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Distribution of Diarrhoea and Associated Factors in Homa Bay County
A Geospatial Analysis

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Introduction

Access to clean water and proper sanitation facilities is important in safeguarding the health of people and communities. Poor sanitation and unsafe drinking water are known to cause illness and death through diarrhoeal diseases.

This geospatial analysis report contributes to the findings of a research study. It used a mixed methods design that comprised a case-control quantitative study, qualitative interviews in the community (key informant interviews and focus group discussions), observation, review of health facility data on under-five morbidity and mortality and water sampling and testing.

The sample size across the three counties was 1174 children under the age of five (613 cases and 561 controls). The study used convenience sampling to select all children under five attending the selected health facilities from February 1-10, 2018. Cases were children under five years of age who presented to the participating health facilities with diarrhoea (as defined by the health worker, with a minimum requirement of three or more loose or watery stools in the previous 24 hours). Controls were children in the same age range who reported with any other infection or trauma but without diarrhoea.

The study findings in Homa Bay county show a clear link between household source of water and a child having diarrhoea, but no link between infant feeding practices and the child having diarrhoea. More households in the control group used protected water sources than those in the case group. However, tests on the water collected show that over half of the sampled households in Homa Bay were using water that was contaminated and unfit for human consumption. Laboratory tests show that 52% of the water samples collected had a high presence of *E. coli*, a clear indication of contamination with faecal matter.

As part of the study, spatial analysis was conducted to build a model of the environment to explain the relationship between diarrhoea and other factors in the county. The spatial data collection method used GPS enabled devices powered by the open data kit (ODK) application to obtain coordinates of the respondents' households and water, sanitation and hygiene (WASH) facilities. GIS mapping of the location of the cases and controls in relation to water sources, open defecation sites and pit latrines indicates that there may be a link between the proximity to open defecation sites and the likelihood of a child having diarrhoea.

Research sample by county

|	Total		Controls		Cases	
	n	%	n	%	n	%
Elgeyo Marakwet	344	29.3	162	28.9	182	29.7
Homa Bay	473	40.3	233	41.5	240	39.2
Kericho	357	30.4	166	29.6	191	31.2

Figure 1: Prevalence of diarrhoea in Homa Bay county
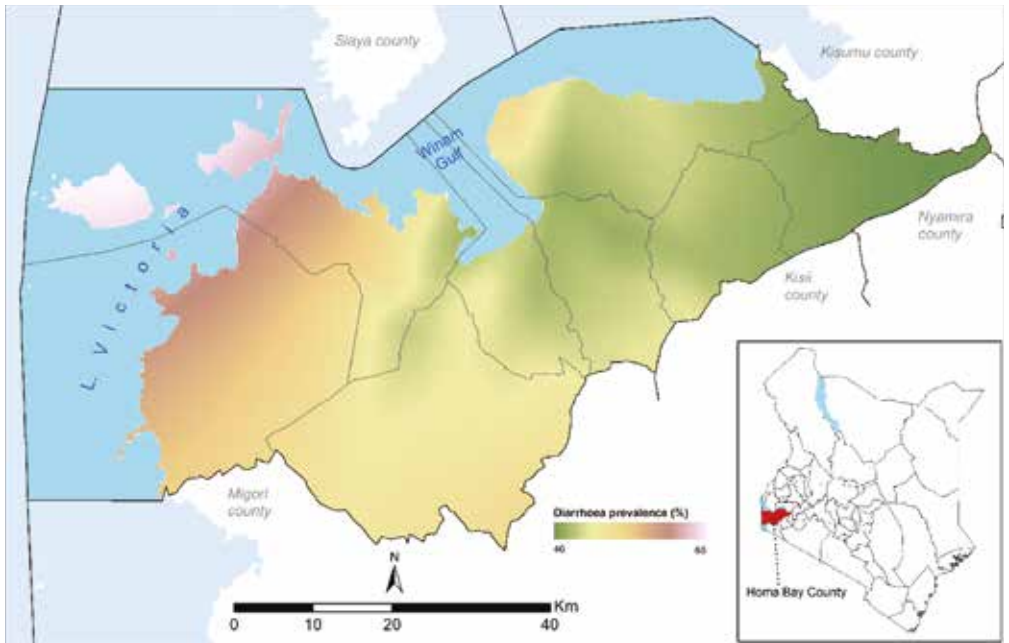
Key Findings

There was a high prevalence of diarrhoea along the lake shores. Specifically, among children under five in the lake regions of Suba, Mbita and Ndhiwa sub-counties. This shows contamination of water that is used for domestic purposes.

