Prevalence of Water Borne Diseases in Relation to the Sources of Water in Some Riverine Communities of Bayelsa State

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The universal importance of water to life cannot be overemphasized. Unfortunately, water have a means of transmitting diseases of public health concern. Consequently, that caution to scrutinize and prioritize the utilization of every drop of water have become a mainstay. This research is concern with the prevalence of some waterborne diseases in some coastal communities along the River Nun axis of Bayelsa State. Data acquisition was through a randomized structured questionnaire, and existing PHC facilities. Based on preferred sources of water, the use of borehole water recorded the highest frequency (45.79%), while shallow-dug pit water recorded the lowest frequency (15.93%) with significance (p<0.05). River (20.52%) and Rain water (18.29%) was statistically related (p>0.05). The Water Borne Diseases (WBDs) were typhoid (37.85%), malaria (32.11%), Cholera (20.56%) and shigellosis (10.06%). With the exception of malaria and typhoid the prevalence of WBDs was statistically significant (p<0.05). This result is an indication that there is an anthropogenic contamination of community source of water. This is a cause for public health interventions and community-based sensitization on the dangers of this diseases and aseptic use of water.

INTRODUCTION

Due to the multifaceted applications of water as an essential resource to all organisms, human-water consumption has become inevitable. Potable water is essential for total health and survival of humans, especially infants (Ohimain et al., 2013). According to Nwabor, (2016), water-borne diseases encompasses all ailments arising from either direct and/or indirect contact of contaminated water, through bathing, consumption, or the aesthetic use of water.

The consumption of contaminated water has become a leading cause of most gastrointestinal illness in all regions of the world (Ahmed et al., 2014). Water-borne diseases have caused major health problems across the world (Clasen, et al., 2007; WHO, 2010). For instance, survey and estimates of WHO had it that...
over 1 million persons dies from water-borne diseases on annual basis (WHO, 2005).

Understanding the pattern of disease spread is a basic pre-requisite for assessing the causes of disease outbreaks (Schuster et al., 2005). Instances of water-borne diseases resulting from the consumption of contaminated water have been documented in literature (Raji et al., 2001; Oguntoke et al., 2009). Raji et al. (2010a) reported that potable water samples from two towns in Sokoto metropolis were found to be contaminated with pathogenic microbes like; E. coli, Salmonella, Shigella and Vibrio.

Besides microbial contamination, potable water was also found to have heavy metal contaminants that exceeded the WHO allowable limits (Raji et al., 2010b). However, there is paucity of information on waterborne diseases in relation to the sources of water in Bayelsa State. Bayelsa is a coastal state with a lot of riverine community settlements having inadequate potable water. Hence, there is need for comparative analysis of water sources and water borne diseases.

3.6 Validity and Reliability of instrument

The questionnaire was verified by experts and certified okay by an expert in the field of public health. The questionnaires were first tested on a pilot scale around some households 1 km adjacent to the study area. The scores were analysed using t-test. The data was significant at p = 0.05 and confirmed the instrument to be reliable.

3.8 Method of Data Collection

Five (5) communities were selected for the study based on accessibility. The communities are; (Gbarantoru, Ogobiri, Tombia, Ikibiri, and Amasoma). Two hundred and fifty (250) households was randomly selected; 50 from each community. From each household, the head was presented with the copy of the questionnaire to fill. In any household where the head was not literate, the content of the questions was read and the respondent was guided. This continued until a sample size was obtained. Sample size was determined as per Daniel (cited in Ebenezer et al, 2015). In the same community, the health data on water borne diseases were sought from the existing PHC facility data bank through the permission of the Medical director.

3.9 Method of Data Analysis

Data arising from the study was verified for accuracy using the 2016 version of Microsoft office excel. Thereafter, it was subjected to SPSS (version 20.0) for descriptive and analytical statistic. Descriptive statistics like percentage was use to express the frequency occurrence of an event. Significant differences between variables were determined in ANOVAs at a confident level of 0.05.

