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Potable water supply and sanitation practices in selected public primary school pupils in Owerri north local government area, Imo state, Nigeria

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ABSTRACT

The study was a cross sectional descriptive survey that examined Potable Water Supply and Sanitation Practices in Selected Public Primary Schools in Owerri North Local Government Area, Imo State, Nigeria. Five primary schools were selected by simple random sampling for the study. Objectives include; identify the sources of potable water, determine accessibility and uses of potable water with functional toilets available in the schools. Multi- stage random sampling technique was used to select 350 pupils in the selected primary schools. Results from the study show that a good number of respondents 82.9% used borehole water, 57.7% of the pupils fetch water from community borehole behind the school, 20.9% walked 20 metres from the school to fetch water and 60.0% used water for domestic purposes; such as drinking, hand washing and cleaning. A good number, 89.9% used cup for drinking water. Moreover, lack of potable water supply and functional toilets in the schools could affect the general hygiene status of the schools and the practice of hand washing by the pupils.

Keywords: Public Primary School Pupils, potable water supply and sanitation practices .

INTRODUCTION

Water is a scarce resource, with unlimited benefits. Development of community water supplies and sanitation results in improved social and economic conditions and improved health (1). World Health Day (2) was dedicated to ensuring healthy environments for children. Worldwide, the burden of environment-related disease falls disproportionately on children and every year, more than 5 million children under the age of 14 die, mainly in the developing world, from these diseases (3). In Nigeria, the inadequacy of potable water and sanitation services is manifested in the prevalence of water and sanitation related diseases. Diarrhoea, which results from poor sanitary/ hygiene habits and consumption of water of poor quality, is the second main cause of infant mortality after malaria, and the third main cause of mortality (4). The prevalence of diarrhoea is higher in the rural than urban areas and in the northern zones than the south. An estimated 150,000 to 200,000 diarrhoea- related deaths occur among children below 5 each year. UNICEF Knowledge, attitude and practice studies 1999 reveal a wide disparity in the priority ranking of water supply and sanitation by communities where water 77 per cent was considered the topmost

priority of most communities and latrines 19 per cent (as an indicator for sanitation demand) was viewed as the least major problems identified by rural households in Nigeria.

In Africa, 62% of the populations have access to improved water supply and 60% have access to improved sanitation, but the situation is worse in rural areas. Only 47% of the rural populations have access to improved water supply and 45% have access to improved sanitation (5). Washing hands after defecation and before preparing food is of particular importance in reducing disease transmission, but without abundant water in or near homes and schools, hygiene becomes difficult or impossible. The lack of water supply and sanitation is the primary reason why diseases transmitted via faces are so common in developing countries. The most important of these diseases, diarrhoea and intestinal worm infestations, account for 10% of the total burden of diseases in developing countries (2).

Water is not only a vital environmental factor to all forms of life, but it has also a great role to play in socio-economic development of human population. It was in recognition of this that the 34th World Health Assembly in 1981 made a resolution emphasizing that safe drinking water is a basic element of 'Primary Health Care' which is the key to the attainment of health for all citizens of the world (6).

MATERIALS AND METHODS

Study setting

The study area was Owerri North Local Government Area, Imo State. Owerri North is an urban Local Government. It encircles Owerri Municipal, the capital of Imo state, Nigeria. The local government is bounded in the North by Orlu Local Government, in the west by Owerri Municipal, in the east by Ikeduru and in the South by Aboh Mbaise Local Government Areas respectively. It is politically divided into 12 wards. It has a population of 176,334 and of this, 87,094 are males and 89,240 are females. And a population growth rate of 3.2% (7).The local government is headed by a local council chairman as chief executive with 12 councillors representing each of the 12 political wards. It has 28 health centres, 48 primary schools, with 73,432 enrolment in 2009 and 18 post primary schools with 19,556 enrolments in 2009. It has three rivers; river Otamiri in Egbu, river Okitankwo in Emekuku and river Orunmurukwa in Azaraegbelu. The major occupation of the people is farming; while some are public servants in government establishments.

Scope of the study

This study covered the level of potable water supply and sanitation practices in Primary schools in Owerri North L.G.A, Imo State, Nigeria. It determined the sources of potable water, accessibility and uses of potable water, what pupils in the school use for drinking water, functional toilets available and hand washing practices among pupils. The study was restricted to pupils in primary V and VI.

