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EPIDEMIOLOGICAL PROFILE OF CHOLERA IN ZAMFARA STATE-NIGERIA. "Epidemiological week 4 - week 43-2023".

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Abstract

Cholera remains a global threat to public health and an indicator of inequity and lack of social development.This study was carried out in a Zamfara state. The main objective of this study is to determine the epidemiological profile of cholera in Zamfara State. The study is descriptive and retrospective. Sampling was exhaustive (n=571).571 cholera cases reported (53%) from Anka and (45%) from Talata Mafara LGA and (1%) Maru LGA, (1%) from Bakura LGA (0) Bukkuyum.. The Cholera Rapid Diagnosis Test was done for 25 patients and 9 (36%) came out positive. Lethality rate was 0.7% and the attack rate is 0.26%.cholera is a constant threat to children and adults in Anka LGA and the surrounding area, and spares no one, regardless of age or sex .The cholera mortality rate is less than 1%.

Key-words: Epidemiological profil, Cholera, Zamfara state

PROFIL ÉPIDÉMIOLOGIQUE DU CHOLERA DANS L'ÉTAT DE ZAMFRA AU NIGERIA : SEMAINE ÉPIDÉMIOLOGIQUE 4-SEMAINE 43-2023

Résumé

Le choléra reste une menace mondiale pour la santé publique et un indicateur d'inégalité et d'absence de développement social. Cette étude a été réalisée dans l'État de Zamfara. L'objectif principal de cette étude est de déterminer le profil épidémiologique du choléra dans l'État de Zamfara. L'étude est descriptive et rétrospective. L'échantillonnage était exhaustif (n=571). 571 cas de choléra ont été signalés (53%) à Anka et (45%) à Talata Mafara LGA & (1%) Maru LGA, (1%) Bakura LGA (0) Bukkuyum. Le test de diagnostic rapide du choléra a été effectué sur 25 patients et 9 (36%) se sont révélés positifs. Le taux de létalité était de 0,7% et le taux d'attaque de 0,26%. Le choléra est une menace constante pour les enfants et les adultes de l'AGL d'Anka et des environs, et n'épargne personne, quel que soit l'âge ou le sexe. Le taux de mortalité du choléra est inférieur à 1%.

*Mots-clés : Profil épidémiologique, Cholera, État de Zamfara.*

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I. INTRODUCTION

According to Nigeria Centre for Disease (NCDC), In Nigeria, cholera is an endemic disease that occurs annually, especially during the rainy season. Nigeria has experienced recurrent cholera outbreaks since 1970. The last serious cholera outbreak occurred in 2018, with 42,466 suspected cases and 830 deaths – a case fatality rate of 1.95%. (ACAPS, 2021)

