



Original Research Article

Determinants of knowledge, attitude and preventive practices relating to Cholera in Wadata-a sub-urban slum of Makurdi, Benue State, North Central Nigeria.

Received 2 October, 2017

Revised 14 November, 2017

Accepted 16 November, 2017

Published 17 November, 2017

**O.G., Ogbeyi^{1*},
T., Bito²,
G., Anefu³
and
G. Igwe⁴**

^{1,2}Department of Epidemiology and Community Health, Benue State University Makurdi, Nigeria

³Epidemiological Unit, Ministry of Health, Makurdi, Benue State, Nigeria.

⁴University of Nigeria Teaching Hospital, Enugu, Nigeria.

*Corresponding Author E-mail: ogbeyigabriel@yahoo.com

Tel: +2348038322698

Cholera disease contributes majorly to health challenges of Benue state, Nigeria. The prevalence of the disease is more than 10% and this places a heavy financial burden on the government. Cholera vaccination is not incorporated in the National Programme of Immunization in Nigeria. Most cases the disease progresses with severe complications and death. The present study assessed the knowledge of, attitude toward and prevention practices of cholera in a sub urban slum of Makurdi, Benue State, Nigeria. A cross sectional study conducted in a cholera prone sub-urban area of Wadata, Benue State. The sample size was 80 and was obtained through multi stage sampling technique where two villages were randomly selected. Data were collected through a structured interviewer administered questionnaires. The study was conducted from June 2016 to September 2016. 80 respondents were analysed. Only 27% could define cholera correctly while 89% were aware of oral rehydration salts (ORS). Forty three percent had good knowledge score of cholera, 96.7% had high positive attitude toward cholera and 65% had good practice of cholera prevention. Knowledge had significant associations with sex, education, attitude and practice. Findings in this study showed that knowledge, attitude and preventive measures of cholera can be improved through health education and community involvement in various environmental challenges in the area by government agencies and non-governmental development organizations.

Key words: Cholera, slum, diarrhoea, Nigeria.

INTRODUCTION

Cholera is a waterborne, life threatening form of dehydrating diarrhoea disease caused by the toxigenic serogroup strains of *Vibrio cholera* (WHO, 2001). The World Health data indicated a concerning increase in the number of cholera cases worldwide since the beginning of the 20th century. The first pandemic began in 1817 in Asia and later spread to other parts of the world like South America and Africa, cholera's new homeland, where over 87% of cases are found (WHO, 2006).

Five hundred and seventy five thousand, two hundred and sixty eight cases were reported by the World Health

Organization (WHO) in January 2000, out of which over 93% were from sub-Saharan Africa (WHO, 2000). In 2001, the World Health Organization and Global Outbreak Alert Response Network took part in the verification of 41 cholera outbreaks in 28 countries (WHO, 2001). Also, 317,534 cholera cases were reported globally during 2008-2010 with a 52% increase in deaths, half of which occurred in children aged less than five years (WHO, Ali et al., 2012). However, in real terms, the numbers are likely to be much higher due to under reporting, differences in definition of acute watery diarrhoea from country to

country, inconsistencies in case definition, and poor surveillance systems (WHO, 2011).

In Nigeria, the first series of cholera outbreak were reported between 1970-1990 (Lawoyin et al., 1999). Nigeria had suffered large cholera epidemics in recent years. In the last quarter of 2009, it was reported that more than 2,600 people died of cholera in four Northern States with over 96 people in Maiduguri, Biu, Gwoza, Dikwa and Jere council areas of Bauchi State. Most of the Northern States of Nigeria rely on hand dug wells and contaminated ponds as sources of drinking water. Usually, the source of the contamination is other cholera patients where their untreated diarrhoea discharge is allowed to get into water supplies (Igomu, 2011).

