Estimating the prevalence of avian influenza in chickens in Bangladesh

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RESEARCH QUESTION

What is the the prevalence of avian influenza subtypes H9 and H5 in farms and in markets in Bangladesh?

What factors affect prevalence?

INTRODUCTION

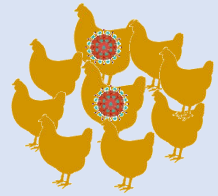
- Avian influenza viruses (AIV), particularly H9 and H5, have a high potential for **zoonotic transmission**[1]
- H5N1 is **highly pathogenic**, and has become enzootic in Bangladesh [2]
- H9N2 is less pathogenic, but **widespread** in Bangladesh [2]

METHODS

Cross-sectional study

100 farms selected from linked markets

Bayesian modelling for prevalence estimates

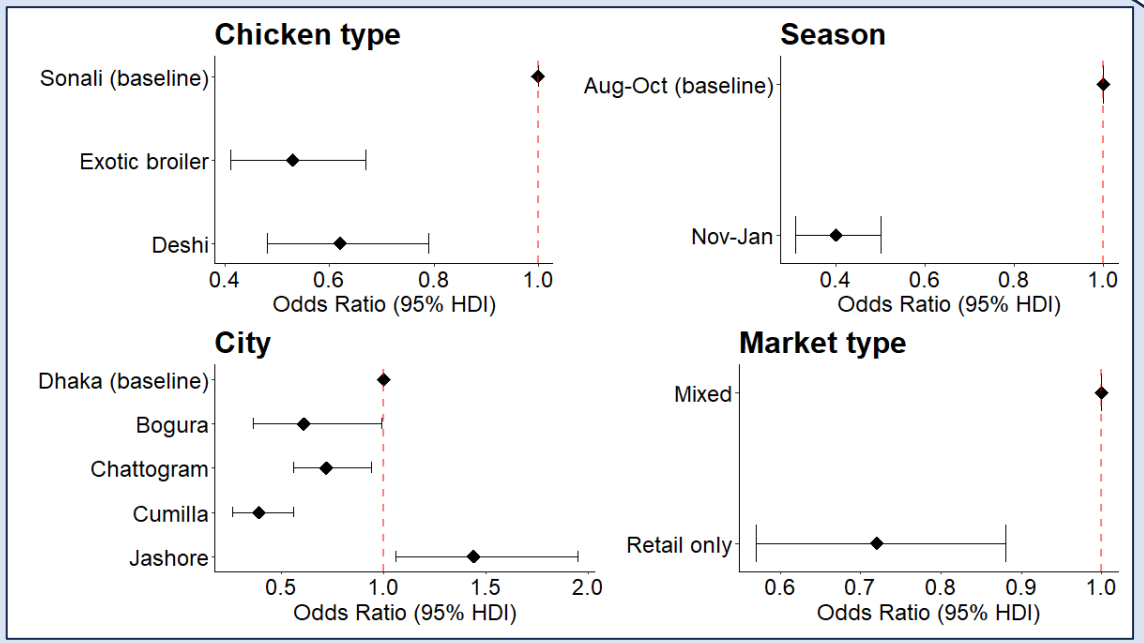


50 markets selected within five cities

PCR testing for AIV M gene, H9, H5

RESULTS

- 3677 birds sampled from August 2021 to January 2022
- Overall prevalence of H5N1
  - Farms: not modelled, 1/1500 (0.07%)
  - Markets: 0.6% (0.2-1.2%)
- Overall prevalence of H9N2
  - Farms: 0.7% (95% HDI: 0.1-2.1%)
  - Markets: 23.1% (95% HDI: 19.4-26.9%)



H9N2 in markets: Odds ratios of included variables

DISCUSSION

- Low detection of H5N1
- Amplification of H9N2 from farm to market has been noted in previous studies [3]
  - Transmission occurs either in transport to the market, or within the market
- H9N2 prevalence was highest among birds in mixed markets, sonali, birds in Jashore, and birds sampled Aug-Oct
  - Mixed markets: possibly wider geographic origins, more travel time
  - Sonali: Variation in the distribution network

FUTURE DIRECTIONS

- Analysis to be re-run with inclusion of new variable: time since market opening
- Analysis on stall-level risk factors + phylogenetic analysis will investigate within-market transmission (Helal, Jayna)
- Mathematical modelling will explore how the amplification occurs (Francesco)
- Round 2 studies will help us understand farm-level transmission and potential introductions in the markets

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