# Figure 2: Topography and diarrhoea distribution
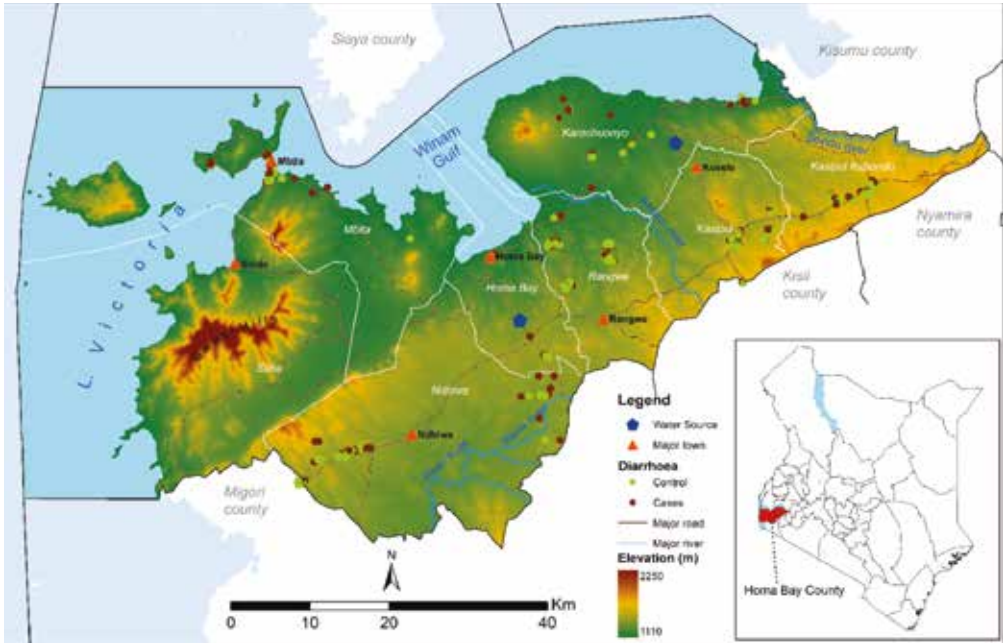
Key Findings

Diarrhoea prevalence varies with the elevation, i.e. highlands and lowlands. In this county, the regions with low elevation have higher diarrhoea prevalence.

This suggests a relationship between groundwater availability and quality of water for human consumption. There is a possibility of consumption of contaminated water.

Figure 3: Distribution of latrines and open defecation
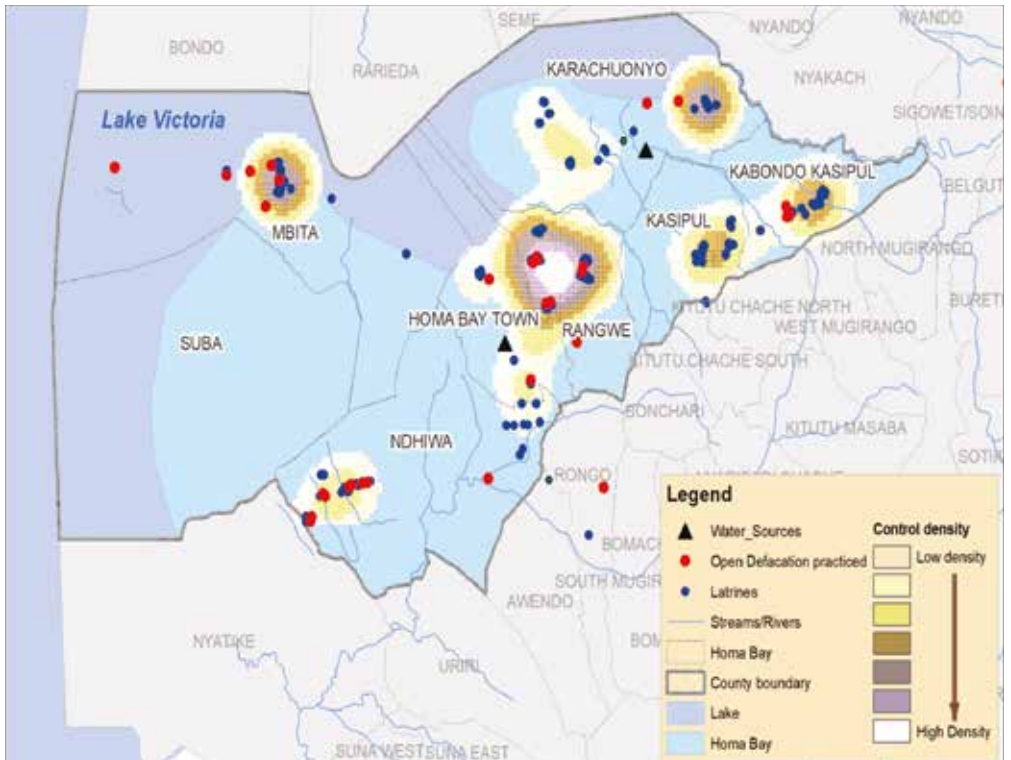
Key Findings

Diarrhoea cases are concentrated in areas with open defecation. This shows an association between open defecation and diarrhoea, especially among children under five.

Areas with high latrine coverage have few cases of diarrhoea. This can be attributed to the use of the latrines.

Conclusions

- The main risk factor for diarrhoea in the county is open defecation near the shores of the lake, beaches and towns, leading to contamination of water sources.

- Latrine coverage is high in urban and peri-urban areas and low in the rural areas. Towns and markets do not have adequate sanitation facilities.

- Diarrhoea cases are concentrated in households near the lake, indicating a common risk factor.

Recommendations

- The county should invest in the building of affordable public sanitation facilities near the beaches, towns and markets to reduce open defecation.

- Public health officers should engage in health education and awareness campaigns through behaviour change communication to improve the use of sanitary facilities by eliminating cultural barriers and taboos.

- Water monitoring should be made routine for public health officers. They should be given weekly targets for testing to improve quality.

- County government and other partners should focus on building user-friendly latrines to improve the quality of sanitation for people living with disabilities (PLWDs). Lack of user-friendly latrines contributes to the practice of open defecation.

For more information on these findings, see report: *Understanding the Effects of Poor Sanitation on Public Health, the Environment and Well-being. Homa Bay - Report of research findings. 2018.* Published by the V4CP programme.

Further information

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