WATER SANTIATION PRACTICES IN OBOWO, SOUTHEASTERN NIGERIA

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ABSTRACT

This study was carried out to determine the level of water sanitation practices among residents in Obowo, Nigeria. A total of 360 respondents were interviewed for this study. Results showed that 90.8% of the respondents use boiling as their method of water purification. 42.8% always boil their water before drinking, 50.3% do not always boil their water before drinking. Water containers were the main source of water storage reported by 78.6% of the residents. Majority (54.7%) of them reported that they only wash their water storage facilities when dirt accumulates on them. Bore-hole water was the major source of water supply reported by 52.6% of the respondents followed by rain water (30.8%). Hand washing before eating with soap and water was reported by 24.7% while 75.3% washed their hands with water alone. Also 76.4% reported that they always washed their hands with soap and water after using the toilet while 23.6% washed their hands but not always. On waste disposal, 57.2% used improved water system for excreta disposal and 47.8% disposed their domestic waste by using them in their farms. Health education programs that will reach all parts of the rural areas on water sanitation were recommended to prevent the occurrence of water-borne diseases.

Keywords: Water, sanitation, hand washing, purification, waste

INTRODUCTION

Water is an essential commodity but remains one of the greatest sources of disease infection due to its high proneness to contamination. Some sources of water are unfit for consumption except when processed and eliminated of contaminations and impurities that make such sources unfit for human consumption. Communities that have streams and natural sources of water face the risk of contamination due to all sorts of environmental abuses, and some of the bore-holes are sited in places of questionable environmental locations, others are so poorly constructed that they are liable to all sorts of degradation[1]. The extent to which the principal sources of pollution pose danger to water and health depends largely on the nature of the contaminant present, their concentration and the volume of the discharge in relation to flow in the receiving river water[2]. Sanitation of water can come in various forms. A protected watershed can provide water that is pure enough to drink without any additional treatment and when the watersheds remain in pristine condition, water quality and quantity are sustained[3]. Amadi[4] states that the purpose of water treatment is to remove substances which may be dangerous to human health, adding that the quality of public water supplies is particularly important because such supplies are capable of transmitting contaminated water to many people. The quality and quantity of water that we drink is directly

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linked to health. If the water is contaminated with germs or chemicals, health will be affected[5]. The water drained from kitchen sinks, laundry tubs, bathtubs and toilets not only contains high concentration of soaps and detergents, but teams with micro-organisms of pathogenic as well as non-pathogenic varieties; many of which are capable of multiplication and the possibility of disease transmission arises when sewage contaminates water supplies intended for human consumption. According to Fris,[6] despite the fact that water is a necessity of human life, about 20% of the world's population lacks safe drinking water, adding that the problem of water quality is especially acute for developing nations like Nigeria where up to 90% of the cities discharge their untreated sewage into rivers and streams. These surface waters may, in turn, be used for drinking and personal sanitation purposes.

Contaminated/polluted water is a potential source of water-borne diseases transmission some of which include dysentery, cholera, typhoid fever, and viral hepatitis[7]. Akhionbare[3] states that the decomposition of solid waste produces heavy metals which percolate and contaminate ground water and surface waters. Furthermore, that animals and man ingesting such contaminated water develop various health problems like gastro-intestinal infections, chronic renal diseases, structural alteration of membranes of the endoplasmic reticulum, central nervous system disorder etc. Water-borne diseases and other numerous adverse health conditions associated with contaminated water can be prevented through water sanitation. As a means of protecting water sources from contamination, surveillance and continuous monitoring of water sources as well as discharges into water is a source protection strategy[3]. Rivers should be subjected to regular environmental monitoring and surveillance to prevent the onset of pollution[8]. It is not possible to tell whether water is of an appropriate quality by visual examination. Simple procedures such as boiling or the use of household activated carbon filter are not sufficient for treating all the possible contaminants that may be present in water. In recognition of source protection as the first approach in water sanitation, the methods that could be adopted in the protection of the various water supply sources are[9]: For rainwater harvesting, the first to three falls should not be used for drinking purposes until roofs have been cleaned. At the next fall, rainfall should be taken after the first 20 minutes of fall. For streams, it could be divided into four sections. The first section closer to the source, for drinking purposes, which should be provided with platform on top to prevent wading through the water, the second section for washing and other domestic uses, the third section for animal consumption and the fourth section for agricultural use. In general, farming should be prevented as far as possible from the river bank. Springs can be protected by building a concrete dam so that water accumulates in a reservoir and is drawn through pipes.

