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Availability of Structural Water Related Facilities in Selected Primary Schools: A Survey of Children's Attitude and Practice towards Facilities

[1]Olufunmilayo I. Ndububa, [2]Emmanuel. E. Ndububa and [3]C. Oluwamodupe Olatunji
[1]*Department of Civil Engineering, Federal University, Oye-Ekiti, Nigeria*
[2]*Department of Civil Engineering, University of Abuja, Abuja, Nigeria*
[3]*Primetech Nigeria Ltd., Abuja, Nigeria*

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Corresponding Author:
Olufunmilayo I. Ndububa
Department of Civil Engineering, Federal University, Oye-Ekiti, Nigeria

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Abstract: Safe structural water, sanitation and hygiene facilities and good hygiene practices contribute to the survival and development of children. In the world, there are 2 billion people who lack basic sanitation services, seven out of ten people who still lacked basic sanitation services live in the rural areas mainly in the least developed countries. Every day, over 800 children die from preventable diseases caused by poor water and a lack of sanitation and hygiene, poor sanitation in schools also affects attendance rates, particularly of girls. Available data showing the status of WASH in school in Nigeria led to the conduct of the survey in selected primary schools located in rural areas of the country. Questionnaires developed were designed to obtain information from selected number of schools on availability of water, sanitation and hygiene facilities and knowledge, attitude and practice of students on facilities. Questionnaires administered to pupils were targeted at gender balance to comprise of equal number of boys and girls in each school. It was found that 47.7% of the 174 schools surveyed had no water facilities installed in the schools and <50% of the schools have a latrine/student ratio of 1:62 students. It is recommended that to achieve the sustainability of installed facilities in schools, capacity building of stakeholders on WASH activities must be in place.

INTRODUCTION

Monitoring the impact of availability of school water supply, sanitation and hygiene structural facilities in primary schools by seeking information on knowledge and awareness, documentation o f use of existing facilities and hygiene practices among the school children is a core activity of Water, Sanitation and Hygiene (WASH) in schools. WASH in schools emphasizes the teaching of basic practices of water use sanitation and hygiene among school children with a particular focus on the girl child education[1].

Capacity of school pupils to become change agents for improved hygiene and sanitation practices in and out of the school environment will protect the pupils from the adverse effect of access to unimproved WASH

environment[2]. Training of children on hygiene practices in school, equips the children to become change agents in their communities as children are more receptive and quick to adopt and sustain change[3], capacity built in children are transferred to communities on strengthening to self monitor and evaluating hygiene practices. Research has shown that provision of water supply and sanitation structural facilities alone are not necessarily associated with improved hygiene practices[4].

Safe water, basic sanitation structural facilities and good hygiene practices contribute to the survival and development of children. In the world, there are 2 billion people who lack basic sanitation services, seven out of ten people who still lacked basic sanitation services live in the rural areas mainly in the least developed countries. About 785 million people who still use unimproved water sources mainly live in the least developed countries[5]. Every day, over 800 children die from preventable diseases caused by poor water and a lack of sanitation and hygiene[6], the world has about 125 million children out of school, poor sanitation in schools affects attendance rates, particularly of girls[7]. About 3.4 million children die each year from diseases associated with lack of access to safe drinking water, inadequate sanitation and poor hygiene[8].

WHO and UNICEF[9] defined safe water sources as water supplied from treated municipal water supply, boreholes, protected wells and springs, protected rain harvesters, water supplied from following sources are classified as unsafe sources, unprotected wells, unprotected springs, vendor-provided water, tanker truck provided water while adequate means of excreta disposal in primary schools are considered to include, ventilated improved pit latrine, pour flush toilet and water closet toilet system. Among the numerous hygiene practices available, the hand washing is being promoted as a critical intervention in WASH programs.

The 2008 WHO/UNICEF joint monitoring program for water supply and sanitation[10] report estimated a decline in access to improved water supply form 50-47% between 1990 and 2006 in Nigeria. The 2008 JMP report also estimated a marginal increase in access to improved sanitation from 26-30% between 1990 and 2006 in the country with the absence of adequate WASH facilities mostly in the rural areas. Research has shown that facilities and work spaces are critical in schools[11]. The Basic and Secondary Education Statistics in Nigeria reported that the pupil to toilet ratio averaged 1:292 for primary schools in 2005 based on these reports, Nigeria has focused on achieving the sustainable development goals especially goal number 6 ‘to ensure water and sanitation for all and goal number 4.1, ensuring quality education by increase in proportion of schools with access to basic drinking water, single-sex basic sanitation facilities and basic hand washing facilities by the year 2030[12].

