STUDY ON KNOWLEDGE OF CONTROL AND PREVENTIVE MEASURE FOR CHOLERA OUTBREAK IN IMO STATE

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Abstract: Having a good knowledge of control and preventive measures against cholera outbreak is an important pathway towards preventing the outbreak of the disease. The aim of the study was to assess the knowledge of control and preventive measures of cholera outbreak in Imo state. The study was designed as a descriptive cross sectional study, and sampled the study participants within two clusters of urban and rural areas in Imo state. Therefore two communities were selected, one representing urban communities and the other rural communities. Data collection was performed in the selected communities using a semi structured validated questionnaire. The participants were visited in a community gathering center and were examined using the data research tool. Analysis of the data were performed in SPSS version27 using both descriptive method such as the use of frequency distribution tables and charts, and the inferential statistics method (chi-square test). The results of the data found high level of general knowledge of cholera (79.6%). Similarly, knowledge about cholera control and preventive measures were found to high (77.8%), the major sources of knowledge were relatives (46.2%) and social media (31.1%). Significant sociodemographic factors associating to knowledge of control and preventive measures include older age (p=0.000) and education (0.028). The study included that constant assessment of knowledge should be made necessary in order to prevent cholera outbreak in the study area.
Keywords: Knowledge; Control; Cholera; Outbreak; Imo state

1 INTRODUCTION

Cholera, is one of the common diseases that mostly affect people from low socioeconomic conditions. This has made it to be nicknamed "the diseases of poverty," It is caused by infection with *Vibrio cholera* bacterium [1]. It is a bacterial gut infection producing watery diarrhea that can quickly lead to severe dehydration and prove fatal within hours if untreated [2]. It thrives in regions lacking access to clean water or sanitation and spreads with unmatched swiftness [3].

World Health Organization report estimates that cholera cases range from 1.3 to 4 million [4]. In terms of mortality, the world records about 21, 000 to 143, 000 deaths annually from the disease. Though cholera could be an indicator of inequity and lack of social development. It is normally a reflection of socioeconomic inequality within and between nations [5]. It is still of such importance that it considered a disease of public health concern globally. In connection with its tendency to afflict poorer regions and countries, cholera is particularly endemic in countries in the Asian and African regions [6]. The world has experienced seven major pandemics of this disease since the early 19th century. The first six were caused by toxigenic strains of classical (CL) biotype, serotype 01 which was reported to have originated from India, while the current 7th is caused by v. Cholera 01 of the El-Tor (ET) biotype [7,8]. In Africa, majority of cases between early 1990 and 2015 occurred in Angola, Democratic.

Republic of the Congo, Mozambique, Nigeria, Somalia, Tanzania and South Africa. In Nigeria, the first recorded cases of cholera was in a village near Lagos, on December, 1970 with 22,931 cases and 2945 deaths [9].

Following its endemic and serious nature, several approaches have been developed and applied towards combating cholera. One major way of combating the disease is by the use of vaccine.

Vaccine confer protection against germs that cause a disease, by building a strong protection or immunity [10]. Sanitation is another method for combating cholera [11]. Sanitation approach aims essentially at the prevention of an outbreak.

Another important method for dealing with cholera is education. Routinely, both governments and private bodies often sponsor public health information campaigns for promoting policy instruments which aim at encouraging people to change behaviours concerning unhealthy lifestyles [12]. These programmes are based primarily on educating the public about a healthy lifestyle based on healthy eating, daily physical activity and avoiding living in unclean or unsanitary habits [13]. As a public health tool, education serves as a channel for awareness creation, resource mobilization and utilization, and community engagement by being an avenue for knowledge creation and dissemination. The strategic relevance of knowledge in the fight against cholera is evidenced in the important interplay between prevention, preparedness and response, and the existence of an efficient surveillance system. Knowledge of control for cholera refers to the possession of facts and information on the causes, mortality, spread and preventive measures for combating cholera [14]. It results in the formulation of guidelines, case histories and clinical reports on previous outbreaks, which becomes a resource pool for

subsequent cases. By maintaining this balance between prevention, preparedness and response, knowledge serves as a crucial tool for mitigating outbreaks and lowering case-fatality rates [15].