Due to the endemic level of water-borne diseases especially in the rural areas, good water sanitation practices among people is essential in preventing these diseases. The objective of this study is to determine level of the water sanitation practices among residents in Obowo Local Government Area, Imo State, Nigeria.

MATERIALS AND METHODS

This study was a cross sectional descriptive survey to obtain information on the water sanitation practices in Obowo Local Government Area of Imo State, Nigeria. Obowo is a rural area in Southeast Nigeria. The people are predominantly Christians and Igbo is the local language of the people. Farming, trading and public service are the major occupation of the people. The simple random sampling technique in combination with cluster sampling was used to obtain a sample size for this study. A well-structured questionnaire was distributed to members of each household. After the questionnaires were returned, the results were computed using tables for analysis.

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RESULTS

A total of 360 were interviewed with the use of questionnaires. Data was collected from household members above 10 years of age. Table 1 shows the characteristics of the respondents. The age group of 31-40 had the highest percentage frequency of 47.5%. On their educational status, 9.4% had primary education, 35% had secondary education, 53.1% had tertiary education and 2.5% had no formal education. While 39.1% of the respondents were married, 58.9% were single and 2% were widowed. Results on the occupation of the respondents revealed that majority of the people were traders with 32.8% followed by students (22.2%). Others include public servants (15%), farmers (10.3%) and artisans (7.8%). 11.9% were unemployed. Information on the usage of water showed that majority (90.8%) of the respondents use boiling as their water purification method. However, 42.8% responded that they always purify their water before drinking. 50.3% purify their water but not always while 6.9% never purify their water. Water containers were the most common method of water storage with 78.6% followed by surface tanks (16.7%). Majority of the respondents (54.7%) said they washed their water storage facilities only when dirt accumulated on it. However, 11.9% washed theirs monthly, 9.4% washed theirs annually and 23.9% washed theirs only when it gets empty. The major source of water supply was bore-hole (52.6%) followed by rain water (30.8%) and spring water (11.9%). From table 3, 75.3% wash their hands with water alone before eating while 24.7% wash their hands with soap and water. After using the toilet, 76.4% always washed their hands while 23.6% washed their hand but not all the time. The method of waste disposal by respondents is shown in table 4. From the table, 57.2% disposed their excreta through improved water system, 28.1% through pit latrine and 14.7% by defecating in the bush. 47.8% of the respondents reported that they disposed their domestic waste by using the waste in the farm, 40.6% disposed their domestic waste at approved dump sites while 7.2% disposed their wastes indiscriminately.

DISCUSSION

A total of 360 persons filled out the questionnaires used for this study. All the respondents were above 10 years. Boiling of water was their main method of water purification/treatment. This is very common in the Southeastern part of Nigeria as it is quite convenient. This is collaborated in other studies[10,11] with the World Health Organization[5] stating that boiling of water is very effective in destroying disease-causing pathogens in water. Some respondents however do not use any method to purify their water. This may be as a result of the fact that they believe that the water available to them does not contain any impurities or pathogens and so there was not felt need. It may also be as a result of ignorance of the adverse effects of the use of contaminated water without purification or just laziness. A study[12] at New Delhi, India, showed that 75% of the participants did not use any method for drinking water treatment. None of the respondents in this study made use of chlorine in water treatment. This may be as a result of non-available of the commodity due to the rural setting of the area of study. It may equally be as a result of lack of knowledge on the method of application of chlorine in water treatment. The use of chlorine in water treatment requires some level of knowledge on the quantity per volume and measuring devices may not be available to them. The main source of water supply according to the respondents was bore-hole water. Some have the bore-hole within their premises while others use containers to fetch their water at places were bore-hole water was available. Bore-hole and spring water sources yield good quality water if properly handled[2]. This is in contrast with a study[13] carried out in a peri-urban community in Jos, Nigeria which revealed that most of the households (80%) source domestic water from municipal pipe-borne water supply. In Nigeria, most rural centers do not have pipe-borne water supply and

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hence, rely on bore-hole and other sources for water supply.

