

Epidemiological Investigation of a Cholera Outbreak in Mpulungu District, Northern Province, May 2023

P1-B23

Ante Mutati^{1,2}, Nawa Mukumbuta³, Lwito S. Mutale^{1,2}, Dabwitso Banda^{1,2}, Sebastian Hachizovu⁴

¹Ministry of Health, Zambia, ²Zambia National Public Health Institute, ³Levy Mwanawasa Medical University, Lusaka, Zambia, ⁴Tropical Disease Research Center, Ndola, Zambia

The study showed that the cholera outbreak affected all age groups, especially in fishing camps with poor sanitation. Drinking untreated water worsened the outbreak. The absence of cases during vaccine-effective periods highlighted the critical role of vaccination and ongoing monitoring.

BACKGROUND

In April 2023, a cholera outbreak in Mpulungu District, Zambia, resulted in 129 cases and three deaths, linked to poor water, sanitation, and hygiene conditions.

The study examined the outbreak's epidemiology, vaccine coverage, and prevention strategies, focusing on vulnerable fishing camps and the district's porous border with Tanzania

METHODS

The study analysed a cholera outbreak in Mpulungu using a case-control design with 88 cases and 268 controls.

Data on demographics, vaccination, and infection sources were analysed in R Studio.

The goal was to identify risk factors and improve cholera prevention at community and District levels.

RESULTS

The median age of cases was 9 years, while controls had a median age of 29. Females made up 53.4% of cases and 63.1% of controls. Most cases were from Mpulungu mainland (67%) and Kapembwe fishing camp (23%)

