

Scope and frequency of enteric bacterial pathogens isolated from HIV/AIDS patients and their household drinking water in Limpopo Province

CL Obi^{1*}, J Ramalivhana², MNB Momba³ and J Igumbor⁴

¹College of Agriculture and Environmental Sciences, School of Agriculture and Life Sciences, University of South Africa, 287 Skinner Street, PO Box 392, Unisa 0003, Pretoria, South Africa

²Department of Microbiology, University of Venda, P/ Bag X5050, Thohoyandou 0950, Limpopo Province, South Africa

³Department of Water Care, Tshwane University of Technology, Acadia Campus, Pretoria, South Africa

⁴University of Witwatersrand School of Public Health, Johannesburg, South Africa

Abstract

Although HIV/AIDS and water-borne infections, exemplified by diarrhoea, are leading causes of morbidity and mortality in developing countries, their association has received only cursory attention. This study was therefore conducted to ascertain the scope and frequency of potential enteric bacterial pathogens isolated from stool samples of HIV-positive and -negative individuals with and without diarrhoea as well as household drinking water of the study groups in rural communities in Limpopo Province. A prospective study involving 330 HIV-positive individuals (200 with diarrhoea and 130 without diarrhoea) and 160 HIV-negative patients, (80 with diarrhoea and 80 without) was undertaken from August 2005 to January 2006. Stool and drinking water samples were analyzed for the presence of enteric bacterial pathogens using standard microbiological methods. Of the 330 HIV-positive individuals, 126 (38%) and 206 (62%) were males and females respectively. HIV prevalence was mostly common in the age group 21 to 30 years. A potential enteric pathogen was isolated from all (100%) of the HIV-positive individuals with diarrhoea and 68 (52.3%) without diarrhoea ($P = 0.0001$). Bacteria that were significantly associated with diarrhoea among HIV-positive patients and their household drinking water were *Escherichia coli*, *Salmonella* spp., *Campylobacter* spp., *Shigella* spp. and *Aeromonas* spp. whereas *Plesiomonas shigelloides* was not. The same profiles of enteric bacterial pathogens were isolated from HIV-negative individuals but at lower frequencies ($P = 0.0001$). Enteric pathogens were distributed across gender and different age strata. A notable finding was the emergence of *Aeromonas* spp. and *Plesiomonas shigelloides* in HIV infected individuals with diarrhoea. This study provides the foremost baseline reference compendium on the scope and frequencies of enteric bacterial pathogens isolated from stool and household drinking water samples of HIV-positive and -negative individuals with and without diarrhoea in rural communities in the Limpopo Province.

Keywords: HIV/AIDS, household, drinking water, diarrhoea, enteric bacteria, pathogens