

# ***Escherichia Coli* Pathotypes and *Shigella* Sero-Groups in Diarrheic Children in Nairobi City, Kenya**

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## **Abstract**

*Microbial infections are a major public health concern. We investigated prevalence of E. coli pathotypes and Shigella serogroups and their antimicrobial profiles among diarrheic children in Nairobi city, Kenya. Although diarrhea genic E. coli pathotypes and Shigella sero-groups are leading causes of diarrhea in children under five years in developing countries, their distribution and antimicrobial resistance vary from place to place and over time in a given region. Using a cross-sectional study, diarrheic children (n=354) under five years seeking treatment at Mbagathi Hospital, Nairobi city, Kenya, were enrolled. Stool samples were collected from all children and cultured for bacterial analysis. Bacterial isolation and identification was performed by conventional microbiological methods. Polymerase chain amplification was used to detect aspU, aggR, and pcd432 for EAEC, est and elt for ETEC, eat for EPEC, stx for EHEC, and ipaH for EIEC and Shigella species. Antimicrobial profile was determined by disk diffusion method. Prevalence of EAEC, ETEC, EPEC (eae), EIEC (ipaH) was 21.2%, 10.5%, 4.5%, and 0.6%, respectively, while that of mixed infection was 0.6% for ETEC/EAEC and 0.3% for EAEC/EPEC/ETEC. No EHEC strain was isolated. Pathogenetic analysis for EAEC showed that 5.9% carried aspU, 8.2% possessed both aspU and aggR and 7.1% had a combination of aspU, aggR and pcd432 while that of ETEC was 2.3% for elt, 6.5% for both elt and est and 1.7% for est. The combination of aspU with aggR, elt and est, and pcd432 with aggR, aspU and est was 0.3% in each case of ETEC/EAEC mixed infection. The aspU gene co-existed with aggR, pcd432, eae and elt in the EAEC/EPEC/ETEC mixed infection. Prevalence of S. boydii, S. dysenteriae, S. flexneri and S. sonnei was 0.8%, 0.6%, 1.7%, and 0.8%, respectively. No E. coli pathotype and shigella co-infection was detected. In addition, both E. coli pathotypes and Shigella species were resistant to ampicillin, trimethoprim/sulfamethoxazole, streptomycin, chloramphenicol and tetracycline while gentamycin and kanamycin resistance occurred in diarrhea genic E. coli. Results of this study confirm that E. coli pathotypes and Shigella sero-groups harboring virulent genes are an important cause of diarrhea in children in Kenya. Increasing spectrum of antibiotic resistance in diarrheagenic E. coli and Shigella species necessitates development of antimicrobial stewardship education-programs to influence prescribing behavior as well as optimizing the use of effective antimicrobials in Kenya.*

**Key Words:** *E. coli* pathotypes; *Shigella* sero-groups; Antimicrobial profile