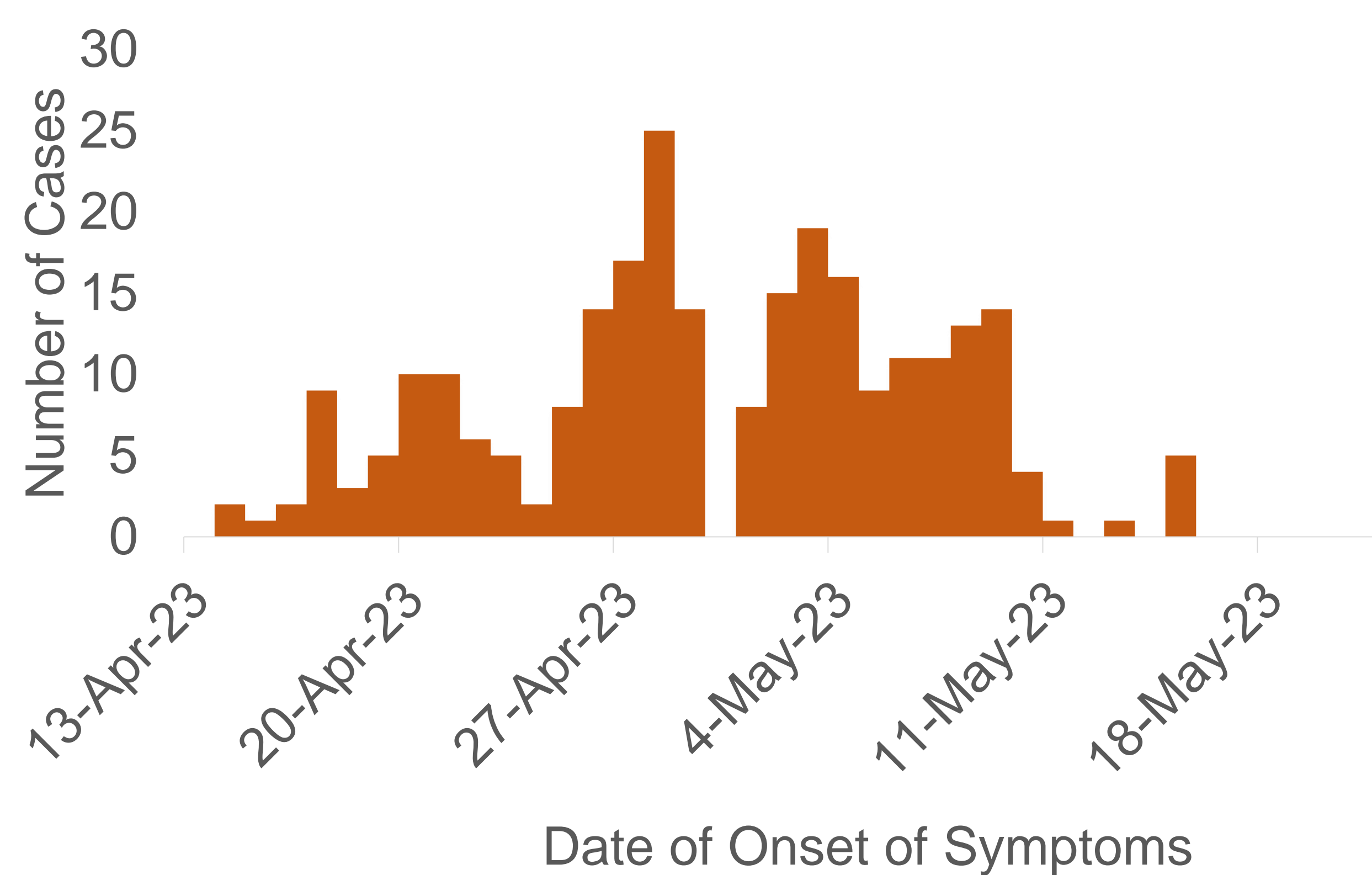


Figure 1. Epidemiological curve showing cholera cases by date of onset of symptoms-Mpulungu District in Northern Province, Zambia May 2023