Research and observation of current events have proved that there is a cyclical relationship between education and health. Poor health affects education through school absenteeism, cognitive dysfunction, and learning disabilities while poor education may culminate in low income/resources leading to poor. A study showed significant impact of level of education on the knowledge score in such a way that the higher the educational level, the better the knowledge. The possession of knowledge can also correlate with age. Younger people tend to be more knowledgeable than older individuals [16]. This is more true in developing countries like Nigeria, the reason being that people who could not access formal education at the dawn of Western civilization few decades ago, make every effort to compensate for their knowledge deficits by making sure that their children avail those elements of modernity than were unavailable to them. This creates variations in attitude to and knowledge of cultural differences and historical change. So often, the intergenerational bridge is widened by a digital knowledge gap which can be measured by how people from different age groups use technology. In this connection, studies show that "the younger generation is certainly more "plugged in" than previous generations were (since such technologies didn't exist), and they have more knowledge-hungry at their fingertips" [17].

Thus there exists a knowledge gap between older and younger generations; or between parents and their children, which has just been exacerbated by what has become known as digital divide . Whereas older people are trapped in the thick mud of the analogue era, netizens of the digital age (millennial and newer generations) "obtain all their answers to problems at the click of a mouse or swipe of a finger[18].

Cholera outbreak can be prevented and controlled and these control and preventive measures should be prompt if cholera must be prevented and controlled The strategies in which cholera can be controlled include - avoiding drinking contaminated water and eating undercooked food especially shellfish that is contaminated with [19].

Cholera has remained a threat in Nigeria and the rest of the developing world despite measures to combat it through sanitation, vaccination and awareness creation or education. This shows that probably, something is not right about the approaches to combating it. This is more worrisome in light of the increase in average level of education of members of the Nigerian population in recent decades. Two broad groups consisting of the 'haves' and the 'have-nots' have developed with respect to the possession of digital knowledge in particular, and conventional knowledge in general [20]. It is therefore very opposite to conclude that the success or failure of any programme for combating cholera outbreak through knowledge dissemination might be affected by differences in the possession of knowledge, which itself is an indicator both of differences in the level of education, and difference in age levels. Based on this reality, the present research was given impetus by the need to find out extent of knowledge of control and preventive measures for cholera outbreak across different demographic in Imo State.

Cholera is a severe diarrheal illness caused by infection with *Vibro cholera* bacterium . This measures about 1.4 -2.6um x 0.5 - 0.8um in diameter [21]. Cholera affects people who eats and drink water that is contaminated by faecal material which contains *V*. cholera. The people should be well equipped with adequate knowledge of cholera control and preventive measures so that the level of transmission will be low. By educating the population they will be involved and helped to educate others and this will keep on reducing the level of transmission. World Health Organisation estimates that 1.3 – 4 million people get the disease annually and 21,000 – 143,000 deaths occur annually. Since there are many ways of controlling and preventing cholera 0utbreak, it should not be taking lives. Indeed, insufficient knowledge of cholera transmission, lack of access to clean water and poor sanitation contributes a lot to the transmission of cholera. Since there are many ways of controlling and preventing cholera outbreak it should not be a worrisome issue.

But despite various efforts by public health authorities to control and prevent cholera outbreaks in Imo State, the region continues to experience periodic outbreaks. This persistent issue raises concerns about the level of knowledge and effectiveness of the control and preventive measures in the place. There is a need to investigate the extent of knowledge and awareness among the population regarding cholera control and prevention, as well as to identify potential gaps in the existing strategies.

2 MATERIALS AND METHODS

2.1 Research Design

This study used a cross sectional survey to determine the knowledge of cholera outbreak among residence of Imo State.

2.2 Study Area

This study was conducted on patients and patient relatives from Imo State attending clinic in federal medical centre Owerri, Imo State.

