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Determinants of Household Drinking Water Quality in Rural Ethiopia

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Abstract

Safe and adequate water supply is a vital element to preserve human health; however, access to clean water is limited in many developing countries. Furthermore, improved water sources are often contaminated with fecal matters and consumption of unsafe water poses a great public health risk. This study seeks to identify determinants of microbial contamination of household drinking water in rural areas of Fogera and Mecha districts of Ethiopia. In this analysis, a random sample of 454 households was surveyed from February to March 2014, and water samples from community sources and storage containers were collected and tested for fecal contamination. The number of *Escherichia coli* colony coliform counts per 100 ml (cfu/100 ml) water was used as an indicator of fecal contamination. The results show that 50 % of households used protected water sources, 38 % used unprotected sources and 12 % used surface water sources. However, water microbiological tests demonstrated that 58 % of household storage water samples and 74 % of water sources were contaminated with *E.coli*. After controlling for household sanitary factors, high level of *E.coli* coliform colonies were observed in unprotected water compared to surface water and protected wells/springs sources. To ensure the quality and safety of water stored in the household, our findings suggest that point-of-use water treatment, safe water handling and storage, proper hygiene practices such as washing hands after critical times and proper disposal of household garbage should be promoted. On-site water wells should be properly designed to prevent seepage from unhygienic household pit latrine. Furthermore, community water sources should be adequately protected and sanitary measures should be undertaken regularly to reduce contamination from human and animal waste.

Keywords: Drinking water quality, *Escherichia coli*, rural Ethiopia, sanitation and hygiene, water source

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