Available data showing the status of WASH in school in Nigeria led to the conduct of the survey in selected primary schools located in rural areas of the country, designed to collect information on the status of water, sanitation and hygiene facilities to put Nigeria on track in achieving the sustainable development goals. Use of standards to stress the necessity of realizing one’s own personal work and identifying the necessity to improve skills and knowledge[13] among pupils is required in achieving these set goals.

Justification for the survey: Inadequate supply of safe water and sanitation facilities in schools lead to women and children bearing the burden of fetching water of which sometimes are polluted[14]. This impact directly on communities as:

- About 3.4 million children die each year from water related diseases
- Attendance rates of children in schools are affected by lack of adequate WASH facilities in schools[15]
- Resources are lost in women and children carrying water from distant sources leading to women drudgery
- Impact of lost resources affect national economics which are weakened by diverting funds to treating ailments that could have been easily prevented
- Working days are lost as a result of the use of unsafe water, inadequate sanitation and poor hygiene practices

The survey was aimed at obtaining information on:

- School Water, Sanitation and Hygiene (WASH) practices and seeking information on knowledge and awareness of need for WASH facilities in schools
- The use of the available WASH facilities in the schools, especially, among the school children
- Capacity of school pupils to become change agents for improved hygiene and sanitation practices in and out of school environment

MATERIALS AND METHODS

Local Government Areas (LGAs) were selected from each of the 36 states of the nation and the Federal Capital Territory Total popula (FCT). Two communities were selected as the focal communities based on support received from donor agencies. Two primary schools per community were selected as the focal primary school. A total number of two hundred and twenty two primary schools were therefore designated as focal schools. For this study, one hundred and seventy four of these focal primary schools were selected for the survey.

The survey in schools was carried out by:

- Development of instrument/questionnaire for collection of all necessary information as in Appendix I-III
- Pre-testing of instrument was carried out to validate the viability of the instrument
- Information for the survey was collected from teachers, students and some community members of each focus school
- Total population of pupils in schools was collected from the school registers and other information related to records
- Physically examination of available facilities and structures were carried out
- Interacting with members of environmental health clubs and their teachers were conducted

Questionnaire developed was designed to obtain information from pupils of primary schools. This questionnaire was administered to about twenty pupils per school, targeted at equal number of boys and girls. Questionnaires were administered as much as possible in a relaxed atmosphere. Names of students were not part of the documentation in the questionnaire, a phenomenon that made the student to relax even more.

RESULTS AND DISCUSSION

Facilities available in schools: An on-ground verification exercise was conducted in all selected school on the availability of WASH facilities in the schools. WASH facilities in schools are documented as water sources, latrines, hand washing facilities and incinerators, information was gathered using developed questionnaire.

Types of water sources: The types of water sources available in schools were documented, varying from boreholes with motorized/hand pumps, protected hand dug wells/with hand pumps to rain harvesters, these are described as basic services[16]. Natural water sources such as streams and rivers were also found in some schools. Facilities installed were checked for functionality. Table 1 shows the types and number of water sources available in the schools. Figure 1 shows that 34.5% of the types of water sources in the surveyed schools are boreholes with hand pumps.

Availability of sanitation facilities: The availability of sanitation facilities such as latrines/toilets in schools was also documented. Each school has various numbers of latrine blocks, latrine compartments per block or toilets as shown in Table 2.

Table 3 shows the number of latrines that are functional and those that are not functional; schools with dilapidated latrine blocks were not classified as functional but as repairs required.

Types of hand washing facilities in schools: A number of schools have one type of hand washing facility or another in place. Most schools do not have a permanent structure installed but make use of various facilities as shown in Table 4.

About >30% of hand washing facilities in schools are located in classrooms while on 6.3% of the facilities are located in the latrines. Figure 2 shows the location of hand washing facilities in surveyed schools.

Table 1: Types of water sources

Type of sources	No. of schools with water sources	Remarks
Borehole with hand pump	60	Safe water sources
Borehole with motorized pump	3	
Hand dug well with hand pump	3	
Protected hand dug well	7	
Rain harvester	4	
Hand dug well	3	Unimproved source
River/Stream	11	Unimproved source
No facility	83	No access
Total	174	

Table 2: Latrine/Toilet compartments:Pupils ratio for schools

Total No. of latrines compartments per school	No. of schools	No. of surveyed schools (%)	Total students	No. of latrines/Pupils ratio
0	34	19.5	10375	N/A
1	6	3.4	2208	1:368
2	8	4.6	3763	1:253
3	12	6.9	2996	1:83
4	6	3.4	3066	1:128
5	3	1.7	693	1:46
6	88	50.6	32959	1:62
7	3	1.7	651	1:31
8	2	1.1	464	1:29
9	4	2.3	1945	1:54
10	2	1.1	2581	1:129
11	1	0.6	253	1:23
12	3	1.7	1542	1:43
16	2	1.1	2871	1:90
Total latrines = 94	174	100.0	66367	