Imo state is located in the south eastern part of Nigeria. It is bounded by Anambra state to the north, Rivers state to the south and west and Abia state to the east. The state has a diverse landscape that includes tropical rainforests, numerous rivers and generally humid climate. Owerri is the capital city of Imo state and serve as its administrative and economic hub

which is surrounded by towns like, Mbaise, orlu and Okigwe. Imo state is populated with over 4 million people. The predominant ethnic group in Imo state is the Igbo people who are known for their rich cultural heritage and traditions. The state is made up of 27 local government area. The State economy is largely based on Agriculture though there is few industries. The primary language is Igbo. English language is also widely used. They are well educated and have tertiary institutions more than any other states in Nigeria. They have so many hospitals and primary health care centres.

2.3 Study Population

This study covers individuals in both urban and rural areas. Both male and female individual were captured. This study cut across ages with approximate of 3.93 million dwellers as recorded by 2006 census conducted Imo State.

3 SAMPLE SIZE

3.1 Sample Technique

Random sampling was used to obtain data.

3.2 Instruments For Data Collection

Data collection for this study was achieved using well drafted questionnaire and oral interview was conducted for those individuals who can not read due to level of education or as a result of sight problem.
Questionnaire and Oral interviews.
The questionnaire will be divided into 5 sections A,B,C,D and E Section
A –will contain the respondent's bio – data
B - Questionnaire and knowledge about cholera
C – contain questions and preventive measures
D – Contains general questions
E - Questions about barriers and suggestions will be here.
I conducted face to face interview using the questionnaires which can help to clarify response and gather more in depth information.

3.3 Validity

This study examined the knowledge of control and preventive measure of cholera outbreak among residence of Imo state by systematically drafting questionnaire which was distributed to individuals residing in Imo state for data recovery. The use of interview was adopted to support the questionnaire among illiterates who were unable to read out what was written and individuals with poor vision. This technique was used to ensure that appropriate sample size was covered thereby capturing different dimensions of knowledge.
I recruited few health personals who I educated to assist me in monitoring effective filling of the questionnaire.

3.4 Reliability of Instrument

The questionnaire was the major tool used here for data collection. It was systematically drafted following close ended questionnaire
All the respondents were closely monitored and questionnaires vetted on return to ensure each person fills the form completely.
Only individuals within the age bracket were permitted to participate. The statistical analysis of the raw data was carefully done using mean and standard deviation.

3.5 Method of Data Collection

A consent form was obtained from Holy Family Hospital Ikenegbu Owerri. Patients at the General Out Patient Department (GOPD) were used for data collection after formal approach and address. Patients consent was obtained and questionnaires distributed.
The form were left with the patients for 2hours to ensure no patient complained of inadequate time. Patients with any form of difficulty in filling the questionaires were assisted to ensure completion of the form. Every patient was encouraged and assured of confidentiality of his/her information.
At the end of the exercise every patient was thanked for compliance.

3.6 Ethical consideration

Ethical approval was obtained from federal teaching hospital Owerri. An informed consent was sort from patients and high level of confidentiality guaranteed to participants.

Method of Data Analysis

Data was carefully collected and analysed using frequency distribution tables, charts, mean and standard deviation to summarize the level of knowledge of control and preventive measures of cholera in Imo state. Inferential statistics (chi-square) was adopted to check the association between demographic factors and level of knowledge of cholera in Imo state

4 RESULTS

4.1 Socio Demographic Characteristics of Study Participants

There were in all 216 persons studied. Their socio demographic characteristics is contained in Table 1 and Table 2.

Table 1 Socio Demographic Characteristics of Study Participants

Socio demographic Characteristics	Freq (n=216)	%
Age (Years)		
Less than 20	36	16.7
20 – 40	46	21.3
41 -60	79	36.6
61 and above	55	25.5
Gender		
Male	110	50.9
Female	106	49.1
Education		
Primary	20	9.3
Secondary	58	26.9
Tertiary	124	57.4
Non formal	14	6.5

Table 2 Continued

Socio demographic Characteristics	Freq (n=216)	%
Marital Status		
Married	137	63.4
Single	69	31.9
Separated/divorced	10	4.6
Occupation		
Artisans	43	19.9
Civil/ Public Servants	46	21.3
Traders/ Business	57	26.4
Farmers	38	17.6
Students	15	6.9
Unemployed	17	7.9
Income level		
Less than N30,000	18	8.3
N31,000-N49,000	49	22.7
N50,000-N99,000	112	51.9
N100,000-N149,000	27	12.5
N150,000 and above	10	4.6

Table 1 and Table 2 shows that 36.6% of the participants were within 46 – 60 years of age, about one quarter were above 60 years old and 16.7% were less than 20 years old. There were slightly more males than females. The males were 110 (50.9%) while the females were 108 (49.1%).

