

## Profile of Water Related Diseases in Benue State, Nigeria

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The study examines the profile of water related diseases in Benue State from 2000 to 2008. This is done against the backdrop of the intervention effort of governments and organizations in the State with a view to assessing the successes and constraints; analyse the trend and spatial dimension of these diseases in the study area and to suggest appropriate recommendations for management purposes. Data were obtained from Epidemiological Department of the Ministry of Health Makurdi. Simple descriptive statistics was employed in the analyses of the data. The results of analyses showed that cases of water related diseases were recorded in all the LGAs of the state with varied dimension. In order of magnitude of cases studied, malaria ranked the highest, followed by diarrhoea, dysentery, filariasis, onchocerciasis, schistosomiasis, typhoid and cholera. The study also show a decline in the number of cases of these water related diseases within the period under examination. This probably may be attributed to some intervention by some organizations. Notwithstanding, much is needed as the profile of these diseases is still high in the State. There is need for intensified public enlightenment on personal hygiene, provision of improved water supply in communities where is lacking, and rehabilitation of broken down water infrastructures, water quality surveillance, re-commitment on the part of government and non-governmental organizations in effort to combat water related diseases in the state.

Keyword: water diseases, cholera, diarrhoea, typhoid, dysentery, malaria, filariasis, onchocerciasis, schistosomiasis

### Introduction

Water related diseases are one of the world's most significant health problems, and are largely preventable. Water related diseases trap millions in cycle of poverty and poor health, often rendering them unable to work or go to school (NAS, 2008). Every year more than 5million human beings die from illnesses linked with unsafe drinking water, unclean domestic environment and improper excreta disposal(WHO,1996; Johannesburg Summit, 2002). As tragic and unnecessary as water related death, there are other significant health consequences that stem from the failure to provide adequate water services. These include lost of work days, missed educational opportunities, official and unofficial health care cost and draining of family resources. We know is the poor who are mostly affected, with 800million people under nourished and 5 million dying each year because of polluted water, lack of sanitation and water borne disease alone (UNDP,2002).

Water related diseases are generally categorized into four (Gleick, 2002): Water borne diseases-those

caused by drinking water contaminated by human and animal feces or urine containing pathogenic bacteria or virus: cholera, typhoid, amoebic and bacillary dysentery, diarrhoea; Water washed –These result from poor personal hygiene and skin or eye contact with contaminated water such as scabies, trachoma and flea, lice or tick bite. Water based diseases are those caused by parasite in organism living in contaminated water such as dracunculiasis, schistosomiasis, helminth. Water related diseases are those caused by insect vectors especially mosquito that breed in water such as filariasis, malaria, onchocerciasis, schistosomiasis, yellow fever.

Epidemics associated with water borne diseases are a common scenario in most developing countries of the world where access to basic amenities especially clean safe drinking water is lacking. This is attributed in most cases to lack of political will of governments especially in Africa to pursue programmes that will improve the quality of life. Across countries of Africa, cases of water borne diseases have become endemic. For instance, in Ghana, typhoid was identified as the commonest water related diseases in some district. This represents 58.6% of the incidence rate, followed by bilharzias (31.6%) guinea worm (2.5%), cholera (6.3%). This was attributed to disorganized drains which serve as breeding ground for mosquitos, lack

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of toilet facilities in most homes, and open waste dump sites (Ghana: Water and sanitation, 2006).

According to Yankson (2011) current statistics on cholera outbreak in greater Accra Region indicates that 4,190 cases have been recorded, with 36 deaths. Health official report attributed the cause of the epidemic largely to poor sanitation systems and hygiene habits especially open defecation. In Tanzania, where four people died and 58 hospitalised following fresh outbreak cholera in Morogoro Region, in northeast Tanga Region where about 60 people have died of cholera is linked with water shortages in the region forcing residents to buy unsafe water from vendors (AFP/News, 2010).

