

EFFECT OF WATER SOURCES ON THE HEALTH OF RURAL CHILDREN: EVIDENCE FROM HOUSEHOLD SURVEY IN KWARA STATE, NIGERIA

R.O. BABATUNDE¹, M.F. SALAMI^{1*}, J.O. AROKE¹

*E-mail: markmercy12@gmail.com

Received: Jan. 15, 2020. Revised: Feb. 03, 2020. Accepted: Feb. 08, 2020. Published online: Mar. 06, 2020

ABSTRACT. Majority of the disease outbreak in developing countries have been attributed to contaminated water with children being the worst hit. Therefore, this study analyzed the effect of water sources on the health status of children under the age of 5 years in Ifelodun Local Government Area of Kwara State, Nigeria. Primary data was obtained through the use of semi-structured interviews; 150 households with at least one child under five years were interviewed however; only 146 questionnaires were completed and found valid for analysis. The data was subjected to descriptive statistics, such as pie chart, bar charts. The results show that majority (58.2%) of the children were males. Also, most (83.5%) of the children were infants, *i.e.* within the age range of 0-2 years. Most (96%) of the households had access to improved water sources of which protected dug well is the most accessible. Many (42%) of the households reported that they experience periods of water shortage, this explains why water washed diseases (disease associated with poor hygiene in the face of water scarcity) was

the most predominant diseases reported among the children with 70 reported cases. These were closely followed by the water related insect vector diseases with 64 reported cases and then water borne diseases with 48 reported cases. Water based diseases rarely occurred in the study area. This study, therefore, recommends that effort should be geared towards provision of safe water all year round for the farming households. Also, insecticide treated nets should be made available for the children in the farming households so as to prevent insect bites.

Keywords: water washed diseases; incidence rate; dysentery; malaria; improved water sources; water shortage.

INTRODUCTION

Water is considered the most important of all public services. It is one of the most essential necessities of life after oxygen. However, rural communities in many developing nations have to obtain their drinking water from untreated surface sources,

¹ Dept. of Agricultural Economics and Farm Management, Faculty of Agriculture, University of Ilorin, Nigeria

often situated far away from their residence. For instance, in many Nigerian rural communities, water supply infrastructures are still at developmental stage or are completely absent (Rossiter *et al.*, 2010). Worldwide, waterborne diseases cause death and suffering of millions of people, especially children in developing countries. Recent survey by Majuru *et al.* (2011) estimated that 65 million Nigerians had no access to safe water. The situation was worse in the rural areas where only 24% of the population were said to have access to safe water.

Children are more vulnerable to the health hazards associated with unimproved water supply and sanitation; their immune, respiratory, and digestive systems are still developing, and children play in areas where contaminants may accumulate (Fayehun, 2010). In general, water-related diseases are caused by inadequacy of portable water supply and sanitation. However, they are broadly classified into four as water-borne diseases, water-based diseases, water-related vector diseases and water-scarce diseases (WHO, 2013).

Several studies (Adewumi *et al.*, 2010; Shaheed *et al.*, 2014; Osita *et al.*, 2014) have been conducted revolving around water and agriculture productivity, incidence of water related diseases etc. Nevertheless, there seems to be dearth empirical evidences as regards the effect of water sources on health of children of farming households. The objectives of the study include: to examine the

various water sources accessible to the farming households in the study area; to analyze the level of accessibility of improved water sources in the study area and to examine the rate of incidence of water-related diseases among the children of farming households in the study area.

MATERIAL AND METHODS

Study area

This study was carried out in Ifelodun local government area. Ifelodun is a Local Government Area in Kwara State, Nigeria, and is the largest local government area in Kwara State. It has an area of 3,435 km² and a population of 206,042 at the 2006 Nigerian population census. The area is located between latitude 7°45'N and 9°30'E and longitude 2°30'N and 6°35'E. The annual rainfall ranges between 1000 and 1500 mm. Average temperature is 30°C and humidity range from 36-60%. The major source of livelihood and occupation of the people in the area is farming.

Source of data

This study relies on primary data, which was harnessed through semi-structured interviews. Relevant literatures were reviewed to access secondary information. The water related diseases considered by this study were those that are self-reported by the caregiver of the child. The caregivers were asked to report any water related disease that affected the child within the last 12 months. The caregivers of the children in each household were the respondents for this study.

