BACTERIAL CONTAMINATION OF WATER USED IN THE HOUSEHOLD FOR DOMESTIC PURPOSES IN MOMBASA COUNTY, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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ABSTRACT

It is essential to determine the microbial content of water since it is essential to sustain human life. Unsafe drinking water and inadequate sanitation account for 4% of all global disabilities. Due to the water scarcity experienced in developing countries, people are forced to rely on water sources of unknown quality. The United Nations has classified Kenya as a country which frequently faces water scarcity. Approximately 56% of its citizens are able to access safe drinking water, with up to 50% of the reported illnesses being waterborne diseases. In Mombasa County, only 24% of the residents have access to safe drinking water. An acute water shortage makes most people adopt alternative water sources whose quality is doubtful. An average of 24% of Kisauni, Nyali and Mvita residents use unimproved water sources. The study's objective was to determine the bacterial quality of 55 water samples, where 35 water samples and 20 water samples collected in the household (HH) storage containers were either from borehole water (case) or other sources (controls), respectively. The research also determined the relationship between bacterial quality and diarrhoeal. The association between the type of water sources and diarrhoeal cases reported was determined. Three hundred and eighteen HHs for the cases and one hundred and sixty four HHs for controls were interviewed to determine risk factors that affect water quality at the HH level. Total coliform, faecal coliforms, Heterotrophic Plate Count (HPC), *Salmonella* and *Shigella* were isolated. The APHA standards methods were adopted to analyse water and a structured questionnaire was used to collect data at the HH. The study design adopted was analytical descriptive cross sectional study. Stratified sampling and random sampling methods were used to identify HHs which were interviewed in case and controls respectively. Total coliforms from the two groups had a combined mean of ±1039.98 CFU, t =0.000. Faecal coliforms (FC) had a combined mean of ±634.74 CFU, t= 0.0006. The results showed significant difference in TC and FC in the two groups. HPC had combined means of ±4519.66, t=0.0891. Boreholes and other sources of water were contaminated with *Salmonella* at 34.3% and 20%, respectively. None of the water samples collected had *Shigella.* The study showed a significant relationship between the microbial quality and diarrheal cases for the two groups (t=0.93, df= 53, and t=0.006). It was also found that there was no relationship between the diarrheal reported diarrheal cases and the type of water consumed in the household, t= 0.076. Risk factors associated with water quality were water treatment, other water sources, hand-washing with soap, water storage period, cleaning of containers, income and the number of under-fives in households. Borehole stored water at the HH was found to be unsafe for human consumption. Improving water quality is essential to reduce cases of diarhhoea. Type of was consumed at the HH cannot be associated with diahhoea cases reported in the HH. Interventions that help to improve water quality by targeting the community, like safe drinking water storage and appropriate handling at the HHs need to be strengthened. Water sanitation and Hygiene activities targeting the HH need to be intensified. Water sampling at the HH needs to be initiated.