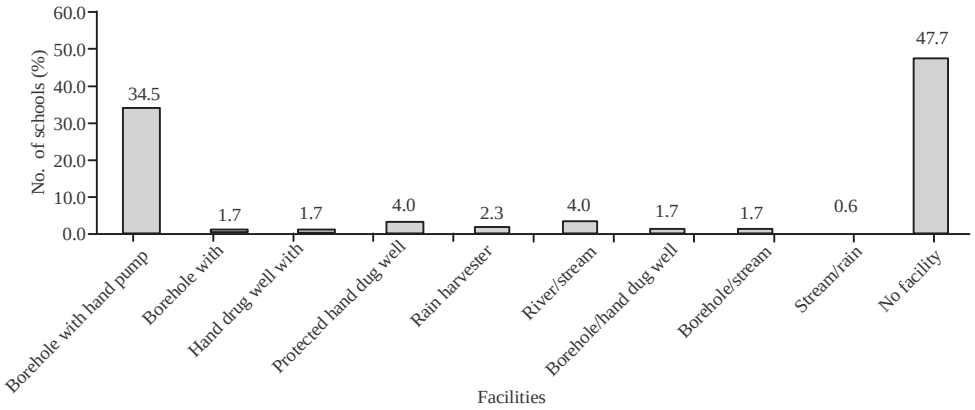

Fig. 1: Types of water sources

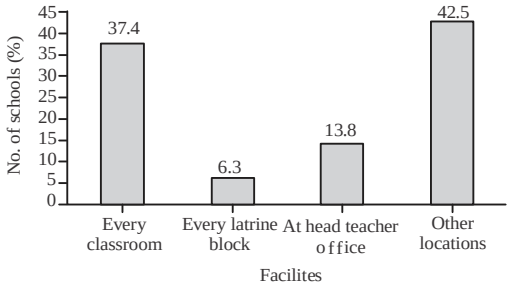

Fig. 2: Hand washing facilitie in schools

Table 3: Functionality of latrines in schools

Variables	No. of schools	Percentage
Functional	123	70.7
Not functional	13	7.5
Repairs required	38	21.8
Total	174	100.0

Table 4: Types of hand washing facilities in schools

Type of hand washing facilities	No. of schools	No. of schools (%)
Plastic bowls	18	10
Bucket	1	0.6
Not available	68	39
Kettles	12	6.9
Basins	1	0.6
Cement mortar construction	1	
Others	73	43
Total	174	100

Table 5: Availability of incinerator in schools

Availability	No. of schools	Percentage
Available	15	8.6
Not available	159	89.7
Total	174	100.0

Availability of incinerator in schools: To monitor the solid waste disposal practices in schools, the availability of incinerator per school is documented. The schools that have incinerators available mostly have only one which is functional. Table 5 shows the status of incinerator in the primary schools.

Table 6: No. of pupils by class

Class	No. of pupils	Percentage
1	25	2.1
2	60	4.9
3	105	8.6
4	190	15.6
5	281	23.1
6	463	38.1
Class not documented	92	7.5
Total	1216	100.0

Table 7: Distribution of pupils by age group

Age group	No. of pupils
5-7	53
8-10	301
11-13	562
14-16	232
17-20	29
No response	39
Total	1216

Analysis of results from questions answered by pupils: Questionnaires were administered to primary school pupils to gather information on their knowledge, attitude and practice on WASH issues, it is important for pupils to know that freedom consciousness is the awareness and understanding of the rights of citizens[17] of which availability of WASH facilities are included.

Finding from the administered questionnaires are present from Table 6 which shows the number of pupils interviewed by class. A total of 1216 pupils participated in the survey; <50% of the respondents were in classes 4-6 while only a few students participated from the lower classes. The range for the age group that participated in the survey is presented in Table 7. The highest participating group is the 11-13 years. Figure 3 shows the percentage distribution of pupils by age group.

Type of school: The schools were classified into four groups, the Islamiya integrated, Christian/Moslem Missionary Schools, nomadic schools and regular schools. The school types are shown in Table 8 there was no nomadic school recorded while 93.2% of the schools surveyed were regular schools.