Sampling technique

A three-stage sampling technique was adopted. The first stage was the

EFFECT OF WATER SOURCES ON THE HEALTH OF RURAL CHILDREN

purposive sampling of five communities in Ifelodun local government area. The second stage was the use of snowballing sampling technique to generate a sampling frame. The sampling frame consists of households with at least one child within the age range of 0-5 years in each community. The third stage involves the random selection of 30 farming households within the sample frame from each community. A total of 146 households that has at least one child within the age group of 0-5 years was surveyed.

Method of data analysis

Descriptive statistical tools, such as percentages, frequency counts, bar charts and pie charts were used to analyze the data obtained. The choice of our analytical technique was informed by the nature of our research topic. This is because this research is within the socio-economic and exploratory context.

RESULTS AND DISCUSSION

Table 1 describes the socioeconomic characteristics of the children within the age of 0 and 5 years of age in the farming

households of the study area. Majority (58%) of the children are males; 53% of them were between the age of 1 and 2 years. Most (71%) of the children had not started schooling.

Table 1 - Socioeconomic characteristics of the children in the households

Variable	Frequency (N=146)	Percentage
Gender		
Male	85	58.2
Female	61	41.8
Age (years)		
<1	44	30.1
1	32	21.9
2	46	31.5
3	20	13.7
4	3	2.1
5	1	0.7
Educational status		
Nursery school	42	28.7
No. formal education	104	71.2

Source: Field survey

The result on *Fig. 1* shows that the most of households (96%) in the study area had access to improved water supply.

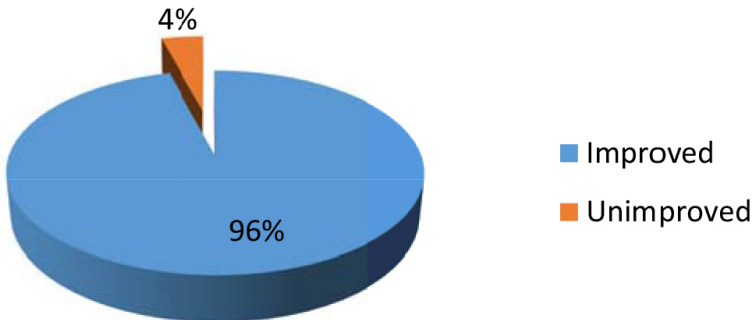


Figure 1 - Accessible water sources in the study area

Source: Field survey

The result on *Fig. 2* shows the breakdown of the various improved water sources that is accessible of the households in the study area; 48% of the households had access to protected dug well, 21% of the had access to public pipe borne water while, 31% of the had access to bore hole water.

The result on *Fig. 3* shows that rain is the major source of unimproved water to the farming

household in the study area. It reveals that 90% of the unimproved water the households make use of is rain water.

The result on *Fig. 4* shows that 42% of the farming households in the study area experiences shortage of water. Shortage of water has an implication on the incidence of water washed diseases. This may probably explain why water washed diseases were reported to be the most prevalent in the study area.

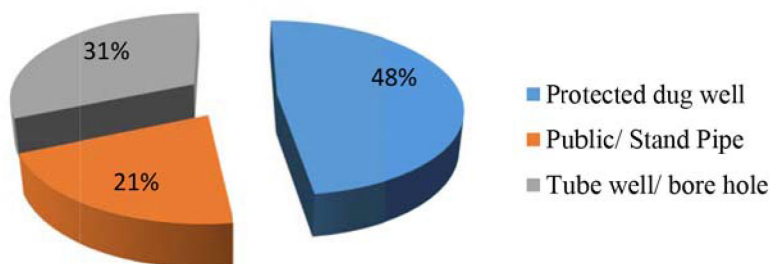


Figure 2 - Types of improved water sources accessible to the households

Source: Field survey

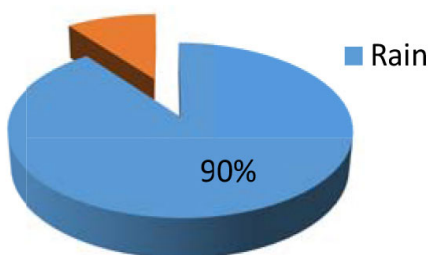


Figure 3 - Types of unimproved water sources accessible

Source: Field survey

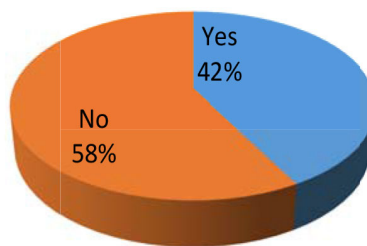


Figure 4 - Water shortage

Source: Household survey, 2017

The result on *Fig. 5* shows that only 36% of the farming households fetch water within their household premises; 25% of the farming households fetch their water within a distance of 501 meters to 1 kilometer

away from how. Moreover, 39% of the household go as far a greater that 1 kilometer distance away for home to access water for their household use.