The most popular method of water storage was the use of water containers other than underground tanks or surface tanks. Light water storage facilities seem easy to manage and this may account for the result in this study. The cost of procurement of underground and surface water storage tanks is relatively high. The rate of washing of water storage facilities in this study has it that majority of the respondents wash their water storage facilities only when dirt accumulated in them. Poor handling of water may affect the quality of the water. A study carried out[14] in Ibadan, Nigeria, revealed that at the household level, water quality significantly deteriorated after collection and storage as a result of poor handling. The lands around the community main water source are mostly cultivated lands. People in rural areas have a tendency of converting any available land to farming, and where the lands are not cultivated, they are allowed to lie fallow for some time to allow for nutrient replenishment. This may account for the cultivated and forested nature of the community main water-sources. Erosion is the main reason for pollution of water sources in the area. This causes the components of the rock or soil together with dirt and other contaminants to be washed down into water sources thus causing water pollution. Studies[3,15] have identified erosion as a major cause of pollutants in water. Human excreta as an agent of water source pollution stems from indiscriminate defecation and location of pit latrine very close to ground water sources. As people defecate on the open land, surface run off washes the feces off and carries it down the valley and into surface water sources thus polluting them. On the other hand, pathogenic organisms in pit latrine can migrate into a nearby water source if the water source is located less than 30feet to the pit latrine facility[17]. Human excreta disposal among the respondents was mainly through improved water system. This may be as a result of good educational status of the people. People in Southeast part of Nigeria are more educated when compared to the Northern part of Nigeria dominated by Muslims. Education on the part of the people makes the people enlightened and thus would prefer use of improved water system rather than defecating in the bush. The respondents also reported that they wash their hands before eating and after using the toilet. Some wash with water alone, while others wash with soap and water. None of the respondents reported that they eat without washing the hands either with water alone or with soap and water. Regular hand washing prevents and controls the spread of diseases. A study[17] showed that interventions promoting hand-washing resulted in 29% reduction in diarrhea episodes in institutions in high-income countries and a 31% reduction in such episode in low or middle-income countries. Hand-washing with soap and water after using the toilet is significant in the prevention and control of spread of diseases. Another study[11] revealed that the rate of helminthic infection varied significantly with hand-washing habits after defecation. Typhoid fever and cholera are the most common water-borne diseases that the people complained about. In conclusion, residents in Obowo, Nigeria are educated people who maintain a reasonably good level of water sanitation. Governmental and non-governmental organizations however, should intensify health education programs on water sanitation especially in the rural areas. People are also advised to maintain a high level of water hygiene in order to prevent the occurrence of water-borne diseases.

REFERNCES

1. Igwe, A.C. (2013). Readings in Environmental Health and Population. Lagos: Klinpath Publications.
2. Okereke, C.D. (2006). Environmental Pollution Control. Enugu: Barloz Publishers.
3. Akhionbare, S.M. (2013). The environment, issues, cases and sustainability. Lagos: Springfied publishers.

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4. Amadi, A.N. (2009). Modern Environmental Sanitation. Owerri: Nationwide printers and publishing.

5. WHO. (2011). Guidelines for drinking water quality. 106.

6. Fris, R.H. (2007). Essential of Environmental Health. Lagos: Jones and Bartlett publishers.

7. Emeharole, P.O. (2009). Communicable and non-communicable diseases Control Technology. Owerri: I.O. Publishers.

8. Kadiri, M.O. (2013). Phycology as an Environmental Assessment tool. 2nd edition. Ibadan: Springfield publishers.

9. Olorunda, A. (2007). Environmental Health in the 21st century. Ibadan: Divine favor publishers.

10. Braimoh, O.B. and Udeabor, S.E. (2013). Hand hygiene practices among Community Health Officers in Rivers State, Nigeria. Afr Health Sci. 13(2): 507-11.