According to Water Aid, 2,000 children die of diarrhoea in Africa daily. Diarrhoea kills more children than HIV/Aids, tuberculosis and malaria combined, and its main cause is food and water contaminated with human waste. In Uganda, 75% cases of diarrhea is as result of lack of clean water and sanitation to communities. Several outbreaks of diarrhoea, typhoid and dysentery have the worst hit in Harare the capital of Uganda since the major outbreak in 2008/9. The latest outbreak of typhoid has affected about 300 people in Harare and Chitungwiza and it is feared that the disease is fast spreading (Dube, 2012). The Harare Resident Trust (HRT) said the outbreaks were as result of lack of clear political will by the City fathers to proffer practical solutions or to address the challenges of water supply which the residents are facing (The Standard, 2012).

In Liberia, 6 out of 7 do not have toilets. Villages in Nyonken, Liberia collect water from river for cooking, washing and drinking even though they know human waste from upstream may have contaminated it a potential danger of water borne diseases (Guardian, 2012). In Burkina-Faso, 20,000 children under 5 die annually because of water related diseases. Economically, 5% of the Gross National Income is lost because of illness related to water and sanitation (Plan Burkina Faso International, 2012). Between 1,085,000 and 2,187,000 deaths due to the water, sanitation and hygiene risk factor, 90% of them among children under five.

In Kano State, Nigeria, a total of 5,600 cholera cases and 340 deaths were recorded in 1996 by the Ministry of Health. The outbreak of cholera in Kano was largely attributed to drinking of water sold by street water vendors and failure to wash hands with soap before meals were taken (Hutin et al, 2003). In China, India, Indonesia, twice as many people die from diarrhoeal diseases as from HIV/AIDS. With simple hygiene measures such as washing hands after using toilet or before preparing food, most of these deaths are preventable (WHO, 1996).

Nigeria Health Authority warned of a possible cholera epidemic and confirmed the existence of pandemic in 12 States of country's 36 States leading to a reported death of over 800 people (This Day Newspaper, 2010). Benue state is predominantly a rural state with over 75% 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. It is generally believed that 80% of the world diseases are water related. To improve the quality of lives of the rural people is to deal with these water related problems.

This paper primarily attempts to examine the profile of water related diseases in Benue State in the light of intervention programmes of governments and donor organisations. This is done with a view to ascertaining areas of successes and constraints encountered in the course of the programme. It is also to analyze the trend and the geographical or spatial dimension of water related diseases in the State during the period under investigation. Findings from this study will be of use to health authorities, governments and non-governmental organizations on the dimension of these diseases and areas needing further intervention.

### **The Study Area**

The study area is Benue State of Nigeria. It has a landmass of about 33,955 Sq Km with a population of 4,253,641 (NPC, 2006). It lies between Lat. 6.5 and 8.5N and Long. It shares boundary with Kogi and Enugu states to the west, Taraba State to the east Cross River to the south and Nassarawa State to the north. It also shares boundary with Republic of Cameroon.

The State has 23 Local Government Areas (LGAs) head by Chairmen. The geology of the study area is principally of sedimentary formation with pockets of basement complex. This made of sandstones, mudstones and limestone that influences both surface and groundwater availability (Kogbe et al, 1978, Abaa, 2004). Major rivers that drain the study area is River Benue and its tributary, River Katsina-Ala. Other rivers include Aya, Guma, Konshisha, Logo, Mu, Okpokwu, Obi etc. These rivers constitute traditional sources of drinking water for the rural communities of Benue State. Climatic fluctuations have a strong influence on the availability of water in this river especially in the dry season leading to most drying up. Consequently, the rural communities are faced with intense water scarcity leading them to source for drinking water from all sorts of places. The implication is that they exposed to all kind of water related diseases.