In terms of level of education, more than half of them had tertiary education level (124: 57.4%), while 26.9% and 9.3% respectively had secondary and primary education level. A total of 14 persons (6.5%) did not have any formal education. Majority of the study group were married (63.4%), while 31.9% were singles.

The largest frequency of the respondents were involved in business or trading (57: 26.4%) followed by civil or public service at 21.3%. the unemployed were 7.9% of the group. More than half (51.9%) earn between N50,000-N99,000 in a month. Up to 8.3% earn below N30,000 while only 4.6% earn at least N150,000 in a month

4.2 General Knowledge about Cholera among the Study Group

Table 3 represents the general knowledge about cholera disease among the study group.

It can be seen from table 4.2 that overwhelm majority of the respondents have heard about cholera (98.6%), which is a clear indication that cholera is a common disease in the study area. Also, clear majority showed knowledge that cholera can cause death (93.1%), and can spread through drinking water (93.1%), through food (90.7%) and through toilets (89.8%).

However, over a quarter of the respondents showed poor knowledge by assuming that cholera is caused by witchcraft (25.9%). Also, close to 41.2% do not know that cholera can spread by flies and mosquitoes.

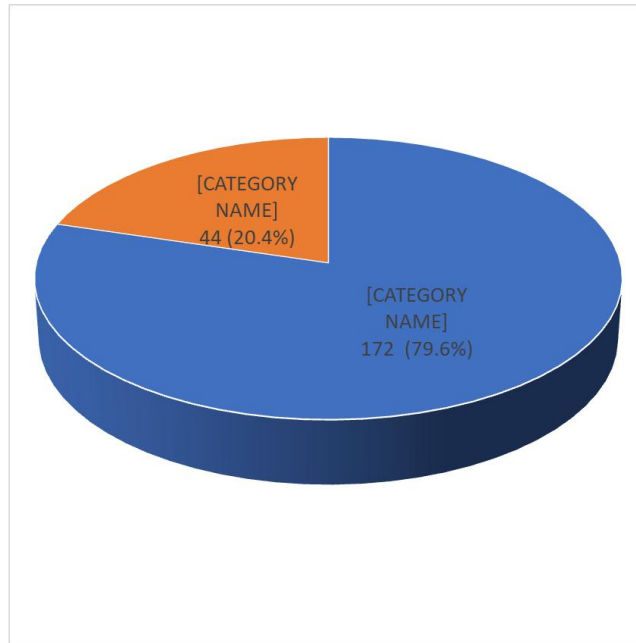**Table 3** General Knowledge for Cholera among the Study Group

Knowledge Assessment Questions	Yes	%	No	%
1. Have you ever heard about cholera?	213	98.6	3	1.4
2 Can cholera spread through drinking water?	200	93.1	16	6.9
3 Is cholera caused by witchcraft?	56	25.9	160	74.1
4 Can cholera spread from food?	196	90.7	20	9.3
5 Can cholera cause death?	201	93.1	15	6.9
6 Can cholera spread from wind (breeze or air)?	83	38.4	133	61.6
7 Can cholera spread through body contact?	83	38.4	133	61.6
8 Can cholera be cured in a person?	199	92.1	17	7.9
9 Can cholera be transferred from one person to another?	82	38.0	134	62.0
10 Can cholera be spread by flies and mosquitoes?	127	58.8	89	41.2
11 Can cholera be contracted through toilets?	194	89.8	22	10.2

Overall general knowledge	172	79.6	44	20.4

Note: All correct answers were divided by 11 (total number of questions) to arrive at the overall knowledge.

## 4.3 The Summary of the General Knowledge

The summary of the general knowledge about cholera indicates that the good knowledge of the disease was found to be high among the study group. In figure 4.1, a total of 172 (79.6%) showed good knowledge while 44 (20.4%) showed poor knowledge.

