

**FAECAL CONTAMINATION PATHWAY AND PREVALENCE OF
DIARRHEAL PATHOGENS IN RURAL HOUSEHOLDS WITH AND
WITHOUT IMPROVED SANITATION FACILITIES**

by

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ABSTRACT

Poor hygiene and inadequate sanitation is a major problem in many developing countries. In South Africa 10.5 million people do not have improved sanitation facilities and 2.15 million of these people live in rural areas in Limpopo province. Inadequate sanitation facilities is responsible for the transmission of diseases such as diarrhoea and cholera due to fecal contamination by fecal material from human or other warm blooded animals which may contain potentially harmful bacterial, viruses, fungi and parasites. In addition very little is known about the fecal contamination pathway among rural households with and without improved sanitation. This study assessed 30 rural household to determine the fecal contamination pathway and prevalence diarrheal pathogens amongst household with and without improved sanitation. *E. coli* and *Enterococci* bacteria were used as indicator organisms. The following sites within households were assessed: (i) the toilet seat, (ii) toilet floor, (iii) the toilet door handle, (iv) house entrance, (v) the kitchen door handle, (vi) the kitchen floor, (vii) the kitchen bench (i.e., the food preparation area), and (viii) female hands. The results showed that from households with improved sanitation 64.5% (71/110) had Total coliforms, 10% (11/110) had *E. coli*, and 70% (77/110) had *Enterococcus*. Household without improved sanitation had 75.5% (68/90) of Total coliforms, 15.5% (14/90) of *E. coli* and 62.2% (56/90) *Enterococcus*. Positive *E. coli* samples were further assessed for prevalence of pathogenic *E. coli* strains using a published multiplex Polymerase Chain reaction (m-PCR). EAEC, ETEC and EPEC were more predominant in both households with and without improved sanitation. The results showed that the faecal contamination pathway starts from toilet to household kitchen and *E. coli* is more prevalent in households without improved sanitation than household with improved sanitation. This is primarily due to poor hygiene practices and inadequate sanitation.