



An assessment of the emergency response among health workers involved in the 2010 cholera outbreak in northern Nigeria

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Received 19 March 2012; received in revised form 16 May 2012; accepted 28 June 2012

KEYWORDS

Cholera;
Emergency response;
Healthcare workers;
Nigeria

Summary

Background: The 2010 cholera outbreak in northern Nigeria affected over 40,000 people, with a case fatality rate (CFR) of $\geq 3.75\%$. We assessed the emergency response of health care workers (HCWs) involved in case management.

Method: This was a cross-sectional study with data collected through a self-administered questionnaire. Data entry and analysis were performed using Epi info software.

Results: A total of 56 HCWs were interviewed. The mean age was 31 years (SD ± 8.16 years). The majority of the HCWs (80%; $n = 45$) were aged 18–39 years. Most were community health extension workers (60%), and 3.6% ($n = 2$) were medical doctors. Many of the HCWs had less than 2 years of work experience (42%). Additionally, 82% of the respondents had <1 week of cholera emergency response training, and 50% of the HCWs managed >20 suspected cases of cholera per day. Although 78% of HCWs

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reported the practice of universal safety precautions, 32% ($n=18$) knew HCWs who developed symptoms of cholera during the epidemic, most of which was believed to be hospital acquired (78%). We also found that 77% ($n=43$) of HCWs had no access to the required emergency response supplies.

Conclusion: Inadequate training, a lack of qualified HCWs and a limited supply of emergency response kits were reported. Therefore, the government and stakeholders should address the gaps noted to adequately control and prevent future epidemics.

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Introduction

Cholera is a diarrheal disease caused by infection of the intestine with the bacterium *Vibrio cholerae* type O1 or O139 in children and adults, with variability in the type and severity of symptoms among those infected. Acute watery diarrhea was observed in approximately 20% of cases, and in an additional 10–20%, severe watery diarrhea with vomiting was observed. In the absence of active case management, severe dehydration can result from the rapid loss of a large quantity of fluids and salt [1].

V. cholerae is typically transmitted through the fecal–oral route from contaminated water and food. A persistent risk of cholera has been observed in some areas, and sporadic attacks occur throughout the world, particularly in areas where there are challenges related to water supply, sanitation, food safety and hygiene [1]. However, in the developing world, cholera is a key indicator of a lack of social development, and it remains a key public health concern [1].

Cholera epidemics in Nigeria can be traced back to 1961, but the first major epidemic, affecting 22,931 people with 2945 deaths and a CFR of 12.8%, was reported in 1971. However, between 1973 and 1990, there were minimal reports of cholera cases across the country. In 1991, another massive wave occurred, affecting 59,478 people with a CFR of 12.9%, predominantly in northern Nigeria. A review of the cholera cases observed from 1991 to the present suggests that cholera has become endemic in Nigeria. The major risk factors identified are poor access to a safe water supply, poor access to proper sanitation facilities and chronic malnutrition [2].

The 2010 cholera epidemic in Nigeria is believed to be one of the worst cholera outbreaks in Nigeria in 20 years. This outbreak was reported to have affected over 40,000 Nigerians by October 2010, resulting in ≥ 1500 deaths and a case fatality rate (CRF) of $\geq 3.75\%$ [3]. The north-eastern region of the country was the most affected. The Red

Cross in Nigeria reported that over 80% of those affected were women and children. The World Health Organization (WHO) attributed the unusually high cholera incidence to seasonal factors combined with poor hygiene conditions and population movements in the area, which are regularly affected by small outbreaks [3].

In response to this outbreak, the Nigerian Institute of Medical Research Emergency Response Team (NIMRERT), Yaba, Nigeria, visited the three north-eastern states of Bauchi, Borno and Gombe to support the states' efforts at controlling the outbreak (by providing relief materials). The team also assessed the epidemics with an evaluation of public health interventions for the outbreak and provided research support for the laboratory evaluation, isolation and typing of the circulating strains of *V. cholerae* in this region [4].

It is pertinent to reiterate that in a controlled cholera epidemic, the CFR should not exceed 1% [1]. Therefore, a CFR in excess of 1%, as in most African states, suggests a failure in the case management of those infected, poor provision of water and sanitation and a dearth of emergency response and preparedness to contain the epidemic.

The current responses to cholera outbreaks tend to be reactive, taking the form of an ad hoc emergency response. This approach may mitigate the associated mortality, but it fails to prevent cases of cholera because controlling a cholera epidemic requires the prompt medical treatment of cases. Therefore, a balanced orchestration of prevention, preparedness and response activities is required in an efficient surveillance system. This is paramount in preventing a future occurrence and controlling outbreaks [1].

Therefore, the above discourse formed the rationale for this study, which aimed to assess the emergency response of healthcare workers involved in the case management of individuals involved in this epidemic in the health facilities visited by the emergency response team during the epidemics in the aforementioned 3 north-eastern states of Nigeria.

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