Prevalence, Antimicrobial susceptibility pattern and associated risk factors for *Salmonella* species and *Escherichia coli* from raw meat at butchery houses in Mekelle, Tigray, Northern Ethiopia

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ABSTRACT

Background: *Salmonella* species and *Escherichia coli* are important foodborne pathogens affecting humans and animals. They are among the most important causes of infection that are associated with the consumption of contaminated food. This study was aimed to determine the prevalence, antimicrobial susceptibility patterns and associated risk factors for *Salmonella* species and *E. coli* in raw meat from butchery houses of Mekelle, Northern Ethiopia.

Methodology: A cross-sectional study was conducted from January to September 2019. Socio-demographic data and risk factors were collected using a predesigned questionnaire. Meat samples were collected aseptically from the butchery houses and transported using icebox to Mekelle University, College of Veterinary Sciences for the isolation and identification of *Salmonella* species and *E. coli*. Antimicrobial susceptibility patterns were determined using Kirby disc diffusion method. Data obtained were cleaned and entered into Statistical Package for the Social Sciences version 22 and logistic regression models with odds ratio were calculated. P-value < 0.05 was considered as statistically significant.

Results: A total of 153 out of 384 (39.8%) of the meat specimens were found to be contaminated. The contamination of *Salmonella* species and *E. coli* were 15.6% (n=60) and 20.8%) (n=80), respectively. Mixed contamination (*Salmonella* species and *E. coli*) was observed in 13 (3.4 %) of the analyzed. Poor washing hands regularly (AOR = 8.37; 95% CI: 2.75-25.50) and not using gloves during meat handling (AOR=11. 28; 95% CI: (4.69-27.10) were

associated with an overall bacterial contamination. About 95.5% of the tested isolates were sensit ive to chloramphenicol and norfloxacin while the resistance of amoxyclav_amoxicillin and erythromycin were both isolated bacteria species. The overall multidrug resistance pattern for *Salmonella* and *E. coli* were 51.4% (n=19) and 31.8% (14), respectively.

Conclusion: Of the 153 (153/384) contaminated raw meat, 60 (15.6%) and 80 (20.8%) were contaminated by *Salmonella* species and *E. coli,* respectively. Poor handwashing practice and not using glove during meat handling showed significant association with bacterial contamination. Multidrug-resistant showed in *Salmonella* species and *E. coli* were 19 (51.4%) and 14 (31.8%) respectively.

Keywords*:* *Antimicrobial Susceptibility test, butchery houses, E. coli, Raw Meat, Salmonella species*