

Abstract

Background Globally, *Escherichia coli* (*E. coli*) and *Campylobacter* spp. are key foodborne pathogens and important indicators for antimicrobial resistance (AMR) surveillance in poultry. Our study assessed their occurrence, antimicrobial resistance profiles, and antimicrobial use in Kenyan small-scale poultry production. A cross-sectional study was conducted between August and December 2024 in 340 small-scale poultry farms across four sub-counties of Murang'a County. In each farm, cloacal swabs from five adult chickens were aseptically collected and pooled to form a composite sample, while data on antimicrobial use were collected using a semi-structured questionnaire. Isolation of *E. coli* and *Campylobacter* spp. was carried out using conventional culture procedures, and isolates were confirmed with matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF). Antimicrobial susceptibility testing was performed using the Kirby–Bauer disk diffusion method, as per the CLSI (2024) guidelines.

Results: Antimicrobial use was reported in 75.3% ($n = 256/340$) of the study farms, with tetracyclines 73.8% ($n = 189/256$) and sulfonamides 52.3% ($n = 134/256$) being the most commonly used classes. *E. coli* was detected in 99.4% ($n = 338/340$) and *Campylobacter* spp. in 61.4% ($n = 209/340$). Among the *Campylobacter* isolates, *C. jejuni* 58.8% ($n = 123/209$) was more prevalent than *C. coli* 41.1% ($n = 86/209$). The highest resistance among *E. coli* isolates was observed against tetracycline, 74.0% ($n = 77/104$), and sulfamethoxazole-trimethoprim, 65.4% ($n = 68/104$). Extended spectrum β -lactamase (ESBL)-producing *E. coli* and phenotypic carbapenem-resistant *E. coli* were detected at 4.8% ($n = 5/104$) and 25.0% ($n = 26/104$), respectively. *Campylobacter* spp. exhibited the highest resistance to nalidixic acid 67.3% ($n = 69/104$) and tetracycline 65.4% ($n = 68/104$). Multidrug resistance (MDR) was identified in 58.6% ($n = 61/104$) of *E. coli* and 46.1% ($n = 48/104$) of *Campylobacter* spp. A significant correlation between antimicrobial use and *E. coli* resistance profiles was found in Kigumo sub-county ($r = 0.72$, $p = 0.04$), whereas no significant association was observed for *Campylobacter*.