A cholera epidemic has claimed 3,300 lives in Nigeria among some 94,000 patients, most of them in the western state of Niger. The case-fatality rate is 3.5%, which is higher than previous annual epidemics over the last four years. According to OCHA, children aged between 5 and 14 are the worst affected. The OCHA Bulletin notes that the epidemic has spread to 32 of the 36 states, including the capital Abuja, but the north remains the worst affected area, accounting for almost 90% of all suspected cases, and in particular the states of Bauchi, Kano, Zamfara and Jigwa, which account for almost 60% of suspected cases. Poor sanitation and health practices, as well as the consumption of contaminated water, are some of the main factors behind the current epidemic, according to the UN's humanitarian coordination. "The rainy season and subsequent flooding have also aggravated the situation", OCHA points out, noting that the unstable security situation is hampering access for humanitarian and health workers and the provision of vital aid (Oicha, 2021).
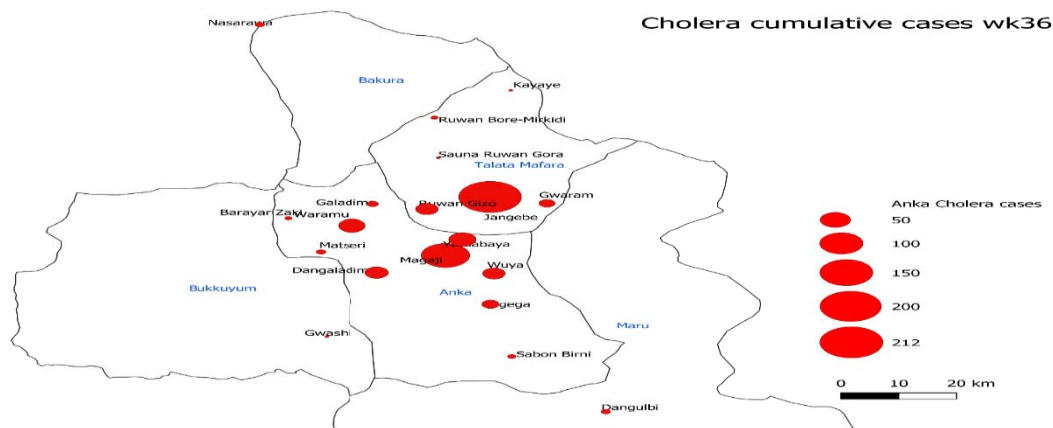
Anka has had a several cholera outbreak experience in 2010, 2014, 2018, and 2022 respectively, and claimed several lives from the outbreak. In early 2023 Nigeria Center for Disease Control (NCDC) declared Zamfara state as one of the cholera hotspots. Medécins Sans Frontières (MSF) has been in Anka responding to many medical issues including outbreaks of diseases of public health concern, in late June 2023, suspected cholera cases

were presented to the MSF facility, and following the Rapid Diagnosis Test (RDT) test one out of five turned out to be positive, hence, developing this strategy to contained and prevent the outbreak.

Cholera still among major public health problems in Anka Local Government Area, as the displaced populations lead a lifestyle that puts them at risk of developing cholera during the rainy season, because they drink dirty, untreated water, not forgetting the open defecation.

MAIN OBJECTIVE

The main objective of this study is to determine the epidemiological profile of cholera in Anka-Local Government and its surrounding area.

SPECIFIC OBJECTIVES

-Determine the gender and sex the most affected by cholera in Anka Local Government area and its surrounding area,

-Determine the age group the most affected by cholera in Anka Local Government area and its surrounding area,

- Determine the Lethality rate and attack rate of cholera outbreak in Anka Local government area and its surrounding area,

-Determine the attack rate of the cholera outbreak in Anka Local Government rea and its surrounding area,

II. METHODOLOGY

Framework of the study

Our study was carried out in a Anka LGA-Zamfara state/Nigeria where the population is estimated at 221,136.

Type and period of study

We conducted a descriptive, retrospective and descriptive study on the description of cholera epidemic response data (From 4th -36th Epidemiological Week-2023).

Study population and sampling

The study population was composed of all patients admitted in Cholera Treatment Unit(CTU)-Anka-Zamfara LGA for Cholera during the period of our study(Epidemiological Week 4-W36) . Sampling was exhaustive (n=571), i.e. all confirmed

cases (0) and suspected cases (571) of cholera recorded in the data-base of the cholera outbreak   response   team.   .

Inclusion criteria

All cholera cases admitted to the Cholera Treatment Unit in Talata Mafara during the study period and meeting the conditions of the cholera case definition were included in the study.

Cholera Case definition

According to World Health Organization, Cholera cases are detected based on clinical suspicion in patients who present with severe acute watery diarrhoea. The suspicion is then confirmed by identifying *V. cholerae* in stool samples from affected patients. Detection can be facilitated using rapid diagnostic tests (RDTs), where one or more positive samples triggers a cholera alert. The samples are sent to a laboratory for confirmation by culture or Polymerase chain reaction (PCR). Local capacity to detect (diagnose) and monitor (collect, compile, and analyse data) cholera occurrence, is central to an effective surveillance system and to planning control measures (WHO, 2021).

