



Review on Prevalence of Waterborne Diseases in Nigeria

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ABSTRACT

The problems associated with drinking water encountered in some parts of Nigeria have created a public health concern. Governments that are unserious about provision of safe drinking water are liable to experience outbreak of waterborne diseases. Nigeria is one of the countries suffering from the crippling burden of water related diseases. The common diseases of drinking water in Nigeria include Cholera, Dracunculiasis, Hepatitis, Typhoid and Filariasis. In this research study, the profile of water related diseases in Nigeria from 2002-2008 was considered. This work was carried out with a view to assessing the successes recorded and problem encountered by governments: analyze the trend and spatial dimension of these diseases in Nigeria and to suggest necessary recommendations for proper management. Data were got from National Bureau of Statistics, Abuja (NBS). Microsoft excel was employed in analyzing the data. From the result obtained, it was revealed that typhoid ranked the highest, followed by cholera, hepatitis and dracunculiasis. Based on the problems facing Nigeria, it is strongly recommended that ministries of water resources and environment at both state and federal levels take the following steps: organize sensitization programmes addressing waterborne diseases, work closely with world health organization (WHO) and other health bodies to provide direct necessary support to Nigerian government and mitigate unsafe drinking water and waterborne diseases in Nigeria.

Keyword: waterborne diseases, typhoid, cholera, hepatitis and dracunculiasis.

INTRODUCTION

Water borne illness is caused by various bacteria, virus, protozoa and pathogenic microorganisms and usually occurs as a result of poorly treated drinking water and wastewater or a natural disaster, like flooding and environmental pollutants.

Nigeria is one of the countries in the world that has unsafe water supplies due to the uncoordinated efforts of various federal, state and local agencies. Given the low quality of drinking water in Nigeria, most Nigerians will usually contract a waterborne illness. Nevertheless, when pollutants find their way into drinking water sources and are not eliminated by water treatment processes, it can and does make people sick. This can be attributed to lack of sanitation system, pipe breaks, leaks, ground water contamination campgrounds where human and wildlife use same source of water. According to [1], inadequate sanitation facilities can lead to spread of diseases through rodents, flies, and other animals. Both

the ground and surface water supplies can be contaminated. In the United

State of America, the number of detected waterborne disease outbreaks and the number of affected individual per outbreak had increased since 1940 [2]. Similarly, water quality monitoring of major European rivers indicated that average coliform levels, or the organisms present in human, animal and bird excreta- have been steadily increasing for decades [3].

Meanwhile, the safe drinking water act has been regularly amended resulting in regulations to ensure against previously unknown or unrecognized pathogens and toxic substances [4]. The total coliform rule requires a maximum concentration of zero for total coliform, fecal coliform, and *Escherichia coli*, which is much more stringent than the original coliform rule [5]. Also, the Lead Contamination Control Act contains requirements for special surveillance of water in distribution systems and a ban on

lead solders, flux, and pipe in public systems [4]. In the same vein, the Surface Water Treatment Rule require filtration followed by chemical disinfection to ensure removal of Giardia and Cryptosporidium protozoa and enteric viruses from surface water supplies and groundwater under the influence of surface water [6]. Access to safe water supply has indeed become a nightmare in Nigeria, about 90 million people are without access to safe drinking water and 130,000 under five Nigerian children die annually from preventable waterborne diseases. Some states in Nigeria are predominantly rural states with over 65% of the population living in rural areas. The greatest problem facing responsible government and non-governmental organizations is how to improve the quality of life of the rural population [7]. The purpose of this paper is to make a comprehensive review on prevalence of waterborne diseases in Nigeria. Besides, the aim is also to explore preventive measures to their occurrence.

Study Area

Nigeria is located in the western part of Africa, bounded in the south by Atlantic Ocean, in the north and west by Niger, Cameroon and Benin Republics. It occupies a total land area of 923, 768 square kilometers (comprising 910, 768km² of land and 13000km² of water) with a population of about 170 million and growth rate of 3.3% [8]. Nigeria is made of thirty six states and

federal capital territory (FCT). As stated by [9], there are seventy four cities and urban areas in Nigeria with population over 100,000.

MATERIALS AND METHODS

The study was based on data collection through primary and secondary sources. The primary source was based on interview, literature survey from internet and questionnaire administration while the secondary data were from report and publications of various private and government institution.

Waterborne Illness

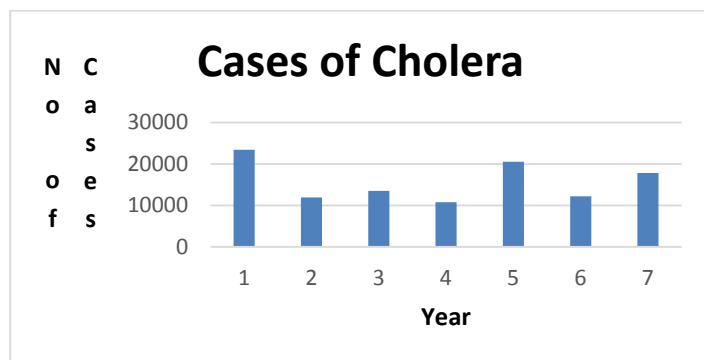
The most common waterborne diseases in Nigeria include Cholera, Dracunculiasis, Hepatitis, and Typhoid. According to Texas Department of Insurance, Division Workers' Compensation, United State, the general symptoms of those aforementioned waterborne illness include abdominal discomfort (cramping), fever, vomiting, diarrhea, loss of weight and fatigue. Generally, the number of incidences of waterborne illness in some part of Nigeria is high compared to other major causes of illness. The essence of this study is to ensure the trend of water related cases in Nigeria and highlighting areas in need of urgent intervention.

