

Investigating the epidemiology and genetic diversity of rotavirus strains and adenovirus genotypes associated with gastroenteritis post rotavirus vaccine introduction in Pretoria, South Africa.

¹Siboniswa A. Mngomezulu; Nonkululeko B Magagula¹; Mathew D. Esona¹; Mapaseka Seheri¹

Diarrhoeal Pathogens Research Unit, Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa.

Background: Diarrhoea remains the second leading cause of death among children <5 years globally, with over one billion episodes occurring annually and approximately 700,000 deaths reported each year. Nearly 72% of these deaths occur in children <2 years. Enteric viruses and bacteria are recognised as major contributors to childhood diarrhoeal disease, particularly in low- and middle-income countries.

Methodology: This study determined the prevalence of enteric adenovirus and rotavirus among children under five years admitted to Dr George Mukhari Academic Hospital in Ga-Rankuwa, Pretoria, South Africa. Stool samples were collected from children with and without diarrhoea between October 2021 and September 2022. Rotavirus antigen detection was performed using a commercially available ELISA kit (Oxoid Prospect®), while enteric adenovirus was detected using real-time polymerase chain reaction (qPCR). Demographic and clinical data were also collected and analysed.

Results: Of the 414 stool samples with sufficient specimen for testing, 192 (46.4%) were positive for enteric adenovirus and 30 (7.2%) for rotavirus. Co-infection with both viruses was identified in 21 cases (5.1%). Adenovirus infections were more frequent among children presenting with diarrhoea and were more common in males. Rotavirus infections demonstrated seasonal peaks, particularly in June, whereas adenovirus showed no clear seasonal pattern. Clinically, vomiting and severe dehydration were more frequently observed in rotavirus-positive cases compared to adenovirus-positive cases.

Conclusion: A substantial proportion of diarrhoeal cases among children under five in this setting were associated with enteric adenovirus and rotavirus. These findings highlight the significant role of viral pathogens in childhood diarrhoea at Dr George Mukhari Academic

Hospital. Strengthened prevention, diagnostic, and case management strategies are essential to reduce the morbidity and mortality associated with these infections.