EFFECT OF WATER SOURCES ON THE HEALTH OF RURAL CHILDREN

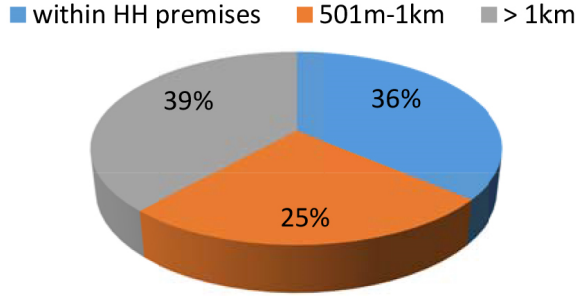
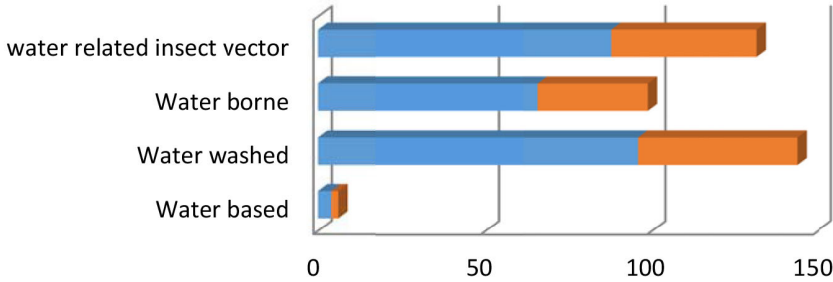


Figure 5 - Distance to water sources
Source: Field survey

Incidence of water related diseases among the children between ages 0 to 5 years in the study area

Fig. 6 reveals the rate of incidence of the four different groups of water related diseases. Water washed diseases were prevailing with an incidence rate of 47.9%. The prevalence of water washed diseases may be probably due to the high level (42%) of water shortages reported by the respondents. The water related insect vector diseases were reported

as the next to water washed ones with an incidence rate of 43%. Water borne diseases occurred in about 33% of the children, while the water based diseases were relatively scarce with only 2.1% rate of incidence. This may be probably because only a minority of the farming household gets water from surface water source, such as rivers, streams and lakes, were the water based diseases could be contracted.



	Water based	Water washed	Water borne	Water related insect vector
■ Frequency	4	96	66	88
■ Percentage	2.1	47.9	32.9	43.7

Figure 6 - Water related disease groups
Source: Field survey

The result on *Fig. 7* shows that most (81%) of the children infected with water washed diseases had dysentery. This corresponds with the findings of Lloyd *et al.* (1989), who in a study that examined the relationship between water-related disease and water quality in Lima, Peru, reported that dysenteries, which is a typical diarrhea disease, has an age distribution, which demonstrates the very high incidence of infection in the first year of life and children face a major risk of exposure to dysenteries during their first five years of life.

The result on *Fig. 8* shows that malaria was the prevalent water related insect vector disease in the study area; 87% of the children reported to have water related insect vector disease had malaria.

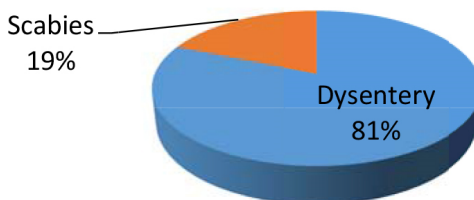


Figure 7 - Water washed diseases

Source: Field survey

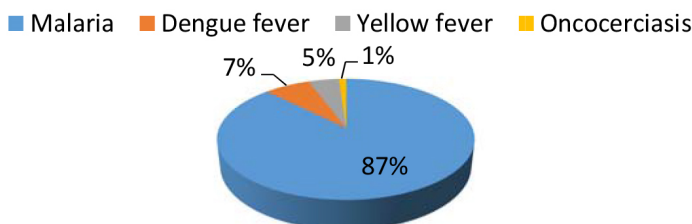


Figure 8 - Water related insect vector disease

Source: Field survey

The result on *Fig. 9* shows that the most prevalent (71%) water borne disease among children under the age of 5 years is typhoid; 24% of the children with water borne disease were having giardiasis. Bacillary dysentery accounted for only 5% of the water borne diseases.