Table 1: Cases of Water related Diseases in Nigeria from 2002-2008.

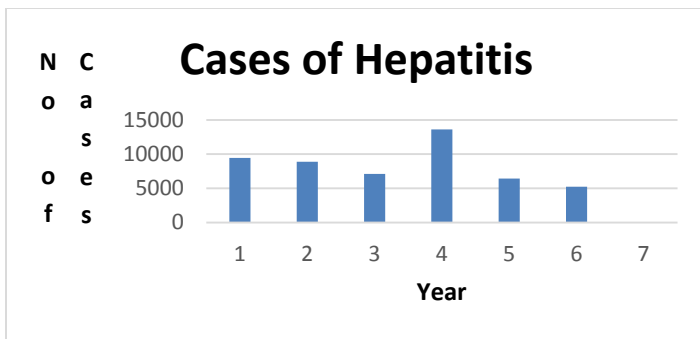
Disease	2002	2003	2004	2005	2006	2007	2008
Cholera	23,441	11,933	13,522	10,785	20,526	12,194	17,854
Dracunliasis	2,588	1,234	2,206	153	36	1	Na
Hepatitis	9,451	8,894	7,104	13,609	6,419	5,239	Na
Typhoid	104,154	77,850	39,337	Na	Na	Na	Na

RESULT AND DISCUSSION

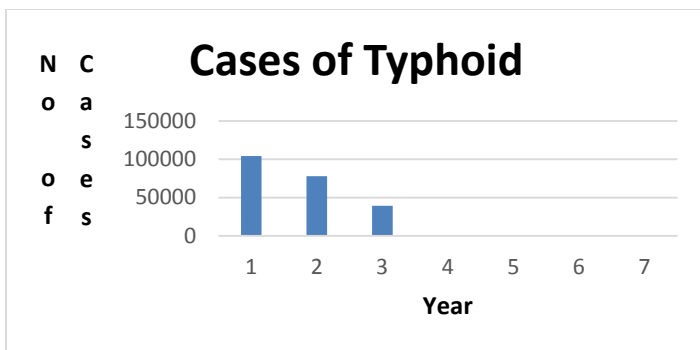
Cholera: is a waterborne disease caused by bacterial with symptoms of vomiting, watery stool, dehydration, fatigue, renal failure and occasional muscle cramps. Cholera has been an extreme burden on Nigeria, according to [10-11], cholera often occurs as rapidly and progressively with large scale outbreak. From table 1, a total of 23,441 cases of cholera outbreak were recorded in 2002, followed by 20,526 (2006), 17,854 (2008), 13,522(2004), 11,933 (2003) and 10,785 (2005). In 2008, Niger state recorded highest number of cholera cases with 2,304, followed by Gombe (1,829), Kwara (1,321), Lagos (252), Nassarawa (138), Rivers (137), Kaduna (126), Sokoto (125), Nassarawa (138), Ondo (97),Enugu (49), Edo (32), Anambra (20), FCT (4), Imo (4), and Ebonyi (2) while there was no recorded cases of cholera in the remaining 22 states [NBS, 2010]. This perhaps may be due to refusal to submit data on cholera cases to the appropriate authorities. From 2002-2008, a total of 1,741 cases of death from this notifiable disease were reported.



Dracunculiasis: Dracunculiasis is among the diseases caused by drinking water contaminated by the parasite Dracunculus medinensis. Humans are the only reservoir for the nematode parasite and symptoms are showed by the invasion of the parasite into the tissues causing secondary infections. Its symptoms may include fever, vomiting, nausea, diarrhea, arthritis and other life threatening limb. A total of 2,588 cases of dracunculiasis in 2002, followed by 2,206 cases in 2004, 1,234 (2003), 153 (2005), 36 (2006) and 1 (2007). There was no record of cases of Dracunculiasis for 2008. From 2002 to 2008, there were no recorded cases of deaths from this notifiable disease in Nigeria.



Typhoid: Typhoid is also a bacterial disease with general symptoms of fever, headache, constipation, appetite loss, nausea, diarrhea, vomiting, abdominal rash. It is transmitted by the injection of food or water contaminated with the feces of an infected person, which contain the bacterium salmonella enterica enterica, serovar Typhil. As shown in Table 1, a total of 104,154 cases of typhoid were recorded in 2002, followed by 77,850 (2003) and 39,337 (2004). From 2005 to 2008, there was no record of cases of typhoid. This perhaps may be due to refusal to submit data on typhoid cases to the appropriate authority.



CONCLUSION

This survey has demonstrated the prevalence of common waterborne disease in some parts of Nigeria. Typhoid cases ranked highest among the water related diseases recorded between 2002 and 2008 in Nigeria, followed by cholera, hepatitis and drancunliasis. This incidence of waterborne diseases is as a result of inability to gain access to portable drinking water most especially people living in the rural areas of the country. People search for drinking water from all sorts of unsafe water sources, which expose them to all kinds of dangers related to drinking of unsafe water. Based on the problems facing Nigeria, it is strongly recommended that ministries of water resources and environment at both state and federal levels take necessary steps by organizing sensitization programmes addressing the issue of waterborne disease, working closely with world health organization (WHO)

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and other health organizations to provide direct support to Nigerian government.

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List of Abbreviation Used.

NA	Non-Available
EPA	Environmental Protection Agency
AWWA	America Water Works Association
WHO	World Health Organization
NBS	National Bureau Statistics
FCT	Federal Capital Territory
VAR	Vulnerability Adaptation Residence

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