**Molecular epidemiology and antimicrobial susceptibility of diarrheagenic *Escherichia coli* isolated from children under age five with and without diarrhea in Central Ethiopia**

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**Abstract**

Diarrhea is a serious health problem in children, with the highest mortality rate in sub-Saharan Africa. Diarrheagenic *Escherichia coli* (DEC) is among the major bacterial causes of diarrhea in children under age five. The present study aims to determine molecular epidemiology and antimicrobial resistance profiles of DEC among children under age five in Central Ethiopia. A health facility-centered cross-sectional study was conducted in Addis Ababa and Debre Berhan, Ethiopia, from December 2020 to August 2021. A total of 476 specimens, 391 from diarrheic and 85 from non-diarrheic children under age five were collected. Bacterial isolation and identification, antimicrobial susceptibility, and pathotype and ß-lactamase encoding genes detection using polymerase chain reaction (PCR) were done. Ethical clearance for the study was obtained from Intitutional and National Research Review Committe. Of the 476 specimens analyzed, 89.9% (428/476) were positive for *E. coli*, of which 183 were positive for one or more genes coding DEC pathotypes. The overall prevalence of the DEC pathotype was 38.2% (183/476). The predominant DEC pathotype was enteroaggregative E. coli (EAEC) (41.5%, 76/183), followed by enterotoxigenic *E. coli* (21.3%, 39/183), enteropathogenic *E. coli* (15.3%, 28/183), enteroinvasive *E. coli* (12.6%, 23/183), hybrid strains (7.1%, 13/183), Shiga toxin-producing *E. coli* (1.6%, 3/183), and diffusely-adherent *E. coli* (0.6%, 1/183). The majority of the DEC pathotypes were resistant to ampicillin (95.1%, 174/183) and tetracycline (91.3%, 167/183). Multidrug resistance (MDR) was detected in 43.2% (79/183) of the pathotypes, whereas extended spectrum ß-lactamaseand carbapenemase producers were 16.4% (30/183) and 2.2% (4/183), respectively. The predominant β-lactamase genes identified was blaTEM (80%, 24/30) followed by *bla*CTX-M (73%, 22/30), blaSHV (60%, 18/30), blaNDM (13%, 4/30), and blaOXA-48(13%, 4/30). All six common DEC pathotypes, and the *blaTEM*, *blaCTX-M*, *blaSHV*, *blaNDM*, and *blaOXA-48*, that were associated with serious and urgent threats globally, were detected from under-five children in Ethiopia. Generally, DEC has the potential to be a big concern in under-five children in Ethiopia.