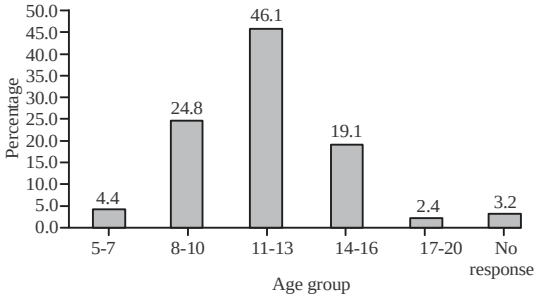

Fig. 3: Distribution of pupils by age group

Table 8: Type of schools

Type of schools	No. of schools	Percentage
Islamiya integrated	1	1.7
Christian/Moslem	3	5.1
Nomadic	0	0.0
Regular	62	93.2
Total	66	100.0

Table 9: Proprietorship

Proprietor	No. of schools
Fed government	1
State government	45
Local government	19
Local government/community	1
Total	66

Table 10: Distribution of pupils by gender

Gender	No. of pupils	Percentage of respondents
Boy	619	50.9
Girl	597	49.1
Total	1216	100.0

Table 11: Distance of school from houses of pupils

Distance	No. of pupils	Percentage
<100 m	491	40.3
Between 100 and 500 m	411	33.8
Above 500 m	88	7.2
Between 500 and 1000 m	101	8.3
Above 1000 m	118	9.7
No response	7	0.6
Total	1216	100.0

Table 12: No. of students with responses on sanitation

Awareness of sanitation	No. of pupils
No. of pupil aware of sanitation	1060
No. of pupil not aware of sanitation	149
No response	7
Total	1216

Proprietorship: Nigeria public schools are school usually owned by the government which is the federal, state and local government. The results are presented in Table 9.

Distribution of pupils by gender: The gender of pupils interviewed was recorded and the distribution is presented in Table 10 the aim was to interview exactly the same number of boys as of girls. The distribution has shown a slight variation mostly due to constraints on the field.

Table 13: Knowledge of pupils on sanitation

What do you understand by sanitation	No. of pupils	Percentage
Use of toilet for defecation	117	9.6
Hand washing	93	7.6
Hygienic disposal of refuse	382	31.4
Covering of food	54	4.4
Covering of drinking water	34	2.8
Hand wash/hygienic disposal/ covering food/water	12	1.0
Use of toilet/hand washing	21	1.7
Covering of food/water	8	0.7
Hand washing/covering of food	10	0.8
Use of toilet/hygienic disposal	32	2.6
Cleaning of surroundings	35	2.9
Inspecting surrounding	2	0.2
Take a bath with soap	5	0.4
Keep a clean body	4	0.3
Use of toilet/hygienic disposal/covering food	19	1.6
Washing utensils	1	0.1
Hand wash/hygienic disposal	14	1.2
Hygienic disposal/covering of food	14	1.2
Hygienic disposal/covering of water	7	0.6
Hygienic disposal/covering of food/water	8	0.7
Sweeping	12	1.0
Use of toilet/hand wash/hygienic disposal	14	1.2
Washing cloths	6	0.5
Not contacting diarrhea	3	0.2
No response	309	25.3
Total	1216	100.0

Table 10 shows that 50.9% of the pupils interviewed are boys, a figure close to the design of the questionnaire.

Distance of schools from the houses of pupils: The distance of schools from the houses of the pupils will probably affect the attendance rate of the pupils. This will also affect the punctuality of the students. Table 11 gives approximate figures on the distances of pupil's houses from the schools.

Awareness of sanitation: The awareness of sanitation by the pupils was asked, 87% of the 1216 pupils interviewed had knowledge of sanitation as presented in Table 12.

Knowledge of pupils on sanitation: Pupils were given opportunities from the multiple options to have combinations of answers to portrait their knowledge on Sanitation. Table 13 gives the results. About 31.4% of pupils responded that sanitation is the hygienic disposal of refuse. Most likely, the pupils link the word sanitation to sanitation days in schools where the school compound is cleaned up to make the environment look neat. Generally, there is a good understanding and knowledge of sanitation among the respondents, especially with the availability of latrines in schools with various designs[18] as most of them apart from those that gave no response mentioned one form of sanitation or the other.

