Research Week 2019 Abstract

Title- Evaluation of the Effectiveness of Biosand Water Filters in Removing Fecal Coliforms Over Time (Years) in Rural Rwanda.

Program of Study – Public & Community Health
Presentation Type – Choose one of the following: Print Poster

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Category: Applied

Abstract: Diarrheal diseases are a major public health burden around the globe, contributing to 1.8 million deaths every year.[1] In children under five, diarrheal diseases are the second leading cause of death and kill more children than measles, malaria, and AIDS combined.[2] Diarrheal diseases disproportionately affect children in low- and middle-income countries (LMICs) such as in sub-Saharan Africa. However, most diarrheal diseases can be prevented through interventions such as safe drinking water and basic hygiene and sanitation measures.[3] Of these methods of prevention, water filtration interventions provide the greatest reduction in diarrheal disease.[4] One common water filtration device is a biosand filter (BSF), which removes up to 99% of bacterial contaminants and 100% of parasites. However, the life span of the filter varies widely. Additionally, literature on the usability of various field methods for determining BSF effectiveness in low-resource communities is inconclusive. Through a pilot study by O'Connell et al., the Colilert Presence/Absence test was selected as the field use indicator. In rural Rwanda, BSFs were installed and tested, producing three years' worth of evaluation data thus far. These data indicated that fecal coliform contamination was present in every improved water source. Following the use of the BSFs, water from 7 of 8 filters met lab standards after two years of use but did not meet these standards after three years (one filter was unused). In 2018, samples were taken from the filters toward the end of the rainy season, but in the dry season in previous years.

Because water contamination is more prevalent during the rainy season, the results may not be due to reduced effectiveness, but rather, the time of year.[5] This study increases the knowledge about the evaluation and life span of BSFs and addresses the need for continued observation.

References

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