Abstract

Every year, there are 1.7 billion diarrheal cases, 760,000 children under-five die from diarrheal disease, and one of the main causes of this disease burden is unsafe drinking water. In households, it is suggested that the risk of fecal contamination increases with inadequate access to water, sanitation and hygiene. No study, however, has looked at the predictors of household water quality across multiple countries (e.g. Sub-Saharan Africa). In a population-based cluster randomized sample of households, the predictors of fecal contamination were tested in households throughout Ghana, Malawi, Mozambique, Niger, Rwanda, Uganda, and Zambia. Data collection included 18,747 household surveys and water quality samples (E. coli concentration) from every fifth household. Negative binomial regression models with survey sampling weights were run to evaluate potential predictors of water quality contamination. A range of Water, Sanitation, and Hygiene (WaSH) as well as socioeconomic variables were found to be statistically significant in predicting E. coli levels in household drinking water. No single variable predicted increased household E. coli levels across all countries. In households, predictors included: improved sanitation (Malawi), improved primary water source (Mozambique); households that stored water in narrow container or containers with a spigot (Niger); households that paid for their water service (Rwanda), and household respondents with higher levels of education (Niger, Zambia).