Introduction

Live Bird Market (LBM) is a place where live birds are traded. The exposure of humans to live birds in the LBMs might be contaminated with various infectious diseases like Avian Influenza Virus. No systematic study has so far been attempted for investigation of Avian Influenza status in LBMs which could pose threats to the economy and public health. Therefore, a cross sectional study was conducted on hygienic conditions of LBMs under Chittagong Metro in Bangladesh. The overall objective of the study was to assess the LBMs demographic and hygienic status and to evaluate the prevalence of AIVs at LBMs and to identify the risk factors associated with the occurrence of AIVs at LBM, and stall level. The study was to assess the LBMs demographic, hygienic status and Avian influenza in LBMs. The study was conducted on hygienic status of LBM, and Avian Influenza prevalence and risk factors. The study was to estimate the prevalence of AI at LBM level and stall level. The study was to identify the risk factors associated with the occurrence of AIV at LBMs and at stall level. The study was to conduct the model evaluation by R-T-PCR.

Methods and Materials

Small scale Live Bird Markets (LBMs) are commonly seen in every town of Bangladesh whereas wholesale and large retail LBMs are in larger cities. Majority of LBMs are located mostly in open air markets with exposure to outdoor environmental factors and contaminants.

Different species of birds enter into LBMs from different sources through a complex transaction chain. Infectious diseases like avian influenza can be easily introduced. Infectious organisms are amplified in the market environment and disseminated across different populations (bird-to-human) (Cardona et al., 2009).

Many previous AIV studies have used live bird samples to evaluate AIV status in LBMs (Garber et al., 2007).

Environmental sampling is the best option to assess the hygienic status associated with the detection of AIV in LBMs (Indriani et al., 2010; Blasius et al., 2015).

Pooled environmental swab samples from all poultry contamination sites of a stall across 40 LBMs has been collected for this study.

Very few previous studies determined potential risk factors for the occurrence of AIV at LBM or stall level (Indriani et al., 2010; Zhu et al., 2015) rather than the proper estimation of hygienic condition.

Therefore this study has been conducted targeting the following objectives:

1. Evaluate the LBM demographic, hygienic status, prevalence of AIV and the avian subtypes of H5, H7 and H9 at stall and LBMs level in the CMA.

2. Determine potential risk factors associated with the occurrence of AIV at stalls of LBMs in the CMA.

Results

Study sites: Tropical zone; 22°22′ and 91°41′; 29 m up from the sea level. Total area of 13° C to 32°C and Humidity of 70 to 85%

Study type: Cross sectional study

Study population: Poultry stalls (n=398) under 40 LBM of Chittagong Metro.

Sampling strategy: 100% stalls were sampled if a market had ≤10 stalls, whereas 50% stalls were sampled if a market had >10 stalls.

Collection, Preservation and Transportation of Samples:

- Pooled environmental swab samples (up to 9) per stall.
- Placed in 15 ml sterile Falcon tube containing 5 ml VTM
- Falcon tubes with samples were placed in insulated ice-box and transported to laboratory.

- 2 aliquots per sample with a volume of 2 ml each were made in the lab.
- One aliquot was stored in -40°C at the laboratory.
- Another aliquot was forwarded to the National Reference Lab. for Avian Influenza at Bangladesh Livestock Research Institute

Molecular evaluation was performed by R-T-PCR.

Collection data: Questionnaire, Interview and observation.

Statistical evaluation: STATTA 13. Descriptive and Generalized Estimating Equation Model were performed

Discussion

Prevalence of avian influenza and other subtype in LBM - Stall level:

- AIV: 40% (H7: 15.0%, H9: 25.0%, H7: 0%, H9: 0%, H7: 12.5%, H9: 3.1%)
- Risk factors for avian influenza - duck with other species in stalls, birds keeping on floor and hygienic score of stalls

References

- Sangkawibool, S., Ahasanul Islam, M., Mohammad, K., Kelly, P.M., 2011. Risk factors for avian influenza - duck with other species in stalls, birds keeping on floor and hygienic score of stalls

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