



**Antimicrobial Uses Pattern, Disease Status and
Biosecurity Practices of Sonali Broiler Chicken Farms
in Selected Areas of Bangladesh**

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Session: 2020-2021

**A thesis submitted in partial fulfillment of the requirements for the degree of
Master of Science in Applied Veterinary Epidemiology**

**One Health Institute
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December 2022

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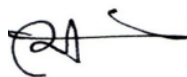
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the thesis examination committee have been made**



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Acknowledgments

The author would like to acknowledge the Almighty Allah for giving him life, hope, courage, strength, and perseverance to carry on despite all the challenges. The author feels highly privileged to express his profound sense of gratitude and honor to his supervisor **Dr. Mohammad Mahmudul Hassan** and co-supervisor **Dr. Sharmin Chowdhury** for their valuable and critical suggestions, scientific acumen, perspicacious remarks, scholarly guidance, blessings, and inspiration throughout the course of this study, research works and preparation of this manuscript. The author expresses his sincere and unfathomable sense of gratitude to **Dr. Sharmin Chowdhury**, Director One Health Institute, CVASU for providing him with a research grant as well as for her constructive advice and encouragement at various stages of this study.

With special pleasure, author acknowledged the Eastern Mediterranean Public Health Network (GHD|EMPHNET) and the Fleming Fund Country Grant to Bangladesh (FFCGB) for supporting him to accomplish this research work.

The author gives sincere thanks to his family, especially his mother, and wife who constantly support him and also grateful to brothers and sisters for their moral support. Very sincere thanks are due to the examiners for helping to refine his work further.

The author once again records his deep-felt gratitude to all those who are not mentioned here but directly or indirectly cooperated in this endeavor.

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List of Symbols and Abbreviations

| | |
|----------------|------------------------------------------------------|
| AI | Avian influenza |
| AMR | Antimicrobial resistance |
| AMU | Antimicrobial use |
| AGPs | Antimicrobial growth promoters |
| APMV | Avian paramyxovirus |
| ATI | Antimicrobial treatment incidence |
| CVASU | Chattogram Veterinary and Animal Sciences University |
| DLS | Department of Livestock Services |
| DNA | Deoxyribonucleic acid |
| DOC | Day old chick |
| FAO | Food and Agricultural Organization |
| HA | Hemagglutinin |
| HPAI | Highly pathogenic avian influenza |
| ILT | Infectious Laryngotracheitis |
| LPAI | Low pathogenic avian influenza |
| MG | <i>Mycoplasma gallisepticum</i> |
| NA | Neuraminidase |
| OIE | Office International des Epizooties |
| PLDP | Participatory livestock development project |
| RIR | Rhode Island Red |
| RNA | Ribonucleic acid |
| SBC | Sonali broiler chicken |
| SLDP | Smallholder livestock development project |
| <i>E. coli</i> | Escherichia coli |
| WOAH | World Organization for Animal Health |

Abstract

A cross-sectional study was conducted in Sonali poultry farms in seven districts (Chattogram, Dhaka, Kushtia, Pirojpur, Chuadanga, Bogura and Barishal) of Bangladesh from May 2022 to August 2022. The objective of this study was to obtain baseline data from a survey on biosecurity practices and antimicrobial use. The questions were focused on four areas of interest: socioeconomic conditions of farmers and their families, flock composition and housing, diseases and antibiotic using frequency. Variables were recorded for assessing the association with the outcome variable. Finally, data exported to STATA-SE 13 (Stata Corp., Texas, USA) for conducting epidemiological analysis. Descriptive and summary statistics were computed on different aspects of questionnaire data. Univariate fisher's exact test was applied to identify the potential set of factors ($p \leq 0.2$) which was then used for constructing multivariate logistic regression analysis. Backward stepwise logistic regression analysis was applied to fit the model. Results revealed that amoxicillin, ciprofloxacin, sulphur drug were the three most used antimicrobials in Sonali poultry farms in Bangladesh. Whereas fluroquinine, tylosin, and metronidazole were less commonly used. Among 210 respondents only 23% had knowledge about antimicrobial resistance (AMR). Most of the farm owners (77%) were unaware of the AMR issue. In various prescriber categories, private veterinary doctors held the largest representation. The poultry dealers (39.52%) also placed as a significant group of prescribing antimicrobials in poultry sector in Bangladesh. On the other hand, the position of government doctors (8.57%) was lowest compared to others. Coccidiosis was the main disease of poultry sector in the study areas. In addition, Infectious bursal disease (IBD), Mycoplasmosis, and Newcastle disease (ND) were the frequently found diseases in poultry farms. On the other hand, Fowl cholera and Salmonellosis were less commonly affected in sonali broiler chickens in the study area. The farmers who gave three vaccines (ND, IBD, Marek's) reported lower mortality (OR= 0.24) than those who used two vaccines (ND, IBD).

To limit the inappropriate use of antimicrobials and control the spread of diseases need proper steps in farm management, personal hygiene and creating awareness among the farmers community about the overuse of antibiotics.

Keywords: Antimicrobial usage, Bangladesh, Biosecurity practices, Poultry diseases, Sonali chicken.