The 2010 outbreak of cholera and gastroenteritis and the attendant deaths in some regions of Nigeria brought to the forefront the vulnerability of poor communities and most especially children to the infection. The outbreak was attributed to rain which washed sewage into open wells and ponds, where people obtained water for drinking and household needs. The regions ravaged by the scourge include Jigawa, Bauchi, Gombe, Yobe, Borno, Taraba, Federal Capital Territory, Cross River, Kaduna, Osun and Rivers. Even though the epidemic was recorded in these areas epidemiological evidence indicated that the entire country was at risk, with the postulation that the outbreak was due to hyper-virulent strains of the organism (Gyoh, 2011).

The incidence of cholera is accelerated by poor sanitation, contaminated food, and contaminated water due to poor knowledge, negative attitude and poor practices of unhygienic life style of living. All these situations are common in overcrowded environments (Njoh, 2010). The aim of this study is to determine Wadata community's knowledge, attitude and preventive practices of cholera.

METHODOLOGY

Study area

This study was conducted in Wadata area of Makurdi Benue State. Makurdi area has an average rainfall of 1,230 millimetres annually. There is constant shortage of water supply due to inadequate power supply and broken pipes in this highly populated city. The water table is high causing a permanent body of water to exist. The city is bisected into north and south by river Benue and has a total land mass of 187 square kilometres. Makurdi has a population of 572,583 people with females 299,120 and males 273,463. The average number of people per household is 5. The most common diseases prevalent in the area are diarrhoea diseases including cholera, malaria, Aids/HIV and motor cycle accidents. This study concentrated on Wadata area which is a peri urban section of Makurdi city. Wadata ward was randomly selected to be our study site and has a population of 38,561. Between May 2014 and March 2015 there were 1,725 cases of cholera (Gyoh, 2011).

Study Design and Population

This study was a cross sectional study. Data were collected using structured questionnaires. The study was conducted between June 2016 and September 2016. The sample size for this study is 80 and was calculated using the sample size determination formula of above ten thousand populations and adjusted for 10% attrition. The study population consisted of household members aged 18 years and above, and of both males and females. A multi stage sampling technique was used for this study. The first stage involved listing all the wards (11) in Makurdi city, and one ward Wadata was randomly selected. The second stage was listing all the villages in the ward (N=5) and two villages were randomly selected. All the households in the two villages selected were involved in the study. House to house interviews were conducted among household members who were aged 18 years and above until the required sample size of 80 was obtained. Data obtained were on socio-demographic, knowledge, attitude as well as information on socio-cultural practices regarding cholera; knowledge scale was used in measuring knowledge. Knowledge section has 12 stem questions. They were assessed as either right or wrong and total responses were summated at the end. Wrong answers were scored zero while correct answers were given 1 mark. A frequency distribution was obtained indicating the lowest and the highest point score. A cut off point of 1-5 marks was given low knowledge score and 6 marks and above as high score. Questions asked were how the respondents recognize cholera, causes of cholera, types of management, and means of preventing cholera. Direct procedure was employed in the measurement of attitude. Respondents were asked to provide a self-report on their attitudes towards opinion statements regarding attitude. Likert scale was used in measuring attitude. Six stem questions were asked in respect of attitude. Such questions were in areas like washing of hands, food preservation and whether cholera can kill. Required answers were agreed and disagreed. A correct answer was given 1 mark while incorrect answer was awarded -1 mark. A frequency distribution was obtained indicating the lowest and the highest point score. A cut off point of 1-4 marks was given low attitude score and 5 marks and above as highscore, socio-cultural practices regarding waste management, water purification and sources of water were assessed.

Data management

Data collected were checked for completeness. All data generated were processed and analysed by EPI info version 3.3.1 an epidemiological software programme for testing proportions and calculations of means. Data were summarized and presented as frequency tables and charts. Chi-square(χ^2) test was used to test for statistical relationships between proper practices of cholera prevention, attitude and knowledge of cholera among the respondents. A confidence interval of 95% was used in this