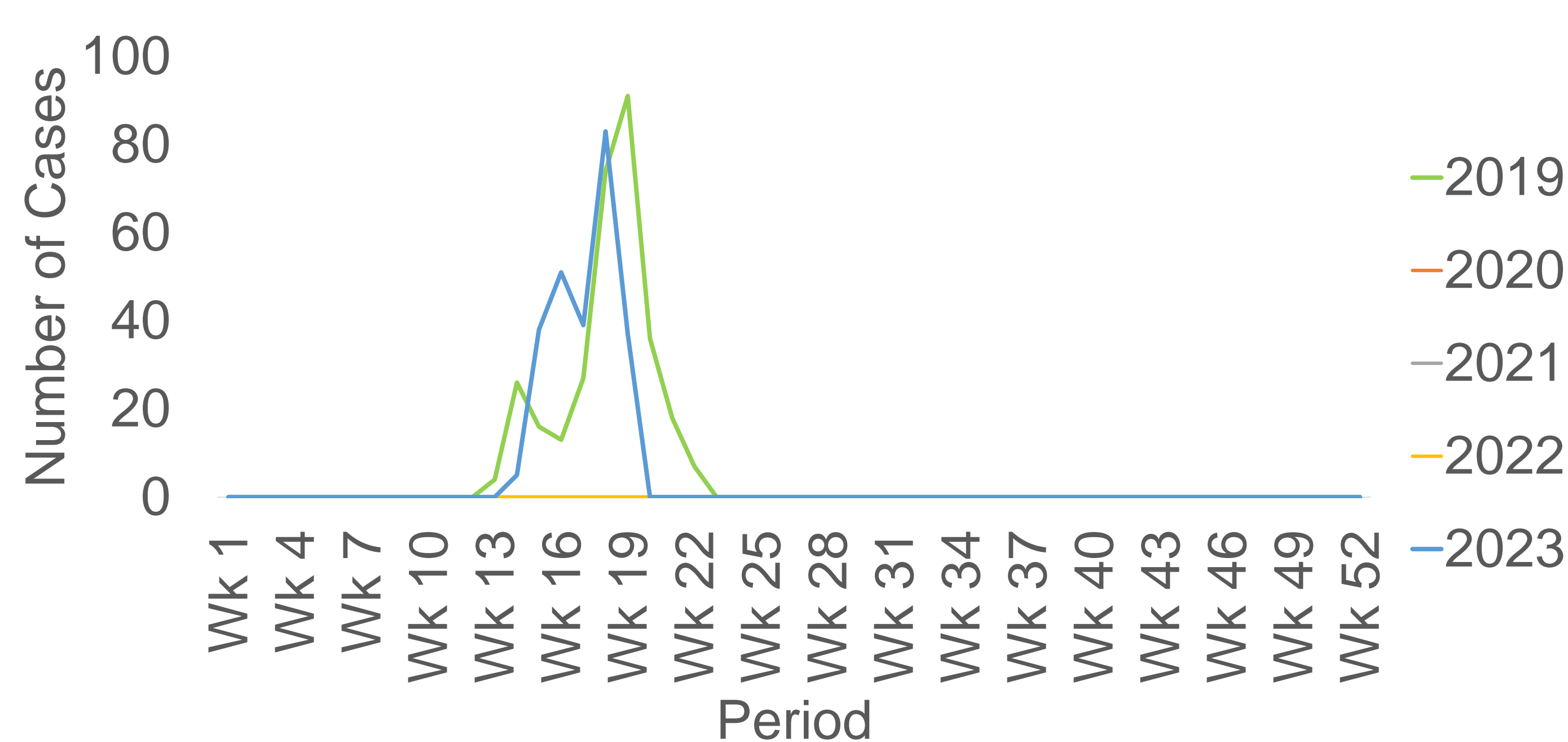


Figure 2. Trend of Cholera outbreak in Mpulungu District 2019 to 2023

RESULTS CONTINUED

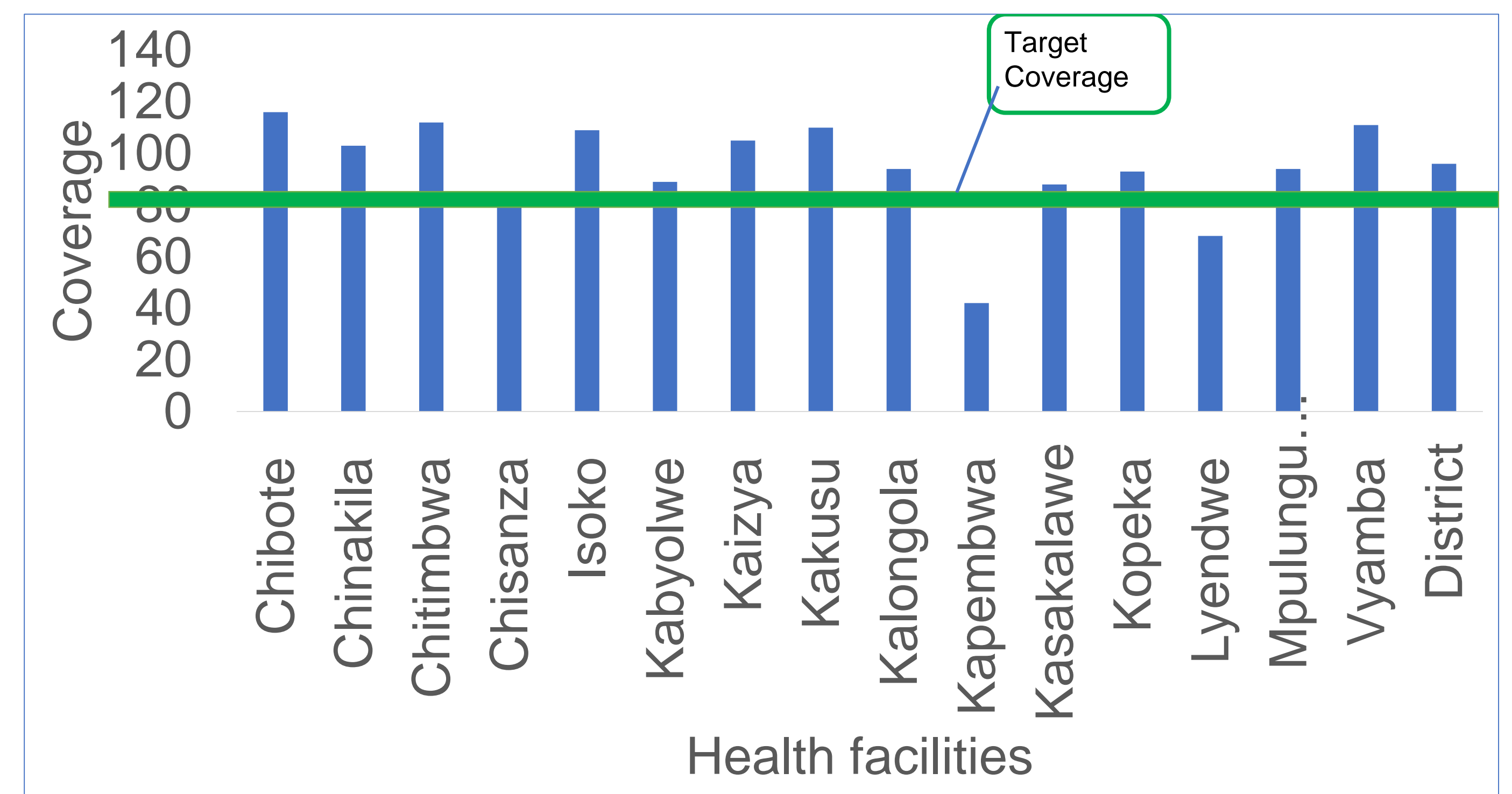


Figure 3. Cholera Vaccination Coverage in Mpulungu District, 2019

Table: Risk Factors Associated with Cholera outbreak in Mpulungu, 2023

Characteristics	AOR	95% CI	p-value
Age Group			
≤5	Ref		
6-15	0	0.00, 0.13	0.007
16-25	0	0.00, 0.00	<0.001
26-35	0	0.00, 0.01	<0.001
36-45	0	0.00, 0.01	<0.001
46-55	0	0.00, 0.11	0.005
56-65	0.02	0.00, 1.23	0.079
66+	1.9	0.02, 172	0.051
Occupation			
Unemployed	Ref		
Fisherman	5.27	1.04, 30.6	0.052
Fish_trader	0.75	0.09, 6.10	0.8
General_trader	2.68	0.39, 17.1	0.3
Farmer	0.04	0.00, 3.10	0.3
Fishing Camp			
none	Ref		
Chezi	0.37	0.00, 146	0.8
Ilata	58.9	1.59, 2,022	0.022
Kalala	1.18	0.10, 11.1	0.9
Kapembwa	1.74	0.44, 7.00	0.4
Contact Fish Trader			
no	Ref		
yes	3.06	0.94, 10.5	0.067
Drink untreated water			
no	Ref		
yes	7,053	404, 463,307	<0.001

CONCLUSIONS

The cholera outbreak primarily affected fishing communities, with women, fishermen, and traders most impacted. Poor sanitation and drinking untreated water contributed to its spread. Periods without cholera coincided with effective vaccination programs, highlighting the importance of vaccines. Ongoing monitoring of vaccine efficacy is crucial for preventing future outbreaks.

REFERENCES

- FMoH (2019) 'Technical Guidelines for Integrated Disease Surveillance and Response in Zambia', In: Department E, editor. Lusaka 2014. p. 377., pp. 1-439. Available at: https://www.ncdc.gov.ng/themes/common/docs/protocols/4_1476085948.pdf.
- Global Task Force on Cholera Control, 2011. Cholera country profile: Zambia, Geneva: WHO.
- Ministry of Health, 2020. Technical Guidelines for Integrated Disease Surveillance and Response in Zambia, Lusaka: MoH.

CONTACTS

Email: an.mutati@gmail.com Phone: +260977476653

FUNDING SOURCES

AFENET, US CDC; Zambia National Public Health Institute

ACKNOWLEDGEMENT

MoH, AFENET, ZNPHI, LMMU, US CDC; TDRC