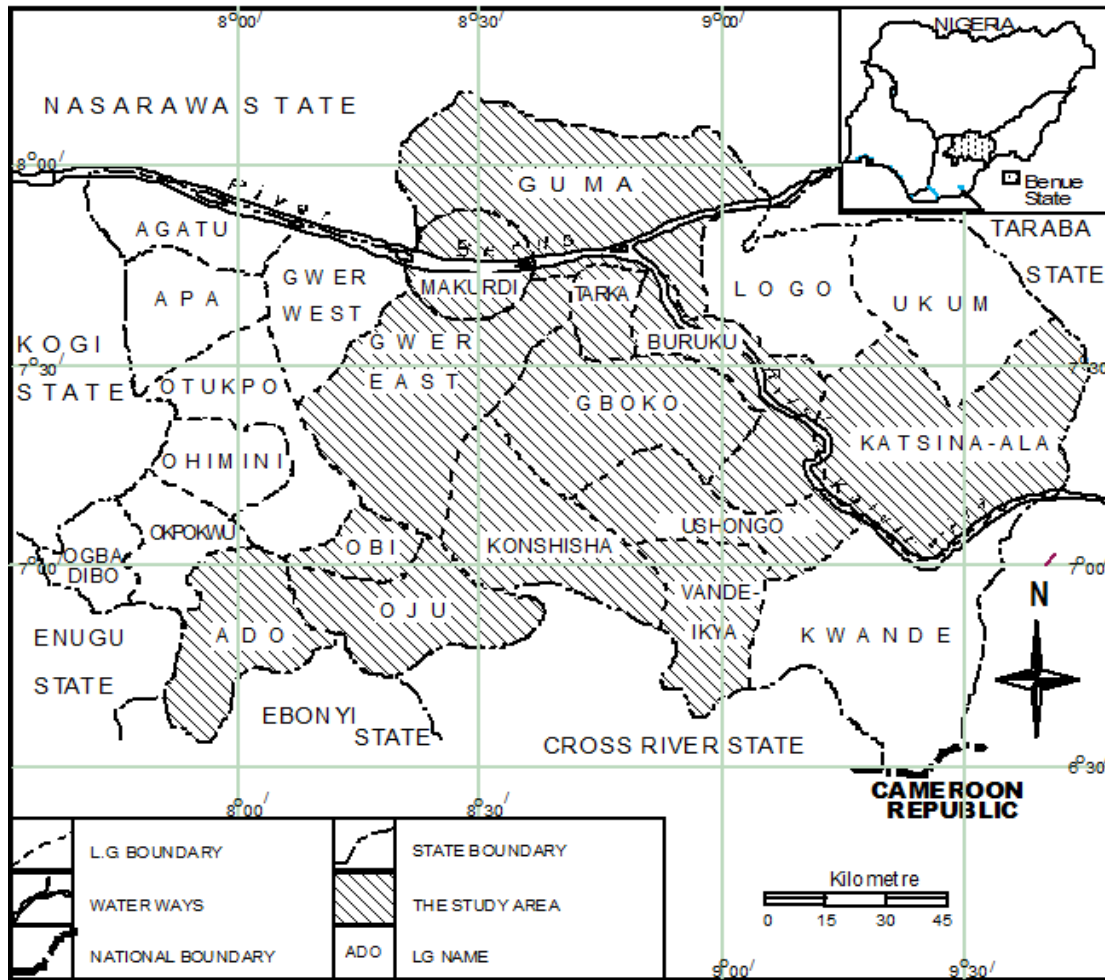


Figure 1. Benue State showing the study area. Source: Benue State Ministry of Lands and Survey (2001).

**Materials and Methods**

In this study we relied mainly on secondary sources of data. Water related diseases for Benue State were obtained from the Ministry of Health Epidemiological department. Data were collected on cholera, diarrhea, typhoid, dysentery, hepatitis,

malaria, filarisis, onchocerciasis and schistosomiasis from 2000 to 2008 (Table 1) covering the 23 Local Government Areas (LGAs) of State. The essence of this study is to examine the trend of water related cases in the state and highlighting areas in need of urgent intervention. Beside, the aim is also explore preventive measures to their occurrences.

Table 1. Cases of Water related Diseases in Benue State from 2000 to 2008.

