Abstract

Food-borne Illness Surveillance and Etiology of Diarrhea in Bangladesh

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Abstract

Background: In Bangladesh, yearly 30 million people are affected by foodborne illnesses caused by Rotavirus, Vibrio cholerae, Escherichia coli, Shigella and Salmonella. Since 2013, the country has been conducting active foodborne illness surveillance (FBIS) in ten sentinel sites to collect epidemiological data and stool samples of acute watery diarrhea (AWD) cases.

Objective: To describe the microbiological findings of stool samples and their relation with epidemiological data of FBIS.

Methods: We described AWD cases reported in FBIS from 2014 to 2015 by age, causative organisms and analyzed cholera cases by behavioral risk factors and geographic area. FBIS defined AWD cases as >3 episodes of loose stools or <3 loose stools causing dehydration or at least a single episode of bloody loose stool in 24 hours among >2 months of age, and watery stools that changed from usual pattern and frequency among <2 months of age. To find statistical association, we performed z-test for two proportions.

Results: Among 4,064 enrolled AWD cases, stool culture identified 8% of cases as cholera, 3% ETEC, 2% shigella, and 1% salmonella. Microbiological test could not identify any specific organism in 86% of samples. Median age of cholera cases was 27 years (IQR: 18-40), ETEC 23 years (IQR: 1.7-42.5), salmonella 36 years (IQR: 25-50), shigella 19 years (IQR: 1.9-40), and no-organism 2.5 years (IQ: R0.9-33). Both proportions of cholera (23%) and taking food from roadside vendors (33%) were higher in 5-14 years age group. In Chittagong district, both proportions of cholera (26%) and drinking well water (21%) were higher than other districts. Cholera was associated with taking food from roadside vendors (P=.04) and drinking well-water (P<.01).

Conclusions: As the majority of stool cultures could not identify causative organisms, we recommend increasing the microbiological identification capacity of FBIS. We also recommend conducting studies to identify true association of cholera with taking food from roadside vendors and drinking well-water.

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