Table 14: Knowledge of malaria among pupils

Knowledge about malaria and its impact	No. of responses from pupils	Percentage from responses
Pupils that had knowledge of malaria	1097	90.2
Pupils with no knowledge of malaria	101	8.3
No response	18	1.5
Total	1216	100

Table 15: Availability of toilets in school

Are there toilets in the school?	Response from pupils	Percentage from responses
Positive knowledge of the availability of toilet and use school toilet	1023	84.1
No. of students that do not know about the availability of school toilet and do not use school toilet	153	12.6
Perception that school toilet is not available for use	31	2.5
No response	9	0.7
Total	1216	100

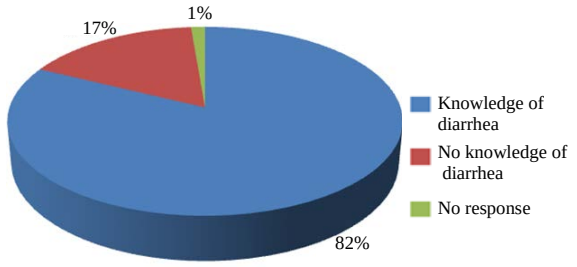

Fig. 4: Percentage number of pupils with knowledge of diarrhea

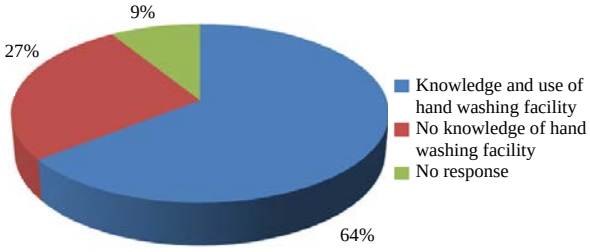

Fig. 5: Knowledge of hand washing facility in school

Knowledge of diarrhea: Figure 4 shows the percentage number of students that had knowledge of diarrhea based on the response. Malaria is a very common ailment in Africa[19], many people contact malaria annually in the country, 90.2% of pupils were aware of malaria and the impact on the community as presented in Table 14[20].

Availability of toilet in schools: The availability of toilets/latrines in schools is a major part of the school sanitation and hygiene education project. The awareness of the pupils on the availability of toilets in the schools also shows their attitude to the facility as shown in Table 15[20].

Types of latrines available in schools, shows the adequacy of sanitation facilities as at 2014 in Nigeria, only 33% of the population in the country had access to improved sanitation facilities[21]. The knowledge of pupils on the types of facilities gives the possible behavior of the pupils to facilities. Table 16 gives the response of students on the availability of separate toilets for boys and girls.

Table 16: Availability of separate toilets for boys and girls

Are there separate toilets for boys and girls	No. of pupils
Yes	933
No	129
No response	154
Total	1216

About 933 students gave a positive response to the availability of separate toilets for boys and girls, the construction of separate blocks of toilets/latrines for boys and girls encourages the use of the systems.

Knowledge of hand washing facilities: The knowledge of the pupils on the availability of hand washing facilities is presented in Fig. 5. Hand washing as an intervention on the reduction of water borne diseases has been shown to have a discrete impact of about 30% capacity of reduction in diarrhea risk[22]. Figure 5 shows the response of students on availability of hand washing facilities in school. About 64% of the pupils responded in the affirmative with adequate knowledge of the availability and use of the hand washing facility.

Effect of open defecation on health: Human activities can alter the natural composition of water through disposal of microbial matter[23], open defecation is a practice that the country is working at ending. Open field defecation is strongly related to the spread of water related diseases such as diarrhea disease[16]. About 662 pupils mentioned diarrhea as a disease contacted due to the practice of open defecation as presented in Fig. 6.

Availability of drinking water sources in school: Knowledge on types of water sources in schools by

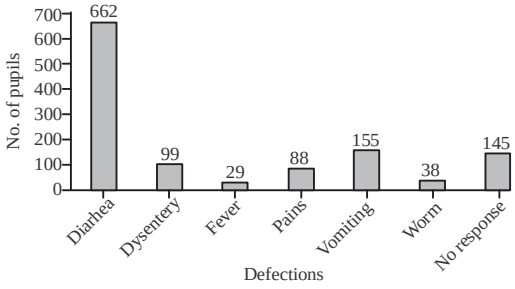

Fig. 6: Types of diseases associated with open defection

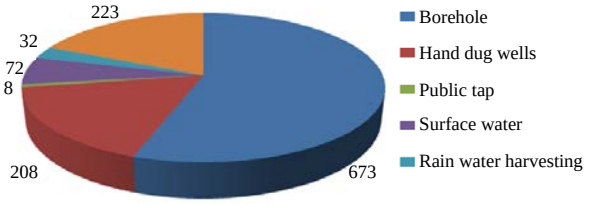

Fig. 7: No. of responsers on types of water sources in schools

pupils is an indication of the understanding for safe water supply for domestic use. Groundwater use is a major source of domestic water supply, research has shown that about 60% of the population in Nigeria depend on groundwater sources for domestic use[24], result on type of water sources identified by pupils is given in Fig. 7.