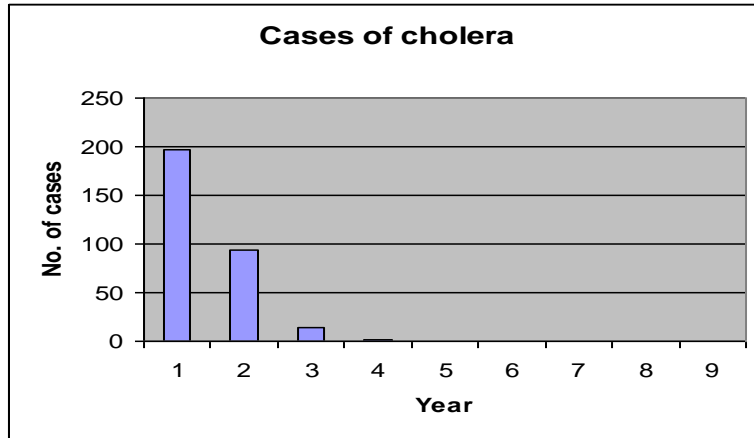
Disease	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cholera	197	94	14	1	0	0	0	0	0
Diarrhoea	21,550	25,571	19,823	20,781	10,803	9,420	8,661	11,622	9,516
Typhoid	1,337	827	1,475	1,266	397	0	0	765	690
Dysentery	9,810	17,351	11,912	9,131	6,676	5,142	4,976	5,754	4,027
Malaria	76,804	72,230	68,877	62,400	60,487	53,419	61,346	66,260	69,515
Filariasis	3,206	8,398	8,883	9,244	1,055	1,356	156	2,588	221
Onchocerciasis	5,613	313	2,199	295	2,092	2,265	2,407	18,586	1,011
Schistosomiasis	2,370	1,574	1,339	757	81	0	0	0	0

Source: Epidemiological Department of Ministry of Health, Makurdi (2010).

**Results and Discussion**

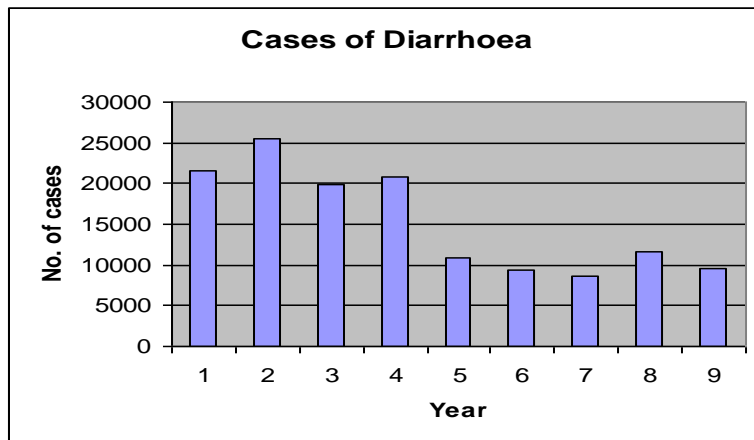
**Chlorea:** In developing countries, chlorea often occurs as rapidly and progressively witha large scale outbreaks (Swerdlow & Isaacson1994; Swerdlow et al.1997). Chlorea is caused by the Gram-negative, comma-shaped bacterium *Vibrochlorea*, the disesease is characterized by a sudden diarrhea with profuse watery stool, vomiting, rapid dehydration, fall of blood pressure, subnormal temperature and collapse.

Death may occur within 48 hours unless medical care is given. From Table 1, a total of 197 cases of cholera were recorded in 2000, followed by 2001with 94 cases (Figure 1). From 2004 to 2008 there were no recorded cases of cholera in the state. This perhaps may be due to failure to submit data on cases cholera to the office. Local Government Areas (LGAs) noted to have cases of cholera are Apa (49.7%), Gwer (35.7%) Okpokwu (11.1%) in 2000.Otukpo LGA recorded 98.9% of cholera cases in 2002.



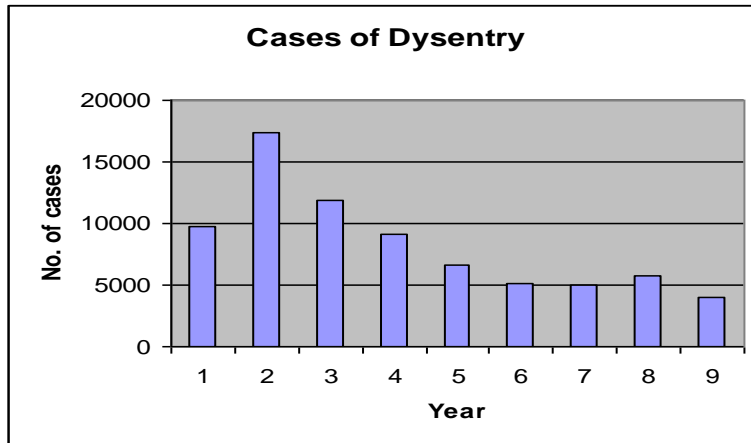
**Diarrhoea:** Diarrhoea is among the diseases caused by drinking water contaminated by human and animal wastes. Everyday diarrhoea diseases causes some 6,000 deaths, mostly among children under five. In 2001, 1.96 million people died from infectious diarrhea, 1.3 million were children under five (WHO, 2001). In Benue State, high numbers of cases of diarrhoea were recorded during the period of investigation. A total of 25,571 cases of diarrhea was

