Prevalence of *Campylobacter* and non-typhoidal *Salmonella* in Chicken in Bangladesh.

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Objective:

Prevalence of *Campylobacter* and non-typhoidal *Salmonella* in chicken in major markets and supplying farms in the country.

Introduction:

- Chicken is natural reservoir of Campylobacter, specially *C. jejuni* and non-typhoidal salmonella, which are two most important zoonotic bacteria causes intestinal illness in humans.
- With very poor management and cleanliness in farms and markets, chicken meat can easily be contaminated with fecal materials which could pose direct or indirect risk to human infection.

Final meeting and conference
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Methods: Cross-sectional study

50 markets and 100 farms selected within five zones in Bangladesh

Cultured the bacteria in specified media

Confirmation by PCR for *C. coli*, *C. jejuni* and *Salmonella*

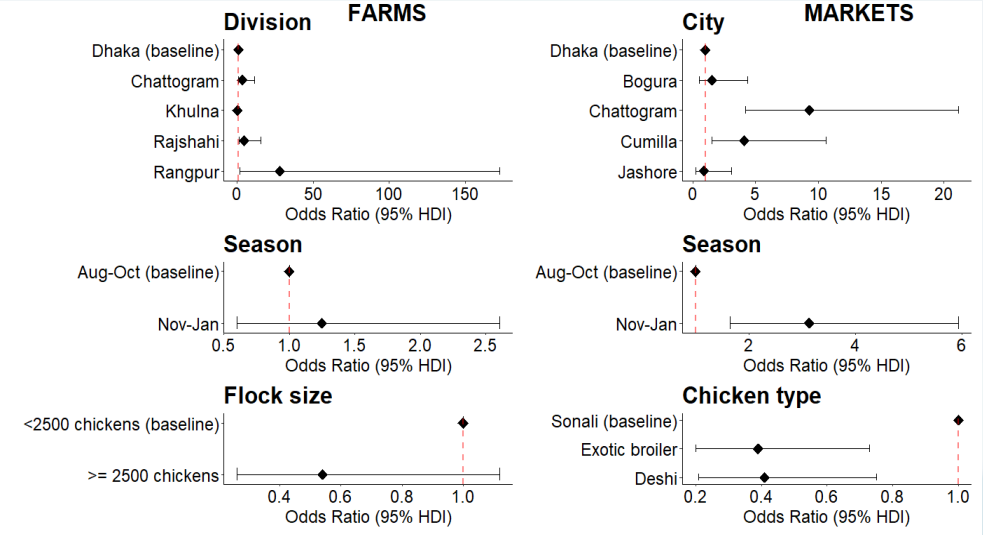
Hierarchical Bayesian modelling analysis

Results (*Campylobacter* in chicken):

- In **markets overall 11%** and *C. coli*(10.7%)>C. jejuni(0.5%).
  - θ By type, Sonali(15%)>Broiler(8.8%)≥Deshi(8.9%).
  - θ By area, Chattogram(24.2%)>Bogura(22.7%)> Cumilla(8.9%)>Jashore(4.9%)>Dhaka(3.3%).
- In **farms overall 17.6%** and C. coli(15%)>C. jejuni(2.6%).
  - θ By type, Sonali(26%)>Broiler(9.2%).
  - θ By area, Bogura(30.%)>Chattogram(24.5%)>Cumilla(20%)> Jashore(3.75%)>Dhaka(3.6%).

Results (*Salmonella* in environment):

- In **markets overall 32%**
  - θ By area, Chattogram(54.5%)>Dhaka(30%) >Jashore(25%)>Bogura(20%)>Cumilla(16.7%).
- In **farms overall 8%**
  - θ By type, Broiler(8%)>Sonali(2%)
  - θ By area, Jashore(12.5%)>Chattogram(9%)> Cumilla(8.3%) and not found in Dhaka and Bogura.



Odds ratios of bird-level variables for *C. coli* positivity, by site type

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Discussion:

- *C. coli* found in all type of chicken in market and farms.
- *C. jejuni* found in broiler and sonali in both market and farm. Not found in deshi chicken in market.
- Both *Campylobacter* and *Salmonella* is higher in markets than in supplying farms[1]. Travel stress and mixing with multiple age and species can increase bacterial load in chicken which leads increased environmental contamination[2].
- Hence eating raw and undercooked meat would pose a risk for human infection.

Scope:

- Risk and root cause analysis can be explored merging this data with the epi-data collected during the study and phylogenetic analysis done in LSHTM and NTU.
- In round 2, the longitudinal study will help more to understand the farm prevalence scenario.
- Slight change in sampling protocol just before the end of study showed good results in Campylobacter detection, which can amplify the quality of round 2 findings.
- The analysis by Hierarchical Bayesian model is being updated to include the variable: before/after change in protocol

References:

1. O. Dubovitskaya *et al*, Quantitative assessment of *Campylobacter* spp. levels with real-time PCR methods at different stages of the broiler food chain. 2023, Food Microbiology, Volume 110.
2. Joan A. St. Amand *et al*, Prevalence of *Salmonella* spp. in environmental samples from table egg barns in Alberta. 2017, Avian Pathology Volume 46, 2017 - Issue 6.

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