The behavior of pupils outside the school was tested by asking for the source of water used in their homes in relation to the need of protection of safe water sources from pollution[25]. Domestic water use accounts for a bout 50% of all water use[26], the shows the need to track use of domestic water. Table 17 gives the results to this question.

The amount of time spent fetching water will have implications on the amount and quality of water that a household makes available to its members[27] in many cases there is need for households to treat water before drinking, Table 18 shows results obtained from pupils on possible methods of treatment:

In relation to the availability of hand washing facilities in schools, access to safe water promotes the practice of hand washing[22] from research presented that around one-third of diarrhea episodes in children is prevented by hand washing. More than 80% of the pupils said that they usually WASH their hands before eating as in Table 19.

In line with monitoring the hand washing practice, most of pupils said that they wash their hands before eating as this has a direct bearing on the possibility of contacting worms, 86% of the pupils are aware of stomach worms presented in Fig. 8.

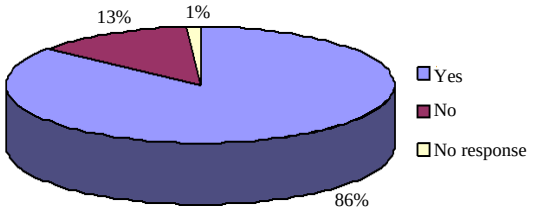

Fig. 8: Awareness of stomach worms

Table 17: Source of drinking water at home

Where do you get drinking water at home?	No. of responses from pupils	Percentage from responses
Borehole	434	35.7
Hand dug wells	344	28.3
Public tap	71	5.8
Pond/stream/rain	89	7.3
Stream	169	13.9
Rain water harvesting	7	0.6
Borehole/tap	2	0.2
Borehole/hand dug	50	4.1
Dam	1	0.1
Sachet water	7	0.6
Tank	3	0.2
No response	39	3.2
Total	1216	100

Table 18: Household water treatment methods known by pupils

Protection from drinking unsafe water	No. of pupils	Percentage
Boiling the water before drinking	423	34.8
Filtering the water before drinking	176	14.5
Collecting drinking water from safe water sources	202	16.6
Boiling/filtering/treating/ draining	33	2.7
Boiling/filtering	89	7.3
Other methods of treatment	90	7.4
No response	203	16.7
Total	1216	100.0

Table 19: Need to wash hand before eating

How often do you usually wash hand before eating?	No. of pupils
Never	9
Always	991
Sometimes	165
No response	51
Total	1216

Pupils are aware on the need to use soap when washing hands as presented in order to prevent the possibility of contacting worms. Research has shown that it is crucial to store knowledge in order to increase institutional capacity[28].

Promoting immunization among children is planned towards achieving total coverage of prevention of childhood diseases. The awareness among children is important; the question on immunization and the source of information about immunization is presented in Table 20.

Table 20: Sources of information about immunization

Source of information about immunization?	No. of pupils	Percentage
Father and mother	210	17.2
Father	6	0.5
Mother	13	1.1
Teacher	642	52.8
Friends	8	0.7
Pastor	1	0.1
Relatives	13	1.1
Members of environmental health club	59	4.9
Health worker	63	5.2
Self experience	19	1.6
Father/mother/teacher	38	3.1
Vendors	6	0.5
Media	7	0.6
Members of environmental/health workers	6	0.5
Father/mother/health worker	6	0.5
Teacher/health workers	4	0.3
Grandmother	17	1.4
No response	98	8.1
Total	1216	100.0

CONCLUSION

The following conclusions are made to support planning and implementation of WASH activities in schools in the country:

- About 83 schools (47.7%) of the 174 schools had no water facilities installed in the schools
- About 13 latrines of the available latrines are reported as not functional, 38 latrines require maintenance. More than 50% of the schools have a latrine/student ratio of 1:62 students
- There is need for standardization of latrine designs as different communities have different designs.
- About 100 schools recorded the availability of hand washing facilities mainly by the use of plastic containers
- The class with the largest group that participated in the survey was from primary six, a total of 463 students. The KAP studies carried out showed that >80% of the pupils had knowledge of sanitation and diarrhea
- About >90% of pupils were aware of malaria; possibly due to the impact malaria has on the communities involved
- About >80% of pupils interviewed responded that toilets/latrines were available in the schools of which above 60% were ventilated improved pit latrines, however, it was noted that not all the latrines were functional
- Above 70% of pupils interviewed wash their hands after using the toilet/latrine of which about 70% use soap and water, a good response to hand washing as a WASH intervention on reduction of diarrhea disease

RECOMMENDATIONS

From the results obtained the following recommendations are made:

