

## UMP. 309

**Virological and bacteriological quality of drinking water in Ethiopia**

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**Background:** Since unsafe water is responsible for serious illness, deaths due to highest burdens of diseases and greatest economic failure, monitoring the quality of water is essential. Water Quality monitoring is assessed widely using different indicators. Bacterial and viral indicators provide more complete picture of water quality. Virological quality of water hasn't been assessed in most countries including Ethiopia. The use of *E. coli* CB390 minimizes resource and time to perform the tests in simultaneous detection of somatic and male-specific coliphages.

**Methods & Materials:** A cross sectional study was conducted on 218 drinking waters samples collected from various regions of Ethiopia from February to June 2016 to assess water quality using coliphages by the help of CB390 *E. coli* host, plaque assay; Multiple tube fermentation method for coliforms and pour plate technique for counting heterotrophic bacteria at Ethiopian Public Health Institute. The data were analyzed using SPSS 20.

**Results:** Heterotrophic bacteria, total and thermotolerant coliforms, *E. coli* and phages were detected in 72.9%, 51.8%, 38.5%, 23.9% and 2.3% of the total samples respectively. Heterotrophic plate count greater than 100 CFU/ml were noted in 41 (18.8%) samples and detections of total and thermotolerant coliforms and *E. coli* in 38 (17.4%), 24 (11.0%) and 10 (4.6%) samples respectively and no detection of phages in chlorinated waters. While, Heterotrophic plate count greater than 100 CFU/mL were observed in 100 (45.9%) samples and detections of total and thermotolerant coliforms, *E. coli* and coliphages in 75 (34.4%), 60 (27.5%), 42 (19.3%) and 5 (2.3%) samples respectively for untreated waters.

**Conclusion:** Majority of the waters contained indicators above standard limits. This indicates that the sources are contaminated with environmental and fecal contaminants signifying poor quality and it is a potential threat to human and animals health. Hence regular water monitoring using various indicators should be a priority agenda by all stake holders.

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## UMP. 310

**Chlorine Levels in a Cistern-Based Water Distribution System in Rural Honduras**

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**Background:** In 2014, a gravity fed, cistern-based chlorination system was installed into the water distribution system in La Hicaca, a village in the Yoro Department of Honduras. The water distribution system consists of a large cistern that feeds water through pipes into private faucets in each household. Per report the chlorine tablets utilized by the system can be utilized for over a one year time span. In June 2015, a study by Cook J.A. et al determined that water chlorination decreased the fecal contamination in drinking water in La Hicaca. However, chlorine levels were not measured at that time. This study aims to find out whether or not chlorine is present in the drinking water at homes that are connected to the chlorine distribution system in La Hicaca.

**Methods & Materials:** In June 2017, members from Virginia Commonwealth University's Global Health and Health Disparities Program (GH2DP) collected water samples from a convenience sampling of 25 of 75 homes in La Hicaca that should receive chlorine from the water distribution system. Samples were then measured to determine the level of chlorine in the drinking water at each home. Per community report the chlorination tablets had been replaced approximately 4 months prior to testing.

**Results:** Twenty-eight percent (7/25) of households had very low levels of chlorine in the drinking water from their private faucets. Six of the homes had a chlorine level of 0.05 PPM and one home had a chlorine level of 0.1 PPM. When the chlorine data were placed onto a map of homes in La Hicaca we found that the six homes with 0.05 PPM of chlorine were clustered together. The one home that had a chlorine level of 0.1 PPM was separate from the other homes with chlorine. The water cistern was found to have 0 PPM of chlorine.

**Conclusion:** We did not find chlorine in a majority of the homes sampled in La Hicaca or in the cistern. In homes where it was found, it was found at very low levels. Further studies are needed to determine the effectiveness of the chlorination distribution system at various time points post chlorine tablet installation.

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