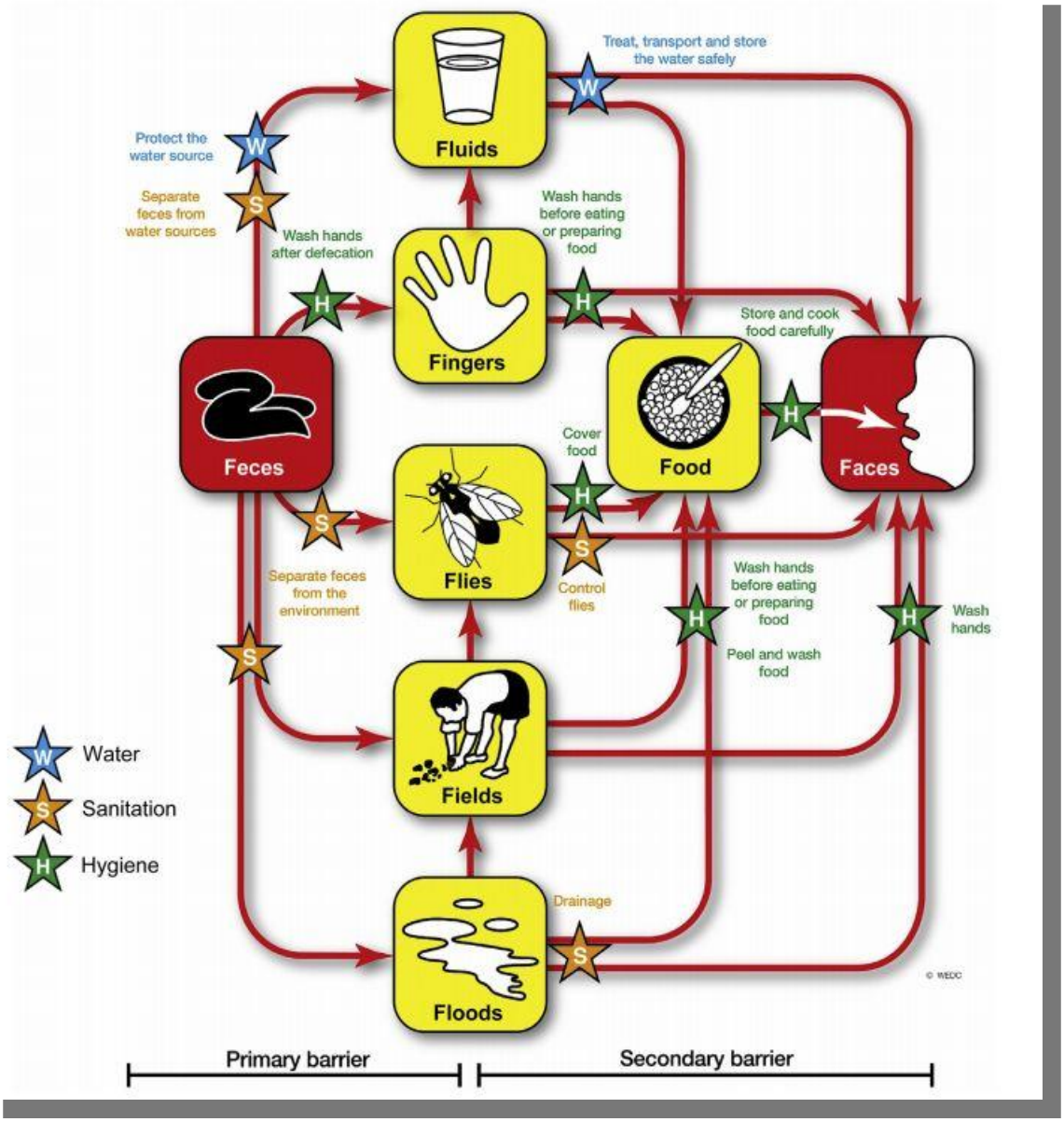


Figure 1: Open defecation path; Source: Wada et al., (2022)

Research questions

The following research questions are made to guide this study:

1. What are the causes/ factors of open defecation in primary schools in Sokoto state, Nigeria?
2. How is the practice of open defecation among primary schools in Sokoto state, Nigeria?

3. What is the nature of water supply at premises of primary schools in Sokoto state, Nigeria?
4. What are the possible solutions to open defecation in primary schools in Sokoto state Nigeria?

MATERIALS AND METHODS

Location of the study

This study was carried out in Sokoto state, Nigeria. Sokoto State is located in the North West Zone of Nigeria between longitude 11" 30–13" 50 and latitude 4"–6". It borders Niger Republic to the north and Benin Republic to the northwest, Kebbi State to south and Zamfara State to the east. It has a land mass area of about 32,000 sq km, and consists of 23 local government areas and 244 political wards. The population is predominantly rural, Muslim and consists almost entirely of Hausa/Fulani ethnic groups.