RESULT

The sources and utilization of water in the coastal communities in this present study is presented in Figure 1. Base on the preferred source of water, the use of borehole recorded the highest frequency (45.79%) and the lowest frequency (15.93%) was recorded in well water. Other sources of water were River (20.52%) and Rain water (18.29%) respectively. With the exception of river and rain water (p>0.05), every other sources of water showed significant difference (p<0.05). The communal sources of water in order of increasing frequency are; Ikibiri:(borehole>river>rain>well);Amasoma:(borehole>well>river>rain);Tombia:(borehole>river>rain>well); Ogobiri (borehole> river>rain> well) and Gbarantoru (borehole>rain> river> well) respectively. Details are shown in Figure 1.
Four water-borne diseases were predominant in the study locations (Figure 2). When the disease burdens were pooled across community, their increasing order of prevalence were; typhoid (37.85%), malaria (32.11%), Cholera (20.56%) and shigellosis (10.06%). There were significant differences amongst the prevalent diseases (p<0.05). Detail of the result is presented in Figure 2.

**DISCUSSION**

The sources of water observed in this present study have been reported elsewhere (Oguntoke et al., 2009, Raji and Ibrahim, 2011). Borehole was the most preferred sources of water and accounted for 45.79% of all the water sources used. This result is moderately high and indicate that community enlightenments on the safe source of water is ongoing. However, the use of other sources of water put together in the study location was 54.91% higher than borehole. Similar study by Temitayo and Bolarinwa, (2017) reported that 66.82% of the households in rural communities in Nigeria, drinks water from unprotected sources such as open wells, springs and streams. However, the present observation contradicts the result of Olowe et al., (2016), who reported that the predominant source of water in Addo Ekiti was well. The observation in this present study highlights that majority of the inhabitants in the study location are still depending on unsafe water for consumption. Nevertheless, the reason for their dependence on unsafe water for consumption is yet uncertain at this time.

Five water-borne diseases in an increasing order of prevalence in the study locations were; typhoid (37.85%) malaria (32.11%), Cholera (20.56%) and shigellosis (10.06%). This result agrees with the similar
The study conducted in North-western Nigeria (Raji and Ibrahim, 2011) but contrasted the result of Temitayo and Bolariwia, (2017), who reported the following water related diseases in the rural communities of Nigeria, such as river blindness, (61.97%), schistosomiasis (22.34%), elephantiasis (13.12%) and guinea worm (about 3%). The higher prevalence of typhoid reported in this present study contradicts the result of Olowe et al. (2016) and Raji and Ibrahim, (2011). Both reported that diarrhoea was the most predominant water borne diseases recorded in South western and North-western of Nigeria. Raji and Ibrahim, (2011) emphasized further that the diarrhoea cases increased from 6.23% in 2004 to 10.04% in 2005.

The prevalence of typhoid, Cholera and shigellosis in the present study is an indication that the sources of water in the study location is highly contaminated with several disease pathogens. Typhoid is caused by Salmonella serotypes such as Salmonella typhi, S. paratyphi A, S. paratyphi B and S. paratyphi C. (Crump et al., 2004), and is transmitted through the ingestion of water or food that has been contaminated by faeces in a crowded and impoverished environment, where the populations has little or no access to sanitation facilities (Eba and Bekele, 2019). The prevalence of typhoid in this present study is an indication that the table water level in the environment is high, which may have easily contaminated the sources of water supply with pathogenic agents.

Cholera is caused by a strain of bacteria species called Vibrio cholera. It strives where there is lack of social amenities and poor environmental sanitation. Shigellosis is a bacterial infection caused by Shigella species. It is considered as a potential factor in infectious diarrhoeas (Sousa et al., 2013). Their presence in this study is an indication that the locations where sources of water is sited may be exposed to the bacterial contaminations.

Malaria is a water wash disease caused by a protozoan parasite of the genus Plasmodium. It is predominant where there are several stagnant water bodies. Such environment encourages the breeding of mosquito and the emergence of adults. Their presence in this present study is not surprising, because malaria is endemic in the Niger Delta area and its prevalence has been reported (Abah and Temple, 2015; Ezenwaka, and Ivoh, 2018).

CONCLUSION

It is apparent from the results of this study that most locations in the study area lack safe and portable drinking water. This have translated to the prevalence of four water-borne diseases in rural communities of Bayelsa State. The frequencies of the water-borne diseases were; typhoid> malaria > Cholera >shigellosis. This result is a cause for public attention. It is therefore recommended government should provide portable drinking water to the community and sensitize rural communities on the need to improve community base environmental sanitation.

REFERENCES


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