



Distribution of Diarrhoea and Associated Factors
in Elgeyo Marakwet County
A Geospatial Analysis

June 2018



This report is the result of the study entitled *Understanding the Effects of Poor Sanitation on Public Health, the Environment and Well-being*, commissioned by SNV Netherlands Development Organisation (SNV) as part of the Voice for Change Partnership (V4CP) programme which advocates for county governments to address water, sanitation and hygiene (WASH) issues affecting their communities.

The V4CP programme is implemented by SNV in collaboration with the Institute of Economic Affairs (IEA). The research was conducted by the Centre for Population Health Research & Management (CPHRM).

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. The study 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.

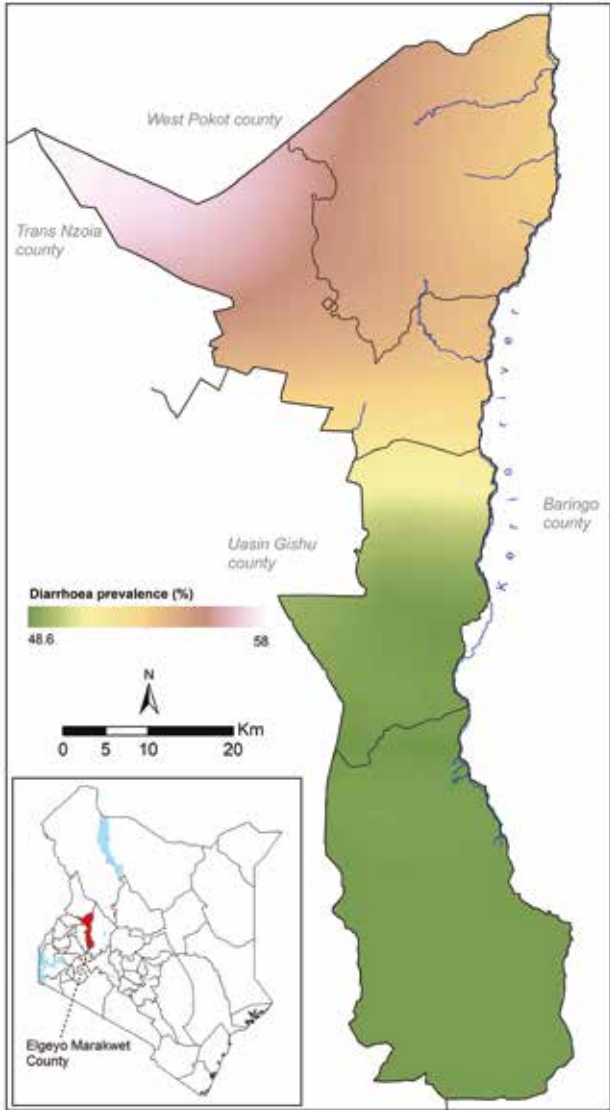
In terms of water used by the households in the sample, the results suggest there may be a link between the source, storage and treatment of the water and the child having diarrhoea. More control households used water from improved, protected sources than case households. Also, more case households (39%) were storing water in an open container (compared to 32% of the control households). Significantly, about 71% of case households reported doing nothing with the water, compared to 56% of those in the control group, and only 24% of the households in the case group reported boiling their water before drinking, compared to 38% of the control group. The situation is aggravated by the finding that the public water points tested in this study were contaminated with a high presence of *E. coli* and thus were unfit for human consumption if untreated.

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

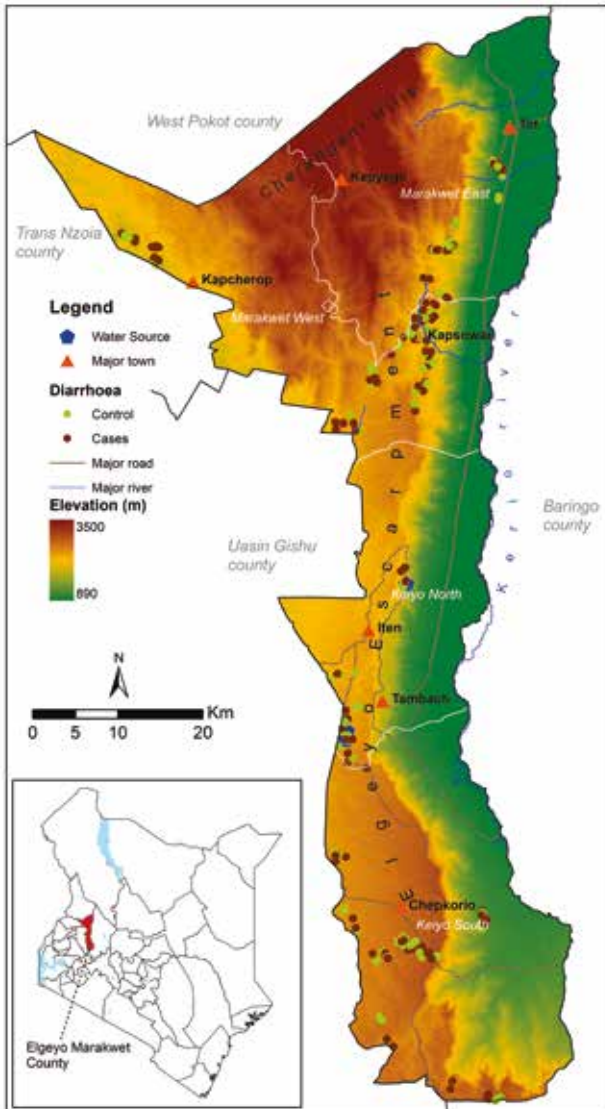
Figure 1: Prevalence of diarrhoea in Elgeyo Marakwet county