- Most schools make use of plastics for hand washing facilities, there is need for more permanent structures in place
- Involvement of many stakeholders apart from government needs to be encouraged on WASH issues
- Latrines need to be maintained as dilapidated structures were seen in some schools; availability of functional latrines is key in the sanitation program
- To achieve the sustainability of installed facilities in schools, capacity building of stakeholders on wsah activities must be in place
- Monitoring of the WASH facilities in schools should be supported by the government towards achieving designed outputs and creating awareness among people on the need for reduction of pollution by strong implementation of legislative measures[29]
- Successes in WASH program that have been achieved among pupils in primary schools should be replicated in other schools to build a critical mass of capacitated pupils to promote best practices in the use of safe water, sanitation and hygiene facilities

ACKNOWLEDGEMENT

This is to acknowledge that the funds for the survey were provided by the United Nations Children's Fund (UNICEF) Nigeria.

APPENDIXES

Appendix 1: Sample instrument for wash survey in selected primary schools

Questions	----------Answers----------		
Name of school			
Local government area			
State			
GPS location	Longitude	Latitude	
Head teacher			
	Total	Female	Male
Total number of students in the school			
Number of students in a class by gender			
Primary 1			
Primary 2			
Primary 3			
Primary 4			
Primary 5			
Primary 6			
No. of classroom blocks/classrooms			
Available facilities in the school	Total No.	Total functional	Type/remarks
Water source			
Latrines/toilets (Blocks)			
How many compartments per toilet block?			
How many latrine compartments provided by gender?			
Availability of incinerators			
Hand washing facilities			
Location of hand washing facilities			

Appendix 2: Sample of questionnaire administered to pupils:

Questions	Answers	Remarks
Section 1: preliminary information		
Name of school		Brief explanation
Local government area		
Type of school	☐	
Proprietorship	☐	
Gender of pupil	☐ Boy ☐ Girl	
In what month and year were you born?		
(indicate using numbers, e.g., 04 for April)	Month Year	
How old were you at your last birthday?	Years	
What class are you in?	☐	
What is the distance from your house to the school	<100 m Between 100 and 500 m Above 500 m Between 500 and 1000 m Above 1000	
Section 2: School water, sanitation, hygiene and health		
Are you aware of what sanitation is?	☐Yes	
Brief explanation	☐No	
Have you heard of hygiene	☐ Yes ☐ No	
What do you understand by sanitation?	☐ Use of toilet for defecation ☐ Hand washing ☐ Hygienic disposal of refuse ☐ Covering of food. ☐ Covering of drinking water ☐ Others (specify) ☐ Don't know	
Have you ever heard of diarrhea?	☐ Yes ☐ No	
Do you know about malaria and its impact?	☐ Yes ☐ No	
Do you know if there are toilets in your school?	☐ Yes ☐ No	
If yes which type is available?	☐ Traditional pit latrine ☐ Ventilated improved pit latrine ☐ Pour flush ☐ Water closet ☐ Others specify	

Appendix 2: Continue

Questions	Answers	Remarks
Are there separate toilets for boys and girls?	☐ Yes	
	☐ No	
Are there hand washing facilities in the school	☐ Yes	
	☐ No	
Can a person get diseases by defecating in the open field?	☐ Yes	
	☐ No	
If yes what type of diseases can one get from	☐ Diarrhea	
defecating in the open field?	☐ Dysentery	
	☐ Fever	
	☐ Others	
Are there drinking water sources in the school?	☐ Yes	
	☐ No	
If yes what type of drinking water sources do	☐ Borehole	
you have in the school	☐ Hand dug wells	
	☐ Public tap	
	☐ Pond/stream	
	☐ Rain	
	☐ Others specify	
Can a person contact disease by drinking water from	☐ Yes	
unsafe water sources such as pond, river/stream?	☐ No	
If yes wWhat type of diseases can a person get from	☐ Diarrhea	
drinking water from unsafe water sources?	☐ Dysentery	
	☐ Fever	
	☐ Others	
How can people protect themselves from contacting	☐ By sweeping the environment regularly	
diseases from dirty environments?	☐ By disposing off the refuse properly	
	☐ By using toilets/latrines	
	☐ By washing hands after using toilets/before handling food	
	☐ By bathing regularly	
	☐ Others (Specify)	
	☐ Don't know	
Do you use wash your hands after using toilet? Can	☐ Yes	
a person contact works by using unwashed hands to eat?	☐ No	
	☐ Don't know	
If yes with what material do you wash/clean your hand	☐ Water only	
after easing yourself/using toilet/latrine	☐ Water and soap	
	☐ Water and ashes	
	☐ Paper	
	☐ Leaves	
	☐ Others (specify)	
Where do you get drinking water at home?	☐ Borehole	
	☐ Hand dug wells	
	☐ Public tap	
	☐ Pond/stream	
	☐ Rain	
	☐ Others (specify)	
How is water from unsafe sources treated?	☐ By boiling	
	☐ By filtering	
	☐ Using safe sources	
	☐ Others (Specify)	
How often do you usually wash your hands before eating?	☐ Never	
	☐ Sometimes	
	☐ Always	
How often do you usually wash your hands after using the	☐ Never	
toilet or latrine?	☐ Sometimes	
	☐ Always	
Are you aware of the program of immunization? What	☐ Yes	
is the source of knowledge?	☐ No	

