# WATER DISTRIBUTION SYSTEMS AND DIARRHEAL DISEASE TRANSMISSION: A CASE STUDY IN KEGALLE DISTRICT

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# WATER DISTRIBUTION SYSTEMS AND DIARRHEAL DISEASE TRANSMISSION: A CASE STUDY IN KEGALLE DISTRICT

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Deteriorating water quality of domestic water sources poses a significant public health threat, particularly in the public water supplies of Sri Lanka. Interventions to decrease the disease burden associated with these water systems range from monitoring the water quality in regular basis and upgrading water distribution networks. To provide insight into this purpose, we conducted a randomized intervention study to provide microbial quality of water sources in five (05) Divisional Secretariats in Kegalle district, where drinking water quality is suboptimal.

We collected one hundred and thirteen (113) samples during the period for six months from August 2009, from protected and unprotected water sources in both urban and rural areas in Kegalle district. Of which, 34 samples from dug wells, 62 from tap water and 17 from spring water sources. Bacterial quality of 61.8% of dug wells, 48.1% of tap water and 94.1% of spring water samples were exceeded the Sri Lankan standard guideline value for drinking water with respect to *Escherichia coli*. The presence of indicator organisms (*Escherichia coli* or thermotolerant *coliform* bacteria) in water indicates recent contamination of the water source with fecal matter and hence possible presence of intestinal pathogens. It is evident that most of the sources of domestic water in Kegalle district are contaminated with fecal matter and do not meet the World Health Organization (WHO) guidelines for drinking water quality. This poses a health hazard to the residents of the slum as they are at risk of water-borne diseases. The results of this study also suggest that tap water may be safer, than water sources from dug wells or springs.

Although high levels of *E. coli* contamination were found in water bodies of Bulathkohupitiya divisional secretariat, few numbers of both dysentery and viral hepatitis patients are reported in the last five years. It is anticipated that patients admit to the nearest hospitals from the rural village of Bulathkohupitiya is to Karawanella or Avissawella, which is not accounted in this study.

The highest number of both dysentery and viral hepatitis patients are reported from urban areas like Aranayake & Mawanella, where hospital records are available. The highest number of patients during the period of 2006-2008 is coincided with high rainfall occurred for such regions.

Taken together, these bacteriologic data would support the hypothesis that diarrhea in the five divisional secretariats in Kegalle district could be attributed to contamination of different water sources, due to leaky pipes and unprotected dug wells/springs. Relatively inexpensive steps, including chlorination and properly maintaining the water distribution system, should reduce diarrheal rates. Therefore Public Health Inspectors (PHI) should be trained to monitor the quality of water in the regular basis or regular quality control mechanisms need to be in place to ensure safety of drinking water in Kegalle district.