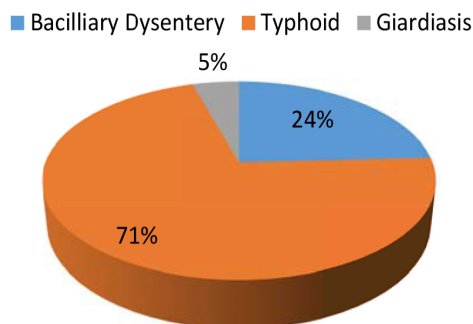


Figure 9 - Water borne diseases

Source: Field survey

Thread worm was the only water based disease reported to infect children in the study area, as revealed in *Fig. 10*.

EFFECT OF WATER SOURCES ON THE HEALTH OF RURAL CHILDREN

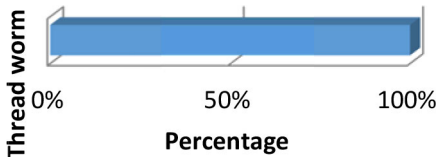


Figure 10 - Water based disease

Source: Field survey

CONCLUSIONS

Majority (58.2%) of the children under the age of 5 years in the study area were males. Most (96%) of the farming household that were survey for this study had access to improved water source. Protected dug well was the predominant improved water source in the study area. However, 42% of the households reported that they experience periods of water shortage. Water washed diseases (caused by lack of water) were the predominant disease group affecting the children under the age of 5 years in the study area. Malaria was the major water related insect vector disease that was reported.

The fact that these farming households had access to improved water source does not guarantee them having access to safe water. This is because the incidence of water borne diseases, such as typhoid, was relatively high, as compared to water based ones.

RECOMMENDATIONS

This study recommends that effort should be geared towards provision of safe water all year round for the farming households in the

study area. Also, insecticide treated nets should be made available for the farming household. Special seminars should also be organized for the rural dwellers on the need to keep their environments clean and dry to prevent breeding of mosquitoes. They should also be educated on simple water treatment methods.

REFERENCES

- Adewumi, M.O., Babatunde, R.O. & Ayodele, O. (2010).** The anthropometric status of farming households in Kogi State, Nigeria. Poster presentation at the Joint 3rd African Association of Agricultural Economists and 48th Agricultural Economists Association of South Africa Conference, Cape Town, South Africa.
- Fayehun, O.A. (2010).** Household environmental health hazards and child survival in sub-Saharan Africa. *DHS Working papers, Demographic and Health Research*, No. 74. Available online: <http://dhsprogram.com/pubs/pdf/WP74/WP74.pdf> (accessed on 15 May 2013).
- Lloyd, B.J., Wheeler, D.C. & Pardon, M. (1989).** The relationship between water related diseases and water quality with particular reference to urban water supply in a developing country. *Water SciTechnol.*, 21(3): 579-591, DOI: 10.2166/wst.1989.0107
- Majuru, B., Mokoena, M.M., Jagals, P. & Hunter, P.R. (2011).** Health impact of small- community water supply reliability. *Int.J.Hyg.Envir.Health*, 214(2): 162-166, DOI: 10.1016/j.ijheh.2010.10.005
- Ezeh, O.K., Agho, K.E., Dibley, M.J., Hall, J. & Page, A.N. (2014).** The impact of water and sanitation on childhood mortality in Nigeria:

evidence from demographic and health surveys, 2003-2013. *Int.J. Environ.Res.Public Health*, 11(9): 9256-9272, DOI:10.3390/ijerph110909256

Rossiter, H.M., Owusu, P.A., Awuah, E., Macdonald, A.M. & Schäfer, A.I. (2010). Chemical drinking water quality in Ghana: water costs and scope for advanced treatment. *Sci.Total Environ.*, 408(11): 2378-2386, DOI: 10.1016/j.scitotenv.2010.01.053

Shaheed, A., Orgill, J., Ratana, C., Montgomery, M.A., Jeuland, M.A. & Brown, J. (2014). Water quality risks of 'improved' water sources: evidence from Cambodia. *Trop.Med. Int. Health*, 19(2): 186-194, DOI: 10.1111/tmi.12229

WHO (2013). Report of the joint monitoring programme: progress on sanitation and drinking-water, *UNICEF/WHO*, New York, USA, 2013.