Research design

A survey design was used for this study. This design is appropriate for areas where little has been reported and that is the reason that motivated the researcher to explore the subject of the study.

Population of the study

The population of this study includes all the primary schools in Sokoto state, Nigeria.

Sample size and sampling techniques

The sample size was calculated using Raosoft calculator at 5% margin of error, 95% confidence limit, and 40 percent response distribution, and 1600 estimated population size. Therefore, for the purpose of this research, the size was three hundred (300) respondents. Thus, the sampling technique was the probability simple random sampling.

Research instrument

The instrument for this study was a semi-structured questionnaire designed by the authors and with full support and suggestions of the expert colleagues. The questionnaire consisted of sections, section A carries the characteristics of the respondents, section B carries the questions about the practice of open defecation among primary schools in Sokoto state, Nigeria, section C carries questions about the nature of water supply at premises of primary

schools in Sokoto state, Nigeria, and section D carries questions about the solutions to open defecation.

Method of data collection

The method used to collect data in this study was using a structured questionnaire, and a simple random probability sampling.

Method of data analysis

The method utilized in the analysis of the data gathered in this work was the interpretation and presentation of data collected using Special Package for Social Sciences (SPSS) and frequency distribution tables.

RESULTS

The results for this study was shown in tables 1-5.

Table 1

Result showing the demographic characteristics of respondents(primary school staff) surveyed in secondary schools in Sokoto state, Nigeria

Item	Parameter	Frequency
Age 20-30	 300	 100.0
Sex Male Female	 280 20	 93.3 6.7
Religion Islam	 300	 100.0
Tribe Hausa/Fulani	 300	 100.0
Level of Education NCE Degree	 280 20	 93.3 6.7
Marital status Single Married	 20 280	 6.7 93.3

Table 1 reveals some characteristics of the respondents teachers in this study. Majority are males (93.3%), some (6.7%) are females, all are between 20-30 years (100.0%), and all Muslims, Nigeria Certificate of Education holders (93.3%), minority (6.7%) are degree

holders and Hausa/ Fulani (100.0%). Majority are married (93.3%), and minority of them are single (6.7%).

What are the causes/ factors of open defecation in primary schools in Sokoto state, Nigeria?

TABLE 2

POSSIBLE CAUSES/ FACTORS OF OPEN DEFECATION AMONG PRIMARY SCHOOLS

Possible cause/ factor of OD	Frequency	Percentage	X^2
No toilet	0	0.0	132
No sufficient water	120	40.0	
Dilapidated toilet	120	40.0	
Untidy toilet	60	20.0	
Total	300	100.0	

X^2 value is 132. The p-value is <.000001. The result is significant at p<.05. Table 2 shows the possible causes/ factors that led to open defecation in primary schools in Sokoto, Nigeria. The factors found are: absence of water supply (40.0%), dilapidated toilets (40.0%), and untidy toilets; therewith, no school was found without toilet (0.0%). Therefore, it has revealed that toilet problems are the major causes of open defecation, and insufficient water supply.

How is the practice of open defecation among primary schools in Sokoto state, Nigeria?

TABLE 3

PRACTICE OF OPEN DEFECATION AMONG PRIMARY SCHOOLS PUPILS IN SOKOTO

Presence of feces in parts of school premises	Frequency	Percentage	X^2
Presence of feces in parts of school premises			150
Yes	225	80.0	
No	75	20.0	
Type of feces			
Fresh	75	20.0	

Dry	225	80.0
Total	300	100.0

X^2 value is 150. The p-value is <.000001. The result is significant at p<.05. Table 3 shows practice of open defecation in primary schools in Sokoto, Nigeria. In majority of the schools visited (80.0%), there was presence of feces in some parts of the schools surroundings, and minority of the schools (20.0%) had no feces on their surroundings when visited. The mostly the feces found was dry (80.0%), and few are fresh (20.0%). In a similar study in Yobe a conflicting observation shows that very few (6%) practiced open defecation as a result of public assessment. This, has shown a varied availability and utilization of toilets between the public household and schools (Karkarna & Adamu, 2021).

What is the nature of water supply at premises of primary schools in Sokoto state, Nigeria?

TABLE 4

WATER SUPPLY AT THE PREMISES OF PRIMARY SCHOOLS IN SOKOTO

Parameter	Frequency	Percentage	X^2
Type of water supply at the premises			37.5
Protected water supply	75	25.0	
Unprotected water supply	75	25.0	
No supply at all	150	50.0	
Total	300	100.0	

X^2 value is 37.5. The p-value is <.000001. The result is significant at p<.05. Table 4 shows that majority (50.0%) of the schools had no any water supply in their premises, 25.0% had protected water supply, and 25.0% had unprotected water supply at the premises. This is similar to a study from Ghana that shows schools have 37.0% access to portable water and 27.5% are contaminated with feces. In turn contributing to open defecation in the schools with ability to cause effects on health, sanitation, and academic activities in schools (Abanyie et al., 2021). Another study from western Ghana has revealed that, majority of the

schools surveyed had no toilets a significant portion engaged in open defecation (Abanyie et al., 2021).

