80. Impact of pit latrines on enteric-pathogen and physicochemical contamination of groundwater in tigania west sub-county, Meru county, Kenya

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Abstract

Pit latrines, particularly prevalent in low-income countries, are essential for reducing infections, diarrhea, morbidity, mortality, and soil-transmitted helminths. Nearly a billion people still practice open defecation, underscoring the urgent need for improved sanitation. Proper sanitation services enhance dignity, economic stability, health, and environmental protection. Access to clean water reduces disease burden and healthcare costs, empowering communities economically and improving productivity. Safe waste disposal prevents environmental contamination, protecting water resources and controlling disease spread. The research objective was to survey the sites of pit latrines versus the locations of groundwater sources and the persistence of waterborne diseases. The study employed a cross-sectional design, where data was be collected from the targeted population at a single point in time and analyzed in response to the study objective. Water samples were collected from groundwater sources near pit latrines (<30 meters) and at a safe distance (>30 meters) from pit latrines using sterile techniques. The collected data was analyzed using descriptive and inferential statistics to address the research objective. The study used a convenient sampling technique to collect samples from groundwater sources. The sample size for this research was 96 households, distributed among all the wards in Tigania West sub-county. The wards include Athwana, Akithii, Kianjai, Nkomo, and Mbeu. Data was entered into Microsoft Excel 2010 and analysed using SPSS version 27. Results of the correlation coefficient ($r = 0.71$) indicates a strong positive correlation between the proximity of pit latrines to water sources and the prevalence of enteric pathogens. This suggests that closer proximity between pit latrines and water sources is associated with a higher prevalence of enteric pathogens. The t-value (1.78) and p-value (0.001) further confirm the statistical significance of this correlation. Maintaining a distance of over 30 meters between pit latrines and water sources is vital for reducing waterborne infections.

Keywords: *Pit latrine , Etheric Pathogens, Ground water, Contamination*