

KNOWLEDGE, ATTITUDE AND PRACTICE OF POULTRY FARMERS ABOUT THE USE OF ANTIBIOTICS

M. Z. Hasan¹, M. G. Haider², M. R. Begum³, M. A. Kalam⁴
M.H. Faruquee⁵ and S. Rahman⁶

¹Avian Influenza Technical Unit, FAO

²Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur-1706,
Bangladesh, ³Central Disease Investigation Laboratory, DLS, Dhaka

⁴Head Epidemiology Unit, DLS, ⁵State University of Bangladesh, Dhaka

⁶Rajshahi University, Rajshahi.

Abstract

The commercialization of the poultry industry in Bangladesh began in 1980 and received momentum in 1990. Poultry rearing may play a vital role for economic development of the people. In the fiscal year 2007-08, 1.04 million ton meat and 5653 million eggs have been produced in Bangladesh. But consumption of unsafe poultry products may pose a significant threat to consumers by the presence of pathogens, antibiotic residues, and chemicals. The study was conducted to understand the knowledge, attitude and practice of Bangladeshi poultry farmers concerning the use of antibiotics. An analytic descriptive study was conducted in 210 poultry farms of 21 different districts from 7 divisions by telephonic interviews to explore knowledge, attitude and practice of poultry farmers on antibiotic use in Poultry in Bangladesh. In the study 21% farmers believed that antibiotic could destroy only bacteria whereas 39.5% thought that antibiotic could destroy both bacteria & virus and 39.5% farmers did not have idea about antibiotics. Which 61.4% farmers believed that antibiotics had side effect and 27.1% had no knowledge about the side effect of antibiotics whereas 11.4% thought that it had no side effect. However, 94.3% farmers were desired to switch to an alternative, if they found its use safer and cheaper than antibiotics. This study showed that 11% farmers went to veterinarian, 34.