Table 1. Respondents knowledge of cholera

Features	Score	Percentage (n=80)
Cholera is watery stool with or without vomiting	1	27
Causes of diarrhoea What are the causes of diarrhoea?		
Lack of potable water, or drinking dirty water	1	77
Eaten rotten food	1	89
Gem	1	95
Ever heard of ORS	1	89
Where do you manage cholera?		
Home	1	48
Health Facility	1	95
Preventive measures of cholera		
Use of potable water	1	73
Adequate sanitation	1	07
Health education	1	05
Food safety	1	85
Basic hygiene practices	1	83
Total score	12	
Total mean score with SD	7.46±2.56	
Good knowledge (equal to or greater than 6)	43% (95% cl 41.2-46.3)	
Poor knowledge (equal to or greater than 5)	57% (95% cl 55.6-57.2)	

Table 2 . Respondents Attitude as Regard Cholera Prevention n=80

Features	Agreed Score	(%)	Disagreed Score	(%)
Hands should be washed with soap and water after defecation	+1	99.9	-1	0.1
Indiscriminate passing of stool can cause disease	+1	99.9	-1	0.1
Hands should be washed before taking food	+1	100	-	0.0
Cholera also affects children	+1	96.3	-1	3.7
Cholera also affects adults	+1	97.1	-1	2.9
Cholera can kill	+1	99.0	-1	1.0
Total score	6.0			

Mean Score of attitude SD 6.92±0.72

Percentage of highly positive attitude (score equal to or greater than 5) 96.7 (95% cl: 95.4-91.2)

Percentage of less positive attitude (score equal to or less than 4) 3.3 (95% cl: 2.3-4.1).

study and a p-value of equal to or less than 0.05 was considered statistically significant.

RESULTS

Knowledge of respondents towards cholera

All the respondents, 80 were successfully interviewed. Table 1 showed the respondents' knowledge on cholera. Only 27% of the respondents could correctly recognize cholera. Majority stated that eating unprotected or rotten food (89%) and drinking unsafe water (77%) were the main causes of cholera.

About 89% of the respondents were aware of ORS. Regarding facilities where a patient can be treated, most (97%) mentioned treatment centres, followed by home (48%). Regarding the preventive measures of cholera, food safety, maintaining good-hygienic practices, use of safe water for drinking and household purposes, and health-

education activities were mentioned by 85%, 83%, 73%, and 5% of the respondents respectively. According to knowledge scoring, less than half of the respondents had good knowledge, and about 57% had poor knowledge of cholera.

Attitude of respondents towards cholera

Attitude of respondents towards cholera are presented in Table 2. Most of the respondents showed a positive attitude toward cholera. Majority of the respondents agreed on such parameters as washing both hands with soap after defecation, defecating in an open place could lead to disease, washing hands before taking food, cholera is a severe health problem which may cause death, and cholera is very serious for adults and children. The attitude scale showed that 96.7% of the study participants had a highly positive attitude toward cholera.

Table 3.Practices of Respondents Relating to prevention of Cholera

Features	Score	Percentage (n=80)
Use of potable water	1	65.2%
Adequate sanitation	1	6.4%
Health Education	1	6.1%
Food safety	1	85.7%
Routine hygiene practices	1	89.2%
Total Score	5	

Total mean score with SD 2.32 + 0.76

Good practice (score equal to or greater than 3) 65.2% (95% ci: 60.1-63.4)

Poor practice (score equal to or greater than 2) 34.8% (95% ci: 32.2-36.2)

Practices Relating to Cholera Prevention

Table 3 presents the respondents practices relating to prevention measures. About 85% of the respondents practiced food safety by having fresh food and avoiding rotten food and maintained good hygiene (89.2%) to prevent cholera in the households. Two thirds of the respondents used safe water for drinking and household purposes. Six percent attended both health education session, and maintained proper sanitation practices. Overall, 65% followed good practices to prevent cholera.

Association of knowledge of cholera with socio-demographic, attitude and practice of cholera prevention

Table 4 shows the association of the respondents' knowledge of cholera with the socio-demographic, attitude and practice-related characteristics. Respondents with poor knowledge of cholera were seen in all age-groups with no significant differences. On the other hand, males (57%) were more likely to have poor knowledge than females (52%) ($p = 0.001$). Respondents with secondary and higher levels of education (45%) were significantly less likely to have poor knowledge compared to those with primary (52%) or having no education (59%) ($p < 0.001$). Regarding family size, there is no significant difference in respect of their poor knowledge of cholera; respondents with highly positive attitude towards cholera are significantly less likely to have poor knowledge of cholera compared to those with less positive attitude. Respondents with good prevention practices of cholera are significantly more likely to have good knowledge of cholera compared to those with poor prevention practices.

