



FACULTY OF HEALTH SCIENCES

DEPARTMENT OF COMMUNITY & PUBLIC HEALTH

DESSERTATION REPORT

FACTORS ASSOCIATED WITH A CHOLERA OUTBREAK

AMONG ISLAND COMMUNITIES IN NAMAYINGO

DISTRICT, 2023: CASE CONTROL STUDY

BY

AUJO DEBORAH

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This Research Dissertation is submitted to the Directorate of Graduate Studies, Research and Innovation, in partial fulfilment of the requirements for the degree of Master of Science in Infectious Disease Field

Epidemiology of Busitema University

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DECLARATION

I, **Aujo Deborah** do hereby declare that the information presented in this research mini-thesis is my own work and has never been presented to any University or institute of higher learning for any award(s).

Signature 

Date 01st August 2025

This dissertation has been submitted in with my approval as university supervisor:

Professor Peter Olupot-Olupot

Clinical and Infectious Disease Epidemiology

Busitema University



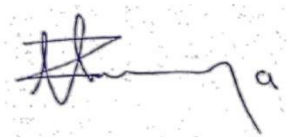
Signature..... Date 01st August 2025

Professor David Mukunya

Associate Professor

Clinical and Infectious Disease Epidemiology

Busitema University



Signature Date 04th August 2025

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LIST OF ACRONYMS AND ABBREVIATIONS

AFRICA CDC	Africa Centers for Disease Control
AMR	Antimicrobial Resistance
EDCTP	European Developing Countries Clinical Trials Partnership
GTFCC	Global Task Force on Cholera Control
HIV	Human Immunodeficiency Virus
IDEA	Infectious
MoH	Ministry of Health
OCV	Oral Cholera Vaccine
PCR	Polymerase Chain Reaction
WASH	Water Sanitation and Hygiene
WHO	World Health Organisation

OPERATIONAL DEFINITIONS

Cholera-endemic area An area where a confirmed cholera case, resulting from local transmission, has been detected in the last three years. An area can be defined as any subnational administrative unit including state, district or smaller localities

7-1-7 metric analysis is a framework developed by the World Health Organisation to improve early detection and response to public health threats. The first 7 days refers to 7 days to detect the threat from the time it emerges, 1 day indicates one day for notification and the last 7 days refers to initiate effective response.

ABSTRACT

Background to the study

Uganda is among the countries targeted by The Global Task Force on Cholera Control for cholera elimination by 2030. However, cholera outbreaks persist, particularly in vulnerable fishing communities, which contributed 58% of the Cholera cases in Uganda between 2011 and 2015. Namayingo District, located in eastern Uganda, has experienced recurrent outbreaks.

Objective of the study

This study aimed to understand the factors associated with the cholera outbreak in Namayingo District to inform targeted interventions and sustainable control measures.

Methodology

A case-control study was conducted on Sigulu and Bukana Islands in Namayingo District to investigate factors associated with cholera outbreak. Initially designed as a matched case-control study, matching was not maintained due to incomplete and inconsistent data; therefore, analysis proceeded as an unmatched case-control study. Cases and controls were randomly selected in a 1:3 ratio. A suspected *case* was defined as a person aged ≥ 2 years presenting with acute watery diarrhea and severe dehydration or death from acute watery diarrhea. *Confirmed cases* were those with *Vibrio cholerae* O1 or O139 detected by culture or PCR. *Controls* were residents of the same subcounties who presented with cholera-like symptoms but tested negative for cholera.

Data were collected using standardized case investigation forms, and a review of outbreak-related documents including surveillance summaries, situation reports, and spot check reports compiled by the Namayingo District Health Team and Ministry of Health during the 2023 cholera outbreak. Bivariate analysis was conducted using Fisher's exact tests. Due to quasi-complete separation in some variables and small sample bias, Firth logistic regression was applied at the multivariate level to estimate adjusted odds ratios and 95% confidence intervals. Data analysis was conducted using R open source software 2024.12.1+563.

Study results

A total of 17 cholera cases (6 confirmed cases of *Vibrio cholera*, serotype 01 ogawa and 11 suspect cases meeting the national suspect case definition) were identified. There was no reported cholera death. The mean age of the cases was 20 (SD 16.9). Both sexes were affected. However, 77% of the cases were female with an overall attack rate of 11 per 100,000 population. Cases were spread between Sigulu Island and Bukana Sub County. 82.4% of the cases (14 cases) were clustered in Secho Village located in Sigulu Island, with a localized attack rate of 74 per 100,000. Among the variables analyzed, occupation, and water treatment were significantly associated with being a cholera case. Compared to fisherfolk, students had a significantly higher odds of cholera infection (aOR = 8.4, 95% CI: 2.1–33.7). Residents in Sigulu had 6.4 times higher odds of cholera infection (aOR =6.4 95% CI: 1.5–37.7). The odds of getting cholera were reduced by treatment of drinking water with any means (aOR =0.17, 95% CI: 0.05–0.55, $p = 0.038$)

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