Figure 1 Summary of the General Knowledge about Cholera among the Study Group

4.4 Source of Knowledge

Figure 4.2 shows that the larges source of knowledge about cholera disease was through relatives (45.2%), followed by the use of social media (31.1%) and healthcare works (23.3%).
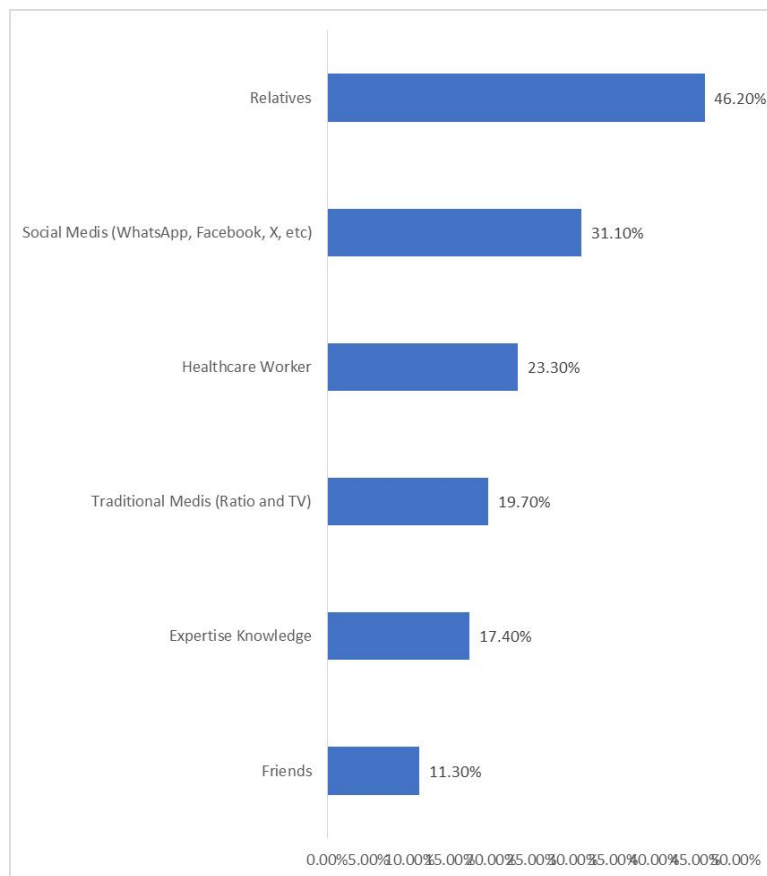
Figure 2 Sources of Knowledge

4.5 Knowledge on Control and Preventive Measures for Cholera

The result contained in table 4 represents the knowledge on control and preventive measures for Cholera among the study group.

Table 4 Knowledge on Control and Preventive Measures for Cholera

Control and preventive knowledge	Yes	%	No	%	Don't know	%
Contaminated water with cholera organism is the source of cholera	183	84.7	13	6.0	20	9.3
Open defecation contribute to cholera Outbreak	189	87.5	10	4.6	17	7.9
Covering of food helps prevent cholera	191	86.1	5	2.3	20	9.3
Going to toilet without washing your hand causes cholera	197	91.2	8	3.7	11	5.1

Poor environmental sanitation contribute greatly to cholera	173	80.1	10	4.6	33	15.3
Homes and environments should be disinfected to control and avoid cholera	165	76.4	13	6.0	38	17.6