Data collection procedure and tools:

Data were collected during October 2023 using the database of the Anka cholera response team. A total of 571 patients had cholera and were treated at the Cholera Treatment Unit (CTU) in Anka General Hospital.

Study variables

The data collected concerned: age, sex, origin (LGA), final classification, Discharge modality.

Data processing and statistical analysis

The database was cleaned. The data were entered and analysed using Excel software, but the quantitative variables were expressed as averages and percentages.

Lethality and attack rate were calculated. SPSS software (Statistical Package Social Sciences) version 26 was used for data analysis.

Ethical considerations

The present study obtained the ́approval of the state health and ethics authorities. The data were stored on a computer and protected by a password. The data were kept anonymous and managed exclusively using the unique identification number assigned to the patient on inclusion in the ́study.

II. RESULT

Table i. Median age of patients by wards
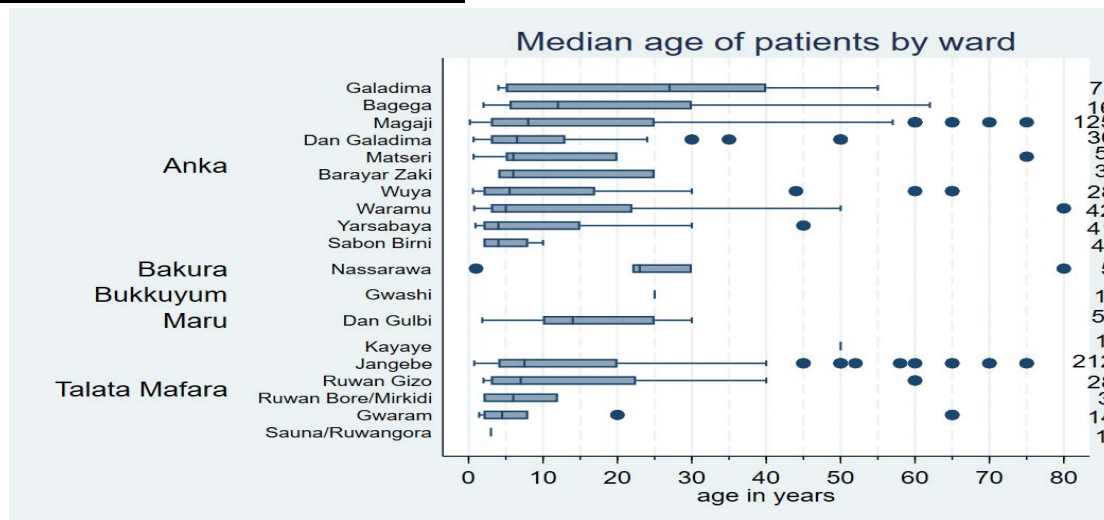
Median age was 7 years, IQR 3 - 22yrs. Age ranges between 2 months to 80 years. 67% of patients were under 15 years.

Table II.: Basic characteristics of cholera patients

characteristics	Number (%)
Total reported cases	571 (100)
reported cases by Epiweek	
wk4	1 (0)
wk21	5 (1)
wk31	2 (0)
wk33	32(6)
wk34	113 (20)
wk35	184 (32)
wk36	234 (41)
Report by LGA and Ward	
Anka LGA	**301 (53)**
Magaji ward	*125 (42)*
Waramu ward	*42 (14)*
Yarsabaya ward	*41 (14)*
Bagega ward	*16 (5)*
Dan Galadima ward	*30 (10)*
Wuya ward	28 (9)
Talata Mafara LGA	**259 (45)**
Jangebe ward	*212 (82)*
Gwaram ward	*14 (5)*
Ruwan Gizo ward	*28 (11)*
Age group	
<5 years	200 (35)
5-14 years	185 (32)
15-49 years	146 (26)
>=50 years	40 (7)
Sex, female	315 (55)
Cholera RDT test result	n=25
Positive	9
Negative	16
Exit status	
Discharge home	362 (63)
Died	4 (1)
No exit status data	571)