What are the possible solutions top open defecation in primary schools in Sokoto state Nigeria?

TABLE 5

POSSIBLE SOLUTIONS TO OPEN DEFECATION IN PRIMARY SCHOOLS IN SOKOTO

Possible solution to OD	Frequency	Percentage	X^2
Provision of enough toilet	125	41.7	12.5
Provision of enough, clean water supply	75	25.0	
Guidance to children/ health education	100	33.3	
Total	300	100.0	

X^2 value is 12.5 The p-value is <.000001. The result is significant at p<.05. The Table 5 shows the suggested possible solutions to control open defecation among students of primary schools in Sokoto state, Nigeria. The majority of the respondents (41.7%) suggested provision of enough toilet, and guidance/ health education (33.3%); and minority among them (25.0%) suggested provision of clean, water supply. It has been suggested by a Yobe study, that government should provide needed infrastructures and facilities for toilets, and provide orientation to the public for the purpose of addressing the low standard fecal management in Yobe state, and country at large (Karkarna & Adamu, 2021). Another Ghana study in female school suggested that to avoid OD and its effects at schools, there should be provision of improved sanitation facilities by the government (Anyarayor et al., 2019). The suggestions for tackling open defecation in table 4 were similar to results from Abanyie et al., (2021) from Ghana.

Indeed, the nature of school environment affect the learning and education endeavors of students, pupils, and other school actors at least (Kanayochuku et al., 2020). From the findings of this study it has been unveiled that open defecation is a significant practice in

primary schools in Sokoto state, Nigeria because of poor toilets conditions, insufficient toilets, insufficient water supply and the likes. It has revealed a poor management of some available WASH facilities in schools which the government needs to take actions (Mensah et al., 20220).

Nowadays, it is unbearable to pay less attention to the prevalence and effects of open defecation in schools anywhere, let alone in Sokoto state, Nigeria; because sanitation at school implies the health of school-aged children and have the ability to influence morbidity and mortality among children either negatively. In terms of academics, school sanitation (an opposite of open defecation) has a great influence on education and economics of the state, and country at large; therewith, open defecation negatively affects academic achievement, attendance, and gender equality (Xuan et al., 2012; Busienei et al., 2019). Adequate, and safe water supply and toilets are important needs to deliver the basic right to education to children and achieve certain sustainable development goals (Abubakar et al., 2021; Umar et al., 2021; Mensah et al., 2022). Several diseases are transmitted via open defecation. Parable, polio, diarrhea, cataract, dysentery, schistosomiasis, hookworm, typhoid fever, ascariasis etc; therewith sick children mostly absent classes and in turn affecting their education. Children trying to search for places to defecate most absent from classes and are at the risk of rape and reptiles/animals attack. Likewise, open defecation at school exposes children (especially girls) to shame, indignity, and anxiety that consequently affect their learning capacity and outcomes (Xuan et al., 2012; Sifawa & Muhammad, 2014; Magami, and Ibrahim, 2016; Winter et al., 2021; Bello etal., 2022). Open defecation facilitates the entering of parasites/ microbes into the body that in turn defends on the children's body for food and in turn deplete their nutritional reserve, and also impair food absorption; in turn leading to stunting, wastage, and other forms of malnutrition that affect health and intelligence, as only healthy, well-fed children can be able to learn properly (van Seventer, & Hochberg, 2017; Omolade et al., 2018; Bello et al., 2022; Umar et al., 2024; Umar & Sarkingobir, 2024).

Practice of open defecation or other unsanitary or insalubrious acts can pollute the environment and affect others as well, therefore, schools need to be well-equipped with WASH facilities to safeguard the health of all (Elhassan et al., 2015; Anyarayor et al., 2019; Amadi et al., 2020). Therefore, governments should use all efforts to provide enough toilets, sufficient protected water, and maintenance at schools to protect health, and education of children and the public as well.

CONCLUSION

The children are more vulnerable than adults in any situation of harm, because they have comparatively a developing immunity, developing body system than the adults, they have more time to spend in the life cycle, they are very curious. Children, spend much times at schools, therefore a school environment needs to be okay for healthy living and effective learning; that is why water, sanitation, and hygiene are needed at schools. Achievement of Water, sanitation, and hygiene is an important feat that impede infectious diseases transmission. However, this study has shown that there is no enough and proper toilets/ sanitation in most of the primary schools and has led to practice of open defecation as well. Open defecation improves the chain of disease transmission, therewith microbes enter the body of humans (especially children) and cause malnutrition and sickness among other effects. These effects affect learning at the schools where open defecation is practiced.

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