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Cholera Outbreak in Addis Ababa, Ethiopia: A case-control study

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Background: Cholera remains a significant public health problem in more than one-third of the countries of the world. Cholera outbreak has become more common in Addis Ababa particularly in the rainy seasons; however, there is a paucity of data on risk factors associated with cholera outbreaks rendering interventions difficult. We investigated the outbreak to identify its etiology, source, risk factors and to control the outbreak.

Methods: We compared cases with health facility-based unmatched controls (1:2). Cases were patients aged ≥ 5 years with acute watery diarrhea, with or without vomiting while controls were persons aged ≥ 5 years without history of acute watery diarrhea. We interviewed our study participants using structured questionnaire to collect demographic and cholera risk factors data. We described the outbreak over time, and then tested our hypotheses using unconditional logistic regression.

Results: The outbreak began on 7 September 2017 reaching its peak on 23 September 2017 and ended on 01 October 2017. We identified a total of 25 cases (Median age: 38 years; IQR: 20 years) and recruited 50 controls (Median age: 35 years; IQR: 29 years). All case-patients had acute watery diarrhea and dehydration requiring intravenous fluids, with admission to cholera treatment centers but there were no deaths. Stool and water samples yielded isolates of *Vibrio cholerae* O1 of serological subtype Ogawa. Consumption of contaminated holy water (AOR: 21.81, 95%CI: 2.34, 203.10) and raw vegetables (AOR: 16.15, 95%CI: 2.52, 103.72) were independent risk factors whereas washing hands with soap after visiting latrine (AOR: 0.06, 95%CI: 0.008, 0.47) was independent protective factor.

Conclusion: Our findings demonstrated cholera foodborne transmission via consumption of raw vegetables, and its waterborne transmission via consumption of contaminated holy water. Washing hands with soap after visiting latrine was protective. We recommended cooking of vegetables and promoting hand washing.