Appendix 3: Names of 66 focus primary schools and locations where questionnaires were administered

State	Local government area	Name of schools	No. of questionnaires administered
Adamawa	Mubi South	Monduva prim. sch.	20
	Tougo	Ganzamanu	20
Anambra	Ayamelum	Akwa MFS umerum	20
	Ekwusigo	Unity prim. sch. Isingwu	20
Bauchi	Darazo	Duwo prim. sch.	20
	Dass	Wanbi prim. sch.	20

Appendix 3 Continue

State	Local government area	Name of schools	No. of questionnaires administered
Benue	Agatu	RCM Enungba	20
	Ushongo	NKST pri. sch. Tiam	20
Borno	Bama	Kumshe prim. sch.	20
	Hawul	Hema prim. sch.	20
Cross Ri	Abi	St. Micheal prim. sch.	20
	Boki	St. John's prim. sch. Arongba	20
Ebonyi	Ivo	Community prim. sch. Iyioji	20
	Ohaukwu	Igbokwe prim. sch. Ejilewe	20
Ekiti	Ekiti West	Community pry school	20
	Oye	L.A. pry sch	20
Enugu	Isi-uzo	Public sch neke	20
	Uzo-uwani	CPS Ukpata	20
FCT	Abaji	Sci. pri. sch yaba	20
	Bwari	LEA pri. sch. Kuchibuyi	20
Imo	Ehime Mbano	Central school Umuona	10
	Mbaitol	Odumara com. sch. Orodo	13
Jigawa	Guri	Margudu primary	20
	Maigatari	S/Maja primary	20
Kaduna	Giwa	Danmahawayi Cd prim. sch.	20
	Kauru	Kagadama CD prim. sch.	20
Kano	Doguwa	Unguawar Natsohuwa prim.	21
	Madabi	Rikadawa Central prim.	19
Katsina	Ingawa	Kwarin Yamusa P.S	20
	Kurfi	Muji B P.S	20
Kebbi	Koko/Besse	Rafin Alh/Tudun Bude. Prim. Sch.	20
	Shanga	Tungar Fawa/Giwa prim. sch.	20
Kogi	Kogi	LGEA Omoko	14
	Olamaboro	Ugbamaka	21
Kwara	Baruten	Baptist Lgea Tabaru	20
	Isin	Comm. pry schl, Olla	20
Lagos	Alimosho	Surulere community prim. sch.	20
	Apapa	Ijora-Oliye prim. sch.	20
Nasarawa	Kokona	Central	20
	Wamba	Maramara Jidda primary	20
Niger	Chanchaga	Lokoto pri. sch	20
	Lavun	Chatafu pri. sch	20
Ogun	Remo North	Local govt. sch. Imagbon	20
	Uewa North	Methodist prim. sch. Igan-Okot	20
Ondo	Akoko southwest	St.Joseph's RCM pri.sch. Uba-Oka	20
	Ile-oluji/Okeig	Christ ang. pri. sch, Araromi	20
Osun	Boluwaduro	Baptist day sch eripa	20
	Ejigbo	Young tajudeen pri. sch ole	20
Oyo	Oluyole	Methodist sch.Idiroko-Adewole	20
	Surulele	St. Paul ang. pri.sch Iresaapa	20
Plateau	Kanke	Garyang	20
	Langtang	Gamakai pilot prim.	18
Rivers	Andoni	CPS Oyorokoto/MPS Asarama	20
	Khana	CPS Beeri/Lorre	20
Sokoto	Tureta	Dorawa primary school	20
	Wamakko	Bini primary school	20
Taraba	Gashaka	Mayo Selbe prim.	20
	Lau	Kunini pilot prim.	20
Yobe	Gulani	A.A. Musa Boarding sc	20
	Yusufari	Maimalari prim.	20
Zamfara	Maru	Jabaka model prim. sch.	20
	Tsafe	Yanware model prim. sch.	20

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