Table 5 Continued

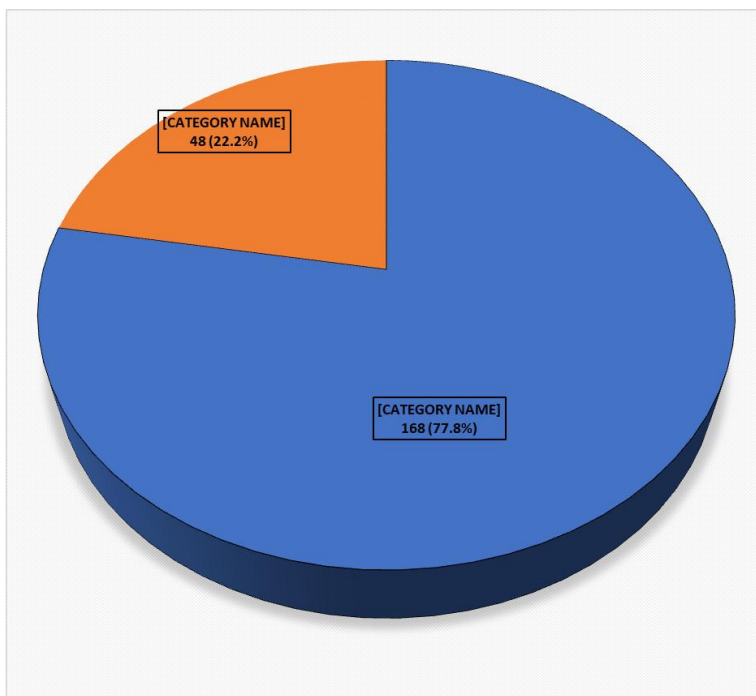| Control and preventive knowledge	Yes	%	No	%	Don't know	%
Food contaminated by flies is the source of Cholera	119	55.1	24	11.1	73	33.8
Improper use and maintenance of toilet (latrine) can cause cholera outbreak	186	86.1	8	3.7	22	10.2
Boiling of water before drinking help reduce the risk of cholera infection	191	88.4	10	4.6	15	6.9
Use of safe water reduce cholera outbreak	196	90.7	4	1.9	16	7.4
Lack of personal hygiene contribute to Cholera	191	88.4	8	3.7	17	7.9
Overcrowding can spread cholera infection	130	60.2	18	8.3	68	31.5
Burial practices for a cholera victim must be of "non-touch technique" to prevent the spread of cholera	111	51.4	15	6.9	90	41.7

From table 4.3, positive responses ('Yes') were high on the assessment of knowledge based on some of the item variables such as "going to toilet without washing your hand causes cholera" (91.2%), ' use of safe water reduce cholera outbreak", (90.7%), Lack of personal hygiene contribute to Cholera" (88.4%), "Boiling of water before drinking help reduce the risk of cholera infection" (88.4%) and others

The knowledge was reduced at the question "Food contaminated by flies is the source of Cholera" with only 55.1% of the respondents responding 'Yes'. Similarly, it was also reduced for "Burial practices for a cholera victim must be of "non-touch technique" to prevent the spread of cholera" at 51.4%.

4.6 Summary of Knowledge on Control and Preventive Measures for Cholera

The summary of Knowledge on control and preventive measures for cholera is represented in figure 4.3, which shows that a total of 168 (77.8%) showed good knowledge of cholera control and preventive measures while 48 (33.3%) showed poor knowledge.

Figure 3 Summary of Knowledge on Control and Preventive Measures for Cholera

4.7 Relationship between Demographic Factors and Knowledge for Control and Prevention of Cholera

The relationship between demographic factors and knowledge for control and prevention of cholera is presented in table 4.4. The table shows that significant association was found between knowledge of control and prevention of cholera with only two sociodemographic variables namely age (p=0.000) and education (p=0.028). For age, knowledge were much better among the advancing age (81% for 40 -60 years and 87.3% for over 60s) compared to the youngest age group (58.3%). In terms of education level attained. The knowledge was best among the tertiary education participants (83.1%), followed by secondary education level (77.6%). It was lowest among those with no formal education at 57.1%.
No evidence of significant association was found in this study between factors of sociodemographic variables with gender, marital status, occupation and income (P>0.05), in this study.

