

## ABSTRACT

Faecal exposure pathways are transmission routes where pathogens in faecal particles pass from one person to the mouth of another. Lack of adequate sanitation leading to open defecation and poor hygiene, are main causes of faecal -oral -route. Tens of millions of people across the world, most of them children, die of sanitation related illness. Sanitation and water management is one of the ways to reduce the spread of enteric pathogens in the urban, peri-urban and rural environmental set-up. About 64.9% of Marsabit county population practice open defecation. Diarrheal cases in Turbi ward among under five, reported at the five health faculties were 944. Faecal exposure pathways assessment tool is used to determine specific gaps in sanitation pathways that pose hazard to the environment and affect health of population. This study aimed to determine faecal exposure pathways among nomadic community of Turbi ward of Marsabit County in Kenya. Descriptive cross-sectional study design adopting mixed method was used, targeting 20 participants from each five (5) selected Manyattas. Data collection was done through observation, focus group discussion, interviews and laboratory analysis. Membrane filtration and plating on BBL MI agar, mColiBlue, Bio-Rad Rapid E. coli 2 media and MacConkey broth were used for microbial sample analysis for water, milk, milking utensils and foodstuff samples. A total of 149 samples of water, milk, flour and utensil swaps in five sampled villages were collected and analysed for presence of indicator bacteria; *E. coli*. A total of 33% (n=149) mainly from water sources and water storage containers used for domestic purposes 24% (n=149) samples, each from both milk and milking utensils, and 17% (n=149) from corn flour were collected. Kruskal-Wallis test and Wilcoxon Signed-Rank test were used to analyse quantitative data. About 68% (n=100) of population sampled from five (5) selected villages used surface water for domestic purpose. There was significantly high number of residents, 76% (n=100) in sampled villages who did not treat their water before using for domestic purpose and did not wash their hands before milking animals, at p-value of 0.0317, (95% CI) using Wilcoxon Signed-Rank test. Approximately 67% (n=37) of milk samples and milk containers 58% (n=37) sampled, revealed presence of *E. coli*. Water, milk and milk utensils was significantly exposed to faecal contamination at p-value of 0.062 (95% CI) Kruskal-Wallis test. Turbi ward had significantly high number of households that practiced open defecation and using surface water without treating for domestic purpose at p-value of 0.025 (95% CI), Wilcoxon Rank Test. The dominant exposure pathway in this study was water pathway with high *E. coli* positivity, 20% (n=50) for dam water sampled, 20% (n=50) for pan and borehole feed water tanks 20% (n=50). Dam water sources analysed had presence of  $1.05 \times 10^7$  CFU/ml and pan water sources  $1.93 \times 10^4$  CFU/ml, which was above acceptable *E. coli* level in water for consumption is (10-40 CFU/ml). The study recommends routine microbial surveillance of water sources for domestic use in order to mitigate contamination and water related infection. This study reaffirms the need for elaborate sanitation model tailored to the need of pastoralist community to reduce perennial faecal contamination of water sources for the community of Turbi ward.