recorded in 2001, followed by 21,550 cases in 2000, 20,781 (2003) 19,823 (2002) 11,622(2007), 10,863 (2004), 9,120 (2005), 9,516 (2008) and 8,661(2006). Although diarrhea cases were recorded in all the LGAs of the State, however LGAs mostly affected are Vandekiya, Konshisha, Ushongo, Kwande, Katsina-Ala, Ukum, Buruku, Otukpo, Agatu, Okpokwu, Ogbadibo and Ohimini.



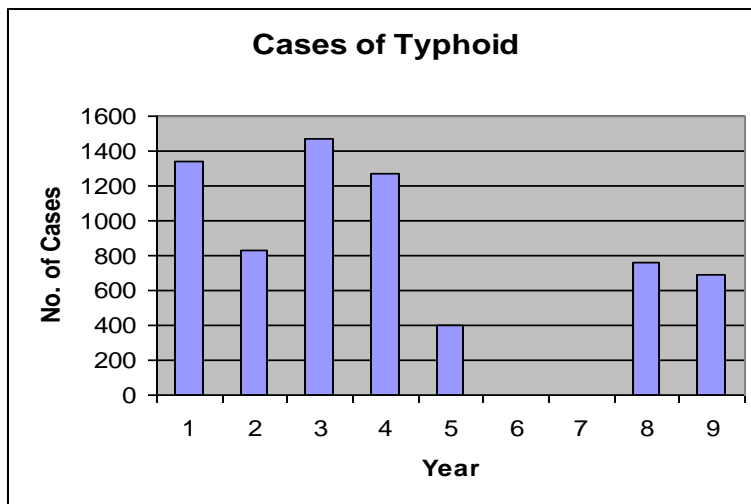
**Dysentery:** Worldwide, approximately 140 million people develop dysentery each year, and about 600,000 die. Most of these deaths occur in developing countries among children under five. In US about 25,000 to 30,000 cases occur each year (Perlin, 2002). Like diarrhoea, high number of cases of dysentery was recorded during period of the study.

In 2001, a total of 17,351 cases of dysentery being highest was recorded. This is followed by 2002 with 11,912 cases, 2001(9,810), 2003(9,131), 2004(6,676), 2007(5,754), 2005(5,142), 2006(4,976) and 2008(4,027). Ushongo, Katina-Ala, Konshisha, Vandekya, and Otukpo LGAs were noted to be worst with cases of dysentery.



**Typhoid fever:** Statistics on cases of typhoid show 1,475 cases being the highest was recorded in 2002, 1,337 in 2000, 1,266 in 2003, 827 in 2001, 765 in 2007, 690 in 2008, and 397 in 2004. There was no

record of cases of typhoid for 2005 and 2006. Agatu, Ukum, and Vandekya LGAs were noted to have recorded most of the cases of typhoid during the period of the study.

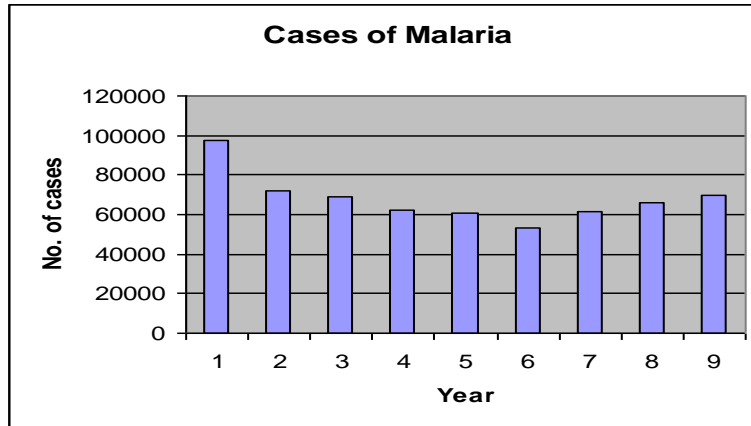


**Malaria:** Malaria kills over a million people every year, and a percentage of them are under five as well, mainly in Africa South of Sahara. In 2001 the estimated global burden of malaria amounted to 42.3 million DALYs, constituting 10% of Africa's