11. Ilechukwu, G.C., Ozumba, A.N., Ojinnaka, N.C., Ibe B.C. and Onwasigwe, C.N. (2010). Some behavioural risk factors for intestinal helminthiasis in nursery and primary school children in Enugu, South eastern Nigeria. Niger J. Clin pract. 13(3): 288-93.

12. Ashish J., Satish P., Jyoti B.K., Mehak S. and Awnish, K. S. (2013). Water sanitation Hygiene, knowledge , attitude and practice in Urban slum settings. Centre for Global Health and Development, 532-15.

13. Yilgwan, C.S., Yilgwan, G., Abok, I. (2010). Domestic water sourcing and the risk of diarrhea: a cross-sectional survey of a peri-urban community in Jos, Nigeria. Niger J. Med. 19(3): 271-4.

14. Oloruntoba, E.O., Sridhar, M.K., (2007). Bacteriological quality of drinking water from source to household in Ibadan, Nigeria. Afr. J. Med Sci. 36(2): 169-75.

15. Hutin, Y., Luby, S. and Paquet, C. (2003). A large cholera outbreak in Kano City, Nigeria: The importance of hand-washing with soap and the danger of street-vended water. J Water Health. 1(1): 45-52.

16. Oguntoke, O., Aboderin, O.J. and Bankole, A.M., (2009). Association of water-borne diseases morbidity pattern and water quality in parts of Ibadan city, Nigeria. J. Health Res. 11 (4) 189-95.

17. Ejemot, R.I., Ehiri, J.E., Meremiukwu, M.M., Critchley, J. A. (2008). Hand washing for preventing diarrhoea. J. Adv Nurs. 64 (1): 14-5.

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TABLES

Table 1: Characteristics of respondents

Age group	Frequency	%
10-20	28	7.8
21-30	76	21.1
31-40	171	47.5
41-50	19	5.3
51-60	19	5.3
61-70	38	10.6
Above 70	9	2.5
Educational status		
Primary	34	9.4
Secondary	126	35.0
Tertiary	191	53.1
No formal education	9	2.5
Marital status		
Married	141	39.1
Single	212	58.9
Divorced	0	0
Separated	0	0
Widowed	7	2.0
Occupation		
Students	80	22.2
Civil /public servants	54	15.0
Traders	118	32.8
Farmers	37	10.3
Artisans	28	7.8
Unemployed	43	11.9

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Table 2: Information on water usage

Water purification method	Frequency	%
Boiling	327	90.8
Use of chlorine	0	0.0
Use of water-guard	8	2.2
None	25	7.0
Purification of water for drinking		
Always	154	42.8
Not always	181	50.3
Never	25	6.9
Water storage		
Underground tank	17	4.7
Surface tanks	60	16.7
Water containers	283	78.6
Washing of water storage facility		
Monthly	43	11.9
Annually	34	9.4
Only when dirt accumulate	197	54.7
Only when empty	86	23.9
Never	0	0.0
Source of water supply		
Rainwater	111	30.8
Borehole	189	52.6
Pond	0	0.0
Pipe-borne water	0	0.0
Spring	43	11.9
Well	17	4.7

Table 3: Hand washing practices

Hand washing before eating	Frequency	%
Never	0	0.0
With water alone	271	75.3
With soap and water	89	24.7
Hand washing after toilet use with soap and water		
Always	275	76.4
Not always	85	23.6
Never	0	0.0

Table 4: Waste disposal methods

Excreta disposal method	Frequency	%
Improved water system	206	57.2
Pit latrine	101	28.1
Defecation in the bush	53	14.7
Domestic waste disposal method		
Approved dump sites	146	40.6
Indiscriminately	26	7.2
Used in farming	172	47.8
Barging into the river/stream	8	2.2

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