

Epidemiology and Risk Factors for Typhoid Fever in Central Division, Fiji, 2014-2016

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Background: Typhoid fever is endemic in Fiji, with the highest reported annual number of cases of any country in the South Pacific, yet risk factors for disease have not been studied. The aim of this case-control study was to identify risk factors to inform targeted disease control programs.

Methods: We sought patients with blood culture-confirmed typhoid fever from February 2014 through August 2016 and two age-interval, gender, ethnicity, and residential area matched controls per case. Matched uni-variable and multi-variable analysis were used to evaluate associations between exposures and risk of typhoid fever.

Results: We enrolled 160 patients with typhoid fever and 319 controls. Of cases, the median (range) age was 27 (2-78) years, 82 (51%) were female, and 77 (48%) resided in a rural area. On multivariable analysis, having constant water availability (odds ratio [OR] =0.4; 95% confidence interval [CI] 0.2-0.9, population attributable fraction [PAF] = 16%), washing produce before eating (OR=0.4; 95%, CI 0.2-0.8, PAF = 19%), and using soap for hand washing (OR=0.5; 95%, CI 0.3-0.9, PAF = 28%) were found to be protective factors. Drinking surface water in the last 2 weeks (OR=5.6; 95%, CI 1.5-20.9, PAF = 8%), attending a mass gathering (OR=2.0; 95%, CI 1.1-3.7, PAF = 22%), and having an unimproved pit latrine (OR=166.3; 95%, CI 7.6-3659.1, PAF = 8%) were risk factors for typhoid fever.

Conclusions: Unimproved sanitation facilities appear to be a major source of *Salmonella* Typhi in Fiji. Our findings suggest transmission by drinking contaminated surface water and consumption of unwashed produce. Mass gatherings are common and appear to increase risk. Improved sanitation facilities that protect surface water and produce from contamination by human faeces are likely to contribute to typhoid control in Fiji.