Study design

A cross-sectional descriptive survey was adopted for this study. This provided a base-line data on level of potable water supply and sanitation practices in the study area. Data were collected from pupils in primary V and VI in the study area, Owerri North L.G.A, Imo State, Nigeria.

Study population

The population of this study comprised all the pupils in primary V and VI in the selected primary schools in Owerri North L.G.A, Imo State, Nigeria.

Sample size determination

Bluman (8) and Edet (9) stated that sample size of a large population can be determined by the formula:

$$\text{Sample size (n)} = \frac{z^2pq}{d^2}$$

Where;

n = minimum sample size
z = confidence limit (95% or 1.96)
p = probability of success (50% or 0.5)
q = probability of failure (1 – p) i.e. (1 – 0.5) = 0.5

d = precision (0.05 or 0.01)
substituting into the formula then sample size

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384.16$$

But 400 questionnaires were used to make up for questionnaire that might not be correctly filled or returned.

Sampling technique
Multi-stage random sampling technique was used. This involved four stages.

Selection of wards:
Five wards were selected by simple random sampling from the 12 political wards; names of the twelve wards were written in pieces of paper, folded mixed up and five people were asked to pick one each. The wards that were picked formed the wards to be use for the study.

Selection of primary schools:
Five primary schools, each from the five wards selected for the study were selected by random sampling. Names of the schools in each of the five wards were written in pieces of paper and put in separate bag. Five people were asked to pick one from each bag. The schools picked, formed the schools selected for the study.

Selection of pupils:
The formula of (10) was adopted bearing in mind the principle of proportionality based on numerical strength. The formula states that:

$$n = \frac{\text{total number of pupils in a school} \times \text{total sample size}}{\text{total number of pupils in the selected schools}}$$

where,
n = number of pupils to be selected per school.

Knowing the number of pupils to participate in the study from Lutz formula in each school, a simple random sampling technique was used to select the pupils for the actual study in the five primary schools selected. A “yes” and “No” option was written on pieces of paper; folded, mixed up, and each pupil in primary v and vi were asked to pick one each. Those that picked “yes” option were selected to participate in the study. Those that picked the “No” option did not form part of the study. A total of 350 pupils were selected out of 4660 using this procedure.

RESULTS AND DISCUSSION

Table 1: Distribution of respondents by sex, age, religion and class (n = 350)

Characteristics	Number of respondents	Percentage
Sex		
Male	193	55.2%
Female	157	44.8
Total	**350**	**100%**
Age group (years)	**Number of respondents**	**Percentage**
6 – 10	234	66.9%
11 – 15	109	31.1%
16 – 20	1	0.3%
No response	6	1.7%
Total	**350**	**100%**
Religion	**Number of respondents**	**Percentage**
Christianity	343	98.0%
Islam	1	0.3%
Traditional religion	6	1.7%
Total	**350**	**100%**
Class	**Number of respondents**	**Percentage**
Primary v	209	59.7%
Primary vi	130	37.1%
No response	11	3.1%
Total	**350**	**100%**

Table 2: Distribution of respondents by sources and accessibility of potable water supply (n = 350)

Source	Number of respondents	Percentage
Borehole	290	82.6%
No response	38	10.9%
Hand dug well	5	1.4%
Rain water	5	1.4%
River	5	1.4%
Drilled well	3	0.9%
Pipe borne	2	0.6%
Stream	1	0.3%
Spring	1	0.3%
Total	**350**	**100%**
Distance	**Number of respondents**	**Percentage**
Community borehole behind the school compound	202	57.7%
20 metres away	73	20.9%
25 metres away	25	7.1%
10 metres away	20	5.7%
No response	30	8.6%
Within the school compound	0	0
Total	**350**	**100%**

Table 3: Distribution of respondents by time of fetching water, uses and what pupil drank water with (n = 350)

Time during which water was fetched	Number of respondents	Percentage
In the morning before classes	263	75%
During break period	77	22%
In the afternoon after school	11	3%
Total	**350**	**100%**
Uses of potable water	**Number of respondents**	**Percentage**
Drinking, flushing of toilet, Hand washing & cleaning	210	60%
Drinking only	75	21.4%
Hand washing & cleaning	30	8.6%
No response	30	8.6%
Flushing of toilet only	5	1.4%
Total	**350**	**100%**
Pupils drank water with	**Number of respondents**	**Percentage**
Cup	312	89.1%
No water in the classroom	23	6.6%
No response	12	3.4%
Hand	3	0.9%
Total	**350**	**100%**

Table 4: Distribution of respondents by methods of refuse disposal and hand washing practice (n = 350).