overall disease burden. As one of the major public health problems in tropical countries, it has been claimed that malaria has reduced economic growth in African countries by 1.3% each year over the past 30 years (Africa Malaria Report, 2003). Of all the water

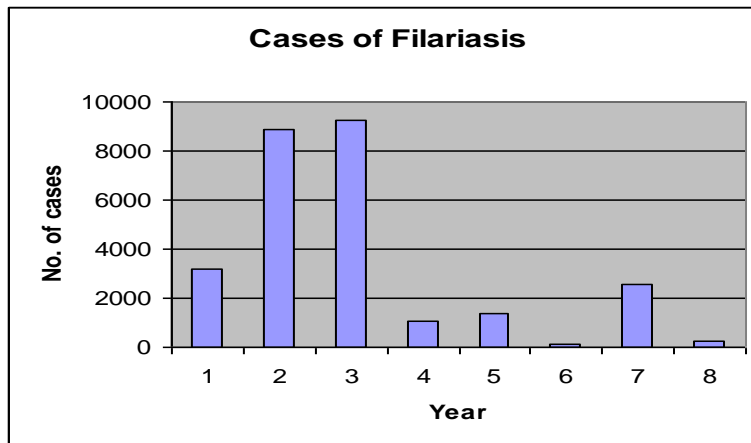
related diseases examined in this study, cases of malaria ranked the highest within the period under investigation and all the LGAs of the state. A total of 76,804 cases of malaria being the highest was recorded in 2001. This was followed by 72,230 cases in 2001, 69, 513 (2008), 68, 877 (2002), 66, 260

(2007), 62,400 (2003), 61,346 (2006), 60,487 (2004), 53,419(2005). Although appreciable numbers of cases of malaria were recorded all the LGAs of the state, LGAs with acute cases of malaria are Otukpo, Katsina-Ala, Gboko, Ukum, Agatu, Apa, Ogbadibo, and Tarka.



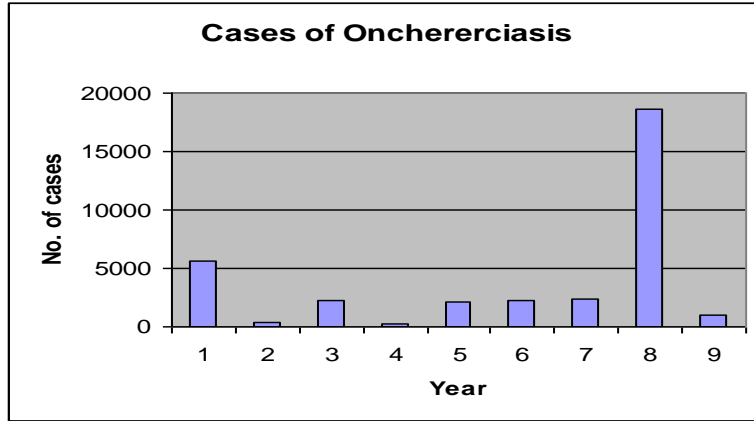
**Filariasis:** A total of 9,244 cases of filariasis being the highest was recorded in 2003. This was followed by 8,883 cases in 2002, 8,398 in 2001, 3,206 in 2000, 2,588 in 2007, 1,356 in 2005, 1,055 in 2004, 221 in 2008, and 156 in 2006. There progressive decline in the number of cases of filariasis is perhaps due to

intervention programmes. Onchocerciasis: A total of 18,586 cases of onchocerciasis being the highest was recorded in 2007. This is followed by 5613 cases in 2001, 2,407 in 2006, 2,265 in 2005, 2,199 in 2002, 1,011 in 2008, 2092 in 2004 and 295 in 2003.