Table 6 Relationship between Demographic Factors and Knowledge for Control and Prevention of Cholera

Socio demographic Characteristics	Total	Good Knowledge		Poor Knowledge		Chi square	P value
Age (Years)		Freq	%	Freq	%		
Less than 20	36	21	58.3	15	41.7		
20 – 40	46	35	76.1	11	23.9		
41 -60	79	64	81.0	15	19.0		
61 and above	55	48	87.3	7	12.7		
Total	216	168	77.8	48	22.2	39.115	0.000

	Gender						
Male	110	89	80.9	21	19.1		
Female	106	79	74.5	27	25.5		
Total	216	168	77.8	48	22.2	1.272	0.259
Education							
Primary	20	12	60.0	8	40.0		
Secondary	58	45	77.6	13	22.4		
Tertiary	124	103	83.1	21	16.9		
Non formal	14	8	57.1	6	42.9		
Total	216	168	77.8	48	22.2	9.113	0.028
Marital Status							
Married	137	108	78.8	29	21.2		
Single	69	53	76.8	16	23.2		
Separated/divorced	10	7	70.0	3	30.0		
Total	216	168	77.8	48	22.2	0.475	0.788

Table 7 Continued

Socio demographic Characteristics	Total	Good Knowledge		Poor Knowledge		Chi square	P value
Occupation							
Artisans	43	30	69.8	13	30.2		
Civil/ Public Servants	46	40	87.0	6	13.0		
Traders/ Business	57	43	75.4	14	24.6		
Farmers	38	28	73.7	10	26.3		
Students	15	13	86.7	2	13.3		
Unemployed	17	14	82.4	3	17.6		
Total	216	168	77.8	48	22.2	5.279	0.383
Income level							
Less than N30,000	18	13	72.2	5	27.8		
N31,000-N49,000	49	37	75.5	12	24.5		
N50,000-N99,000	112	90	80.4	22	19.6		
N100,000-N149,000	27	20	74.1	7	25.9		
N150,000 and above	10	8	80.0	2	20.0	1.141	0.888

5 DISCUSSION

The present study targeted to assess the knowledge of control and preventive measures for cholera outbreak in Imo State. Males and females (male :50.9%, female48.1%) from Imo state aged with different classes of education and occupation were studied of their knowledge of control and preventive strategies of cholera [22].

Clear majority (98.6%) have heard of cholera disease,, Also greater majority showed high knowledge that cholera can cause death. spread through drinking water, through food (90.7%) and through toilets. In all, the overall knowledge about cholera is high (79.6%) in the study area. The high knowledge obtained in the present study is a signal that cholera has been devastating and became a common household disease well known in the study area [23].

Knowledge was high in this study on some of the causes of cholera based on poor sanitation practices such as toilet without washing your hand causes cholera" (91.2%), use of safe water reduce cholera outbreak and (90.7%) and lack of personal hygiene contribute to Cholera (88.4%), similar to this present study, sanitation practices also recorded high knowledge as a cause of cholera disease in another Nigerian study with 93.3% of the respondents in that study [24] .

On the other hand, up to one quarter of the respondents showed poor knowledge by assuming that cholera is caused by witchcraft and many also think that cholera can spread by flies and mosquitoes that signified that many are still misinformed about cholera, similar to this finding, a study in plateau state Nigeria has reported that 14.13% of the study participants believed cholera is a spiritual problem [25].

it could also signify that enough has not been done io penetrate the society on full knowledge about cholera disease. The knowledge score was high for surveillance/laboratory methods, moderate for case management, WASH, and vaccination, and low for coordination.

Significant association was found between knowledge of control and prevention of cholera with and education in this study. Both age and knowledge were also significant [26]. The knowledge in the present study were much better among the advancing age compared to the youngest age group. This is likely considering that the advanced age group are more likely to have greater experience about cholera.

Age was also found as a significant factor of cholera control and prevention in Abuja population but age group below 50 years contributed higher percentage scores than those above 50 years old.. it has been argued that there could be knowledge gap between older and younger generations; or between parents and their children, which has just been exacerbated by what has become known as digital divide [27]. The significant influence of education found in this study was not a surprise finding since education is likely to increase knowledge [28].

No evidence of significant association was found in this study between factors of sociodemographic variables with gender, marital status, occupation and income (P>0.05), in this study. However, it was found gender as a significant factor of cholera prevention practices. It implies that the result may have been affected by the structure of the study population and calls for more investigative studies on these variables.

6 CONCLUSION

Based on the analyzed results, this study found that knowledge of Cholera is improving among the study group yet it need to attain a perfect level for preventing and controlling the disease in the society. Age and Education were found as the major underlying factors undermining the knowledge of Cholera in the study population.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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