

Fecal contamination of public water sources in informal settlements of Kisumu city, Western Kenya

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High levels of environmental contamination, often associated with improper waste and excreta management are widespread among informal settlement areas within urban areas in developing countries. Such contamination affects the water quality, resulting in water-borne diseases. This cross-sectional study determined the level of fecal contamination in domestic water sources and evaluated the potential contribution of these water sources to the observed prevalence of soil-transmitted helminths (STH) infections in the informal settlements of Kisumu City, western Kenya. Membrane filtration technique was used for enumeration of total coliform and fecal (*Escherichia coli*) coliform bacteria in 80 water samples collected from dams, rivers, springs and wells in 7 informal settlement areas of Kisumu City, western Kenya. Out of the 80 water sources sampled, 76 (95%) were found to be highly contaminated with fecal (*Escherichia coli*) matter. Wells were the main source of water (66.3%). Total and *E. coli* coliforms were found in 100% of water samples from unprotected wells (26), whereas 25 samples (92.6%) from protected wells were positive for *E. coli*. The highest and lowest *E. coli* densities were recorded in Manyatta B (3331 ± 1008 coliforms per 100 ml) and in Nyalenda B (792 ± 187 coliforms per 100 ml) areas, respectively. The estimated lateral distance between the pit latrines and the wells was generally short, with 41.5% of the pit latrines being less than 15 m from the wells). The well water sources were found to be highly contaminated with *E. coli* and pit latrines were a major source of this contamination. The use of the well-water may not be suitable for human consumption, and its continued use could increase and constitute a major health risk for the inhabitants of slum areas within Kisumu City. A routine system of water-quality control for the wells is therefore needed throughout the City, for instance the Municipal water treatment plants that will monitor drinking and surface water for the presence of fecal contamination.

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