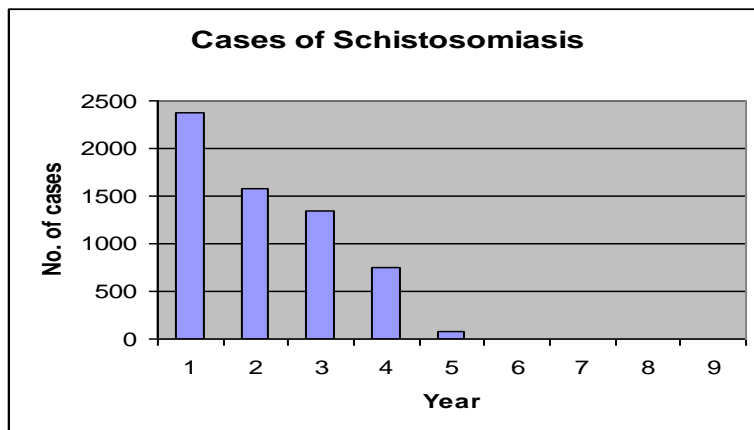
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*Schistosomiasis:* Of the 200million people in the world inflected with worm that causes schistosomiasis, some 20 million suffer sever consequences, such as renal failure, bladder cancer and liver fibrosis. The disease is still found in 74 countries. Studies show that 80% of the transmission takes place in Africa south of the Sahara. A total of

2,370 cases of schistosomiasis being the highest was recorded in 2000 in Benue State. This is followed by 1,574 cases in 2001,1339 in 2001,757 in 2003 and 81 in 2004.No cases of schistosomiasis was recorded from 2005 to 2008. Kwande, ushongo, Katsina-Ala, Buruku and Tarka LGAs were noted to experience cases of schistosomiasis.



**Implication of the Study**

The study has shown cases of water related diseases were recorded in all the Local Government Areas of Benue during the period under investigation with varied dimensions. Despite the interventions, cases of water related diseases were still high.

Generally improved water supply is considered a lasting solution to the problems of water related diseases. Improved rural water supply through borehole systems is saddled with problems of sustainability in Benue State. According to Ocheri (2010) more than 50% of the boreholes are not functioning or have broken down and left

unrehabilitated or completely abandoned. Beside, water of doubtful quality due to present of colour, odour, taste and presence of E-coli which are indications of pollution are undermining the well intended efforts. The rural population is therefore compelled to return to their old polluted sources. This perhaps may have accounted for the prevalence of water related disease in the rural areas.

In urban areas public water supply is either inadequate or inaccessible to a large proportion of the population. Consequently, urban dwellers are forced to rely on unsafe drinking water from unprotected sources such as hand dug wells, rivers/streams and water vendors.

Water is both a receptor and a carrier of all forms of pollution. Open defecation by humans and animals is a common practice especially in rural areas of the State. These wastes are eventually washed into surface and groundwater sources. Studies carried out in the study area have shown evident of bacteriological pollution especially coliform and faecal coliform bacteria linked to human wastes (Ocheri2010; Ocheri et al., 2011; Ocheri & Atu2011; Okponya, 2012; Okele2011; Enejiet al 2012). Beside, lack of sanitary facility such as toilets coupled with unhygienic habits of not washing hands after toileting and preparing food with unwashed hand may be contributing to the problem of water menace in the study area.

Funding of water projects in Nigeria is principally through WHO, UNICEF, World Bank assisted and non-government organization. It takes co-operation and commitment of governments to realize the objective. Lack of political will and commitment is identified as a major constraint to improved water supply delivery in the study area. These issues raised if adequately addressed it will go along a way to stem the tide of water related diseases in the State.

## Conclusion

The survey has aptly demonstrated the prevalence of water related diseases in all the LGAs of Benue State. Malaria cases ranked the highest, followed by diarrhoea, dysentery, onchocerciasis, filariasis, schistosomiasis, typhoid and cholera. The incidence of these water related diseases is reflection of the problems of water scarcity faced by the inhabitants living especially in rural areas. These people search for drinking water from all sorts of unprotected water sources. Consequently, they are exposed to all kinds of risks linked with drinking of polluted or unsafe water. Public education on personal hygiene, safe drinking water, and intervention by governments and non-governmental organization will go along to remedying the situation.

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