Methods of refuse disposal	Number of respondents	Percentage
Throw anywhere (open dumping)	34	9.7%
Daily burning	296	84.6%
Daily burying	3	0.9%
Others	8	2.3%
No response	9	2.5%
Total	**350**	**100%**
Hand washing materials after defecating	**Number of respondents**	**Percentage**
Water only	73	20.9%
Soap and water	245	70.0%
Rag	1	0.3%
No material i.e no means	31	8.9%
Total	**350**	**100%**

DISCUSSION

In this study, respondents comprised of 350 pupils who were administered questionnaires on potable water supply and sanitation practices. Pupils in Primary V and VI were used for the study. The socio-demographic data such as sex, age and class among others in pupils were investigated. The study showed that more males of 193 (55.2%) were involved in the study than the other sex. But 209 (59.7%) respondents were in primary V and 130 (37.1%) were in primary VI respectively.

On the sources of potable water supply, only 2 (0.6%) respondents used pipe-borne water, others resorted to wells, 5 (1.4%), boreholes, 290 (82.6%) and other sources such as rain harvesting 5 (1.4%) and rivers 5(1.4%). 38 (10.9%) had no source of water supply. The results of these findings agree with the findings of studies carried out by (11); who reported in their studies that only 25 % of the respondents had access to potable water (pipe borne and borehole sources), untreated surface water sources such as rivers, streams, and lakes made up about 22% of water supply for domestic use, while a vast majority of respondents (36%) had shallow well as their source of water supply. Many studies (5) have however reported that water from sources such as river is usually contaminated and often times unfit for human consumption.

Results on accessibility of potable water show that more than half of the respondents obtain their water from community borehole behind the school compound while 20.9 percent of the respondents walk 20 meters away from their school to get water. The findings are in line with the findings of a survey carried out on access of potable water by Federal Ministry of Water Resources Nigeria in 1997. The survey revealed that no more than 5% of the population had access to water from protected boreholes while 13% used water from communal wells (12). The findings also agreed with the results of studies carried out in Nigeria in 2003 by UNICEF; where it was reported that a journey to fetch water in many parts of Nigeria can be a round trip of up to 10km and lasting up to 4 – 6 hours particularly in the dry season (13). A similar survey carried out by UNICEF in Nigeria schools revealed that more than 60 per cent of the schools lacked access to potable water supply especially rural schools (13). Standard for potable water as recommended by (14) was employed to measure accessibility of potable water by respondents; that the source should be less than 1km from its point of use and each member of a household should reliably obtain a minimum of 20 litres per person (14). In this present study, 20.9 percent respondents walk more than 1km to get water. This result agrees with the findings of (15) that about 72 million Nigerians have no access to potable water supply. These data also revealed that majority of the respondents engage in water fetching in the morning before classes; while only 3.0 percent fetch water in the afternoon after school. The implication of this finding is lateness or outright absenteeism from classes. This finding agrees with a similar survey conducted by (13) in Nigeria, which more than half of the population lack access to potable water supply. It further stated that lack of potable water and sanitation facilities in schools may increase absenteeism of both pupils and teachers through illness.

Moreover, uses of potable water revealed that 60 percent of the respondents used water for domestic purposes such as drinking, hand washing and flushing of toilet. This finding is supported by the reports of (6) that water is a vital environmental factor to all forms of life and should be readily available for domestic uses. Regarding sanitation facilities available, a reasonable proportion of the respondents (40.3%) use traditional pit latrines while (19.4%) use open environment such as field and bush as they do not have toilet facilities. This finding is supported by the findings of (15) that more than half of the population in developing countries lack access to basic sanitation facilities which include excreta disposal facilities. Study also revealed that majority of the respondents (84.6%) carry out daily burning of refuse. This finding is in line with the report of (16) who discovered in their studies that 72.3% of the respondents practice daily burning of refuse. This result shows a high awareness that dirty environment could lead to illness. Hand-washing practices among respondents, 245 (70.0%) wash their hands after using the toilet with soap and water while 73(20.9%) use water only. 31(8.9%) respondents did not wash their hands after using the toilet due to lack of hand-washing facilities. This findings is in line with the results of the studies carried out by (17) that 42- 47% of respondents did not wash their hands after using the rest room.

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