571 cholera cases reported (301 (53%) from Anka and 259 (45%) from Talata Mafara LGA & 5(1%) Maru Local Government Area (LGA), 5 (1%) from Bakura LGA & 1 (0)

Bukkuyum. A continuous increasing trend of cholera cases week after week. Report in Wk36 is the highest as compared to the previous weeks. 234(41%) of all cases reported in week 36 alone. 558 (98%) managed at Cholera Treatment Unit and the remaining 11 (2%) at oral rehydration point. Cholera Rapid diagnosis Test was done for 25 patients and 9 (36%) came out positive.No culture/PCR(polymerase chain reaction)result so far.4 patients died, 3 females and 1 male.3 from Magaji and 1 Gwaram (Talata Mafara Local Government Area) .Age: 1, 6, 45 & 55 years old. 2 died in week 36, 1 in wee k33 & 1 in week34.Two adults died same day of admission from Magaji. the other two in 1 and 2 days of admission.In Anka Local Governemnt Area (LGA), 238 (79%) of cases came from four wards: Magaji, Waramu, Yarsabaya & Dangaladima. In Talata Mafara, 212 (82%) of cases came from Jangebe ward.

IV. DISCUSSION

571 cholera cases reported (301 (53%) from Anka and 259 (45%) from Talata Mafara LGA & 5(1%) Maru LGA, 5 (1%) from Bakura LGA & 1 (0) Bukkuyum.Anka LGA is the most affected because there are more than 34 IDPs camp where hygiene is not good and they have an easy access to free care provided by MSF, which support in Anka Town one Out patients Department (OPD) very closer to the biggest Internal Displaced Populations (IDPs) camps and the Anka General Hospital Cholera Treatment Unit. For example in Wuya where the first case were reported, patients could not reach Anka due to the insecurity on the road, geographic barrier (They have to cross-big river by canoe) and poverty. MSF could not reach the area, but the local government tried to manage their cases even if there was many community death reported. The socio-economic situation in the northern states is dire, with high levels of poverty. The health outcomes are poor, reflected by high levels of under-five mortality (158 per 1,000 live births. (Unicef, 2021), and high levels of under-five malnutrition (31.9% stunted, 8.4% wasted) (GNR, 2021).

The living conditions in Anka and the villages in its catchment area are characterised with poor living standards, including poor hygiene conditions and lack of safe Wash facilities. This is the results of open defecation in an area where many households rely on surface water as their source of drinking water. The surrounding area around Anka town is remote, with small scattered villages, some with access problems in terms of rivers and long distances without available or affordable transportation. Anka town is also hosting a fluctuating number of IDPs residing in a camp for periods at a time due to village raids and insecurity. The insecurity in the area in relation to banditry and violence from armed groups are further acting as an access challenge, both for health care workers to access the affected areas, and the patients to reach health care facilities.

Cholera has been seen as intermittent outbreaks in Nigeria since the first recorded outbreak in 1972. The northern part of Nigeria, including North West, is known to be

endemic for cholera infection, especially around rainy season, with Zamfara having more aggressive Attack Rates (AR) than the rest of the country. The ongoing climate changes are said to increase the frequency and AR of cholera, as global warming creates a favourable environment for the bacteria. Each year in the rain season in Zamfara state, we use to have cholera cases even few but it is like a must. For the year 2023, the population movement due to the insecurity increased the risk of cholera outbreak.

Based on most recent projected population count from 2020, Anka and its surrounding is estimated at 221.136, the attack rate was estimated to 0,02%, for the finding of study done by Kelly Osezele Elimian and all, the overall attack rate during the outbreak period was 127.43/100,000 ,specifically, Zamfara (175.08/100,000 population) and Bauchi (134.65/100,000) states recorded higher ARs compared to other states such as Jigawa with an AR of 0.24/100,000 population. CFRs (Cholera fatality Rate) were generally high across all affected states, with about 70% of these states recording higher CFRs above the national figure of 1.90%. Notably, states from north-central recorded the highest CFRs [7.84% in Kogi and 7.04% in Nasarawa] (Osezele,2018) which is also higher than our finding (CFRs is 1.1%).This is due to the good quality of the response to the outbreak: Good Health Promotion(Awareness), ORP(Oral rehydration point) in each cholera hot spot, Water chlorination, good IPC in CTU, good Watsan team, competent medical team and availability of drugs needed ,good team of surveillance and notification, coordination meeting organized weekly,…but only the result of samples taken never been given to the team till now.

