64. Determination of faecal coliforms and pathogenic bacteria in borehole water at source and storage in households within Ekalakala ward in Machakos county, Kenya

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Abstract

Drinking water quality is vital to public health. Diarrhea can be caused by poor hygiene practices, inadequate sanitary actions, and unsafe drinking water. Furthermore, Africa has been classified as the leading continent in cholera disease owing to a lack of access to safe clean water and basic sanitation. Despite the United Nations and other countries implementing Sustainable Development Goal Number 6, a large global population still lacks clean water and basic sanitation. Globally, 1,000 children die annually due to controllable sanitation-related diarrhea. Kenya is a water-scarce country, leading to the drilling of many boreholes. Five million people in Kenya practice open defecation; 59% have access to clean water, but about ten million drinks directly from contaminated sources. This study aimed to determine faecal coliforms and pathogenic bacteria in borehole water within the Ekalakala Ward in Masinga Sub-County, Machakos County. A cross-sectional study design was used. Ninety samples from 30 boreholes and 60 households were randomly selected, collected, stored in iceboxes, and transported for microbial analysis. The most probable number (MPN) method was used to identify fecal coliforms (Escherichia. coli) by gas production in Durham tubes in lactose broth and enumeration of E. coli. Other targeted organisms included Vibrio cholerae, E. coli and Salmonella typhi which were identified using biochemical tests. The results showed that most of the samples were contaminated with fecal coliforms with a mean value of 171.3MPN/100 ml of water while those from biochemical tests identified 55% Escherichia. coli, 40% Salmonella and 55% Vibrio cholerae respectively. Water from boreholes and households had high levels of faecal coliforms and pathogenic bacteria with increased contamination in the households. Knowledge from study will be used to bridge the gap on diseases management caused by sanitation related practices. Borehole water in Ekalakala Ward was contaminated with fecal coliforms and pathogenic bacteria. Therefore, the treatment of water is important. Moreover, the public should be educated on the guidelines required to drill boreholes and align the latrines.

Keywords: *Borehole water, biochemical tests, contamination, diarrhea, E. coli, faecal coliforms, sanitation.*