Key Findings

Marakwet and Cherangany regions had higher diarrhoea prevalence, i.e. the northern part of the county. This can be attributed to the high rates of open defecation.

Figure 2: Topography and diarrhoea distribution

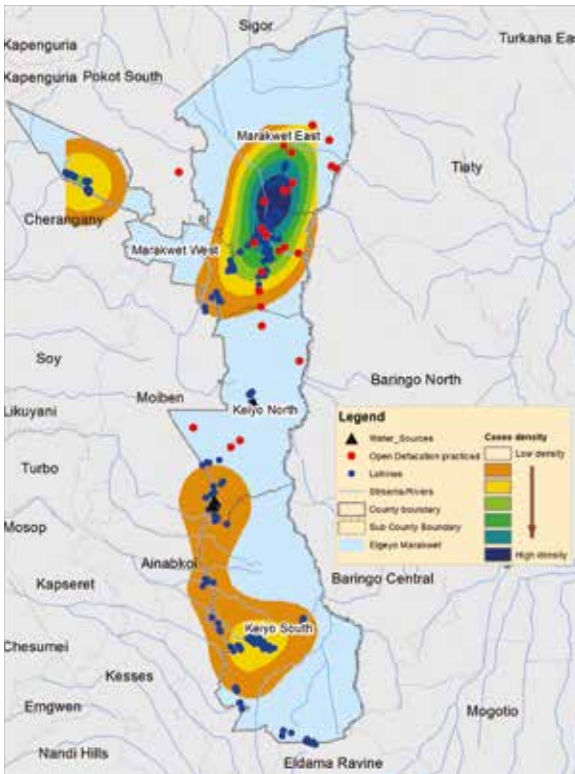


Key Findings

Rivers, streams, wells and springs were the main source of water in the county. Settlements were also dense along the rivers, streams and roads

Diarrhoea cases are concentrated along the major rivers and streams as evident in Kapsowar. This suggests that households use contaminated water from these sources.

Figure 3: Distribution of diarrheal cases in relation to latrines, open defecation sites and water sources



Key Findings

There was a high prevalence of diarrhoea in areas with high open defecation. Regions with high latrine coverage had lower diarrhoea prevalence. This can be attributed to the improved sanitation.

There was a high concentration of diarrhoea cases near the major water sources. These suggests that people were using a common, contaminated, water source for domestic use.

Forest areas and dense plantation areas were most prone to open defecation, and yet near no settlements.

Regions with high latrine coverage had lower diarrhoea prevalence.

Conclusions

- Settlements and households along the rivers establish their sanitation rituals along the rivers, which jeopardises the quality and safety of the water.
- Open defecation sites were denser along the rivers, and in forests and major plantations. The practice can be related to human activities such as wood sowing, water fetching, washing, bathing and farming.
- High diarrhoea prevalence along the major water sources, rivers and streams can be attributed to the quality of water and contamination due to practices such as open defecation and human activities.
- Distribution of diarrhoea cases were also more concentrated along the roads. This can be attributed to lack of sanitary services and unclean latrines along the roads.
- The distribution of cases was related to altitude. Lowland areas were denser with diarrhoeal cases as compared to the highland areas.
- Cases were more clustered than the controls, which were relatively sparsely spread across the study areas in the county. This shows a relationship of common risk factors for cases.
- Risk factors for diarrhoea are water contamination, poor sanitation facilities and open defecation.

Recommendations

- Affordable and suitable public sanitation options should be established near the major river sources, plantations and roads to curb the practice of open defecation. These should be user friendly to people living with disabilities (PLWDs).
- Public education and awareness campaigns should be strengthened to improve the demand and use of latrines and hand washing facilities, especially in rural areas.
- Water quality monitoring should be made routine by public health officers during sanitary inspections. They should be given weekly targets for water samples to improve quality.

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

Further information

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