A continuous increasing trend of cholera cases week after week. Report in Wk36 is the highest as compared to the previous weeks. The increase of cases in Week 36 is due to the Health promotion action awareness about cholera in the community and implementation of ORP(ORS rehydration point) in all locations affected. 234 (41%) of all cases reported in week 36 alone. 558 (98%) managed at CTU and the remaining 11 (2%) at oral rehydration point. RDT was done for 25 patients and 9 (36%) came out positive. No culture/PCR result so far. Sample were taken and sent to Zamfara state laboratory for analysis but any feedback till now , we managed to consider all patient meeting cholera case definition as cholera cases, we did only Cholera RDT test for the 25 patients. 4 patients died, 3 females and 1 male. 3 from Magaji and 1 Gwaram (Talata Mafara LGA) .Age: 1, 6, 45 & 55 years old. 2 died in week 36, 1 in wk33 and 1 in week34.Two adults died same day of admission from Magaji.

In Anka LGA, 238 (79%) of cases came from four wards: Magaji, Waramu, Yarsabaya & Dangaladima. In Talata Mafara, 212 (82%) of cases came from Jangebe ward.

55% of patients were female for our study. But according to Umoh JU and al, finding, Cholera infection rate, sex and age distribution and seasonality are not constant. In 1982,

Katsina, Nigeria, was affected by an outbreak of gastroenteritis associated with *Vibrio cholera* serotype ′Ogawa′ (Umoh, 1983).

In our study, Median age was 7 yrs, IQR 3 - 22yrs. Age ranges between 2 months to 80 years. 67% of patients were under 15yrs.

CONCLUSION

This study was about Epidemiological profile of cholera in Zamfara state-Nigeria (epidemiological week 4 - week 43-2023). cholera is still a public health problem in zamfara state in general, because every year in the rain season, cholera cases are detected and most of the time from internal displaced populations camps due to bad hygiene conditions. the outbreak were declared very late because the first case was seen in w4 but outbreak declared in w33, which is due to the delay in making decision by state ministry of health. According to the study, cholera is a constant threat to children and adults in Anka local government area and the surrounding area, and spares no one, given the precarious living conditions of the population, who are forced to leave their home areas for the displacement camps because of growing insecurity. The study is descriptive and retrospective. Sampling was exhaustive (n=571). 571 cholera cases reported (53%) from anka and (45%) from talata mafara lga and (1%) maru Local Government Area , (1%) from bakura lga (0) bukkuyum.. the cholera rapid diagnosis test was done for 25 patients and 9 (36%) came out positive. lethality rate was 0.7% and the attack rate is 0.26%. cholera is a constant threat to children and adults in anka lga and the surrounding area, and spares no one, regardless of age or sex .the cholera mortality rate is less than 1%. we recommend to the government should bring peace to the state of Zamfara, where the population is forced to flee their villages to live in IDPs camps where hygiene conditions are precarious, exposing them to handkerchief disease. only peace could enable humanitarian workers to gain access in order to help people who have no access to healthcare.

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APPENDIX

LIST OF ABBREVIATIONS

ACAPS: Assessment Capacities Project"
AR: Attack Rate

CFR: Cholera Fatality Rate

IDP: Internal displaced population

IQR: Interquartile range

LGA: Local Government

MSF: Médecins Sans Frontières

NCDC: Nigeria Centre for DiseaseControl

OCHA: United Nations Office for the Coordination of Humanitarian Affairs

OPD: Outpatients Department

ORP: Oral Rehydration Point

PCR: Polymerase Chain Reaction

RDT: Rapid Diagnosis Test

UN: United Nations