DISCUSSION

Not many studies have been done in this community as regards knowledge, attitude and practices relating to diarrhoeal diseases in Wadata slums of Makurdi, Benue State, Nigeria (WHO, Gyoh, 2010). Our study assessed the

knowledge of, attitudes toward, and prevention practices relating to cholera among urban slum-dwellers. We found that only 27% of the respondents could identify cholera as watery diarrhoea, which was lower than that observed in studies in Dhaka, Bangladesh, Zanzibar and Haiti where 60-89% of the population could characterize cholera as watery stool or diarrhoea (Schaetti et al., 2010), Rochars et al., 2010). Definition of cholera varies in many documents including WHO. In this study we used the common correct definition such as acute watery stool with or without vomiting. Respondents who did not qualify diarrhoea as watery stool scored zero mark (Rochars et al., 2010, WHO), this could possibly explain why most respondents could not identify cholera. On the other hand, the Haiti study literally identified cholera as diarrhoea (89.1%), and the Zanzibar study presented to respondents a clinical scenario describing a cholera case and asked how they would name the condition presented to them. Most results of community-based studies showed that cholera was the result of diarrhoea, vomiting, dehydration, and weakness of the body, which corroborated the findings of our study

The findings in this study are similar to the findings of studies done in Haiti, Bangladesh and Nigeria which showed that more than 90% of the respondents had knowledge of ORS (Lawoyin et al., 1999; WHO, Chingayipe, 2005). Our study and other studies from Bangladesh and Zanzibar showed that urban and peri-urban people are more likely to give ORS to patients primarily for the treatment of cholera than the rural people (Schaetti et al., 2010).

It is worrisome that only 7% of the respondents in this study knew that proper sanitation and health education are important preventive measures of cholera. This is lower than the 10% recorded in the Bangladesh study. This may be because Wadata community is part of Makurdi slum with poor infrastructure for sanitation. There are few schools in this locality compared to the neighbouring areas. Sanitation is part of the school curriculum in Makurdi and also taught early. It is not surprising that the communities that mention health education as a form of cholera prevention have more educational facilities than Wadata (Gyoh, 2011, UNICEF, 2008, Mpazi et al., 2005).

There is high level of positive attitude towards cholera in

Table 4. Relationship of Knowledge of Respondents on Cholera with Socio-Demographic, Attitudinal and Practice Related Features

Features	Knowledge level		P-value	
	Good knowledge 43% (n=34)	Poor knowledge 57% (n=46)	100 (n=80)	P-value
Status of knowledge				
Socio- Demographic Features				
Age Groups (years)				
18-24	44.2	55.8	21.1(17)	0.72
25-44	41.6	58.4	40.2(32)	
45+	42.1	57.6	38.7(31)	
Sex				
Male	43.2	56.8	29.7(24)	0.001
Female	48.2	51.8		
Education				
No education	40.1	59.1	49.0(39)	0.000
Primary	48.2	51.8	23.7(19)	
Secondary and above	55.3	44.7	27.3(22)	
Family Size				
Less than or equal to 4	40.7	59.3	60.1(48)	0.124
More than or equal to 5	44.9	55.1	39.0(32)	
Attitudinal Features				
Attitude				
Highly positive towards cholera and its control (score equal to or greater than 5)	42.7	57.3	94(78)	0.000
Less positive towards cholera and its control (score equal to or less than 4)	16.9	83.1	6(2)	
Practice features				
Practice				
Good prevention practices (equal to or greater than 3)	57.2	42.8	64(51)	0.000
Poor prevention practices (equal to or greater than 2)	24.2	75.8	36(29)	

this study. The attitude level found in this study was similar to the findings of some studies in Tanzania, India and Bangladesh. One of the challenges of reporting cholera in the media in Nigeria is that they are all classified as diarrhoea. This causes confusion in terms of definition and standard classification of cholera disease and can be responsible for discrepancies between studies.

We found a significant association between the respondents' knowledge and several factors, including sex, education, family size, a positive attitude toward cholera, and practices to prevent cholera. Education is primarily important and is related to knowledge. Female respondents were more knowledgeable than male as they were the main caregivers of cholera patients, which is consistent with results of our study (Chingayipe, 2008).

This study was conducted with a group of people who are at high risk of cholera epidemics. The findings revealed a poor level of knowledge on cholera among this high-risk group. Strengthening of health-education activities may, thus, improve their knowledge on cholera. Such education should focus on cholera prevention and control. There is a need for community participation in the various environmental activities that will be employed to reduce

cholera burden by governments and non-governmental organizations.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

REFERENCES

- Ali M, Lopez AL, You YA, Kim YE, Sah B, Clemens J (2012). The global burden of cholera. *Bull World Health Organ.* 10(90):209- 218A.
- Chingayipe EM (2008). Factors affecting cholera case detection by the communities in Chiradzulu district. Master's dissertation. University of Malawi, College of Medicine, Environmental Health; <http://www.medcol.mw/mpd/dissertations/intake%202005/Elizabeth%20Chingayipe.pdf>
- Gyoh SK (2011). Cholera epidemics in Nigeria an indictment of the shameful neglect of government. *J. Africa Health.* 33 (1):5.

- Igomu T (2011). Cholera epidemics: Far from being over, NBF News. www.nigeriabestforum.com/blog/?p=60321. Accessed 23 August 2011.
- Lawoyin TO, Ogunbodede NA, Olumide EAA, Onadeko MO (1999). Outbreak of cholera in Ibadan, Nigeria. *Eur J Epidemiol.* 15 (4):367-370.
- Mpazi VM, Mnyika KS (2005). Knowledge, attitudes and practices regarding cholera outbreaks in Ilala Municipality of Dar Es Salaam region, Tanzania. *East Afr. J. Public Health* 2(6):6-11.
- Njoh ME: The Cholera epidemic and barriers to healthy hygiene and sanitation in Cameroon: a protocol study. PhD thesis. 2010, Umea University, Department of Epidemiology and Public Health, <http://bvs.Per.Paho.org/texcom/cholera/MENjoh.pdf>
- Rochars VEBD, Tipret J, Patrick M, Jacobson L, Barbour KE, Berendes D, Bensyl D, Frazier C, Domercant JW, Archer R (2010). Knowledge, attitudes, and practices related to treatment and prevention of cholera, Haiti. *J. Emerg Infect Dis.* 7(3):24-27.
- Schaetti C, Khatib AM, Ali SM, Hutubessy R, Chaignat C-L, Weiss MG (2010). Social and cultural features of cholera and shigellosis in peri-urban and rural communities of Zanzibar. *J. BMC Infect Dis.* 10(339):1-14.
- UNICEF. Sanitation, hygiene and water supply in urban slums. Dhaka; 2008. [http://www.unicef.org/bangladesh/URBAN_Water_Sanitation_and_Hygiene.pdf]
- World Health Organization. Prevention and control of cholera outbreaks: WHO policy and recommendations. [<http://www.who.int/cholera/technical/prevention/control/en/index.html>]
- World Health Organization: Cholera (2011). *WklyEpidemiol Rec.* 2012, 87(31-32): 289-304.
- World Health Organization: Cholera 2000. *WklyEpidemiol Rec.* 2001, 76(31): 233 - 240
- World Health Organization: Cholera 2001. *WklyEpidemiol Rec.* 2002, 77 (31): 257 - 268
- World Health Organization: Cholera 2006. *WklyEpidemiol Rec.* 2007, 82(31): 261 - 284
- World Health Organization: Cholera 2010. *WklyEpidemiol Rec.* 2011, 86 (31): 325 - 340
- World Health Organization: Global Health Observatory (GHO): Number of reported cholera cases. [<http://www.who.int/gho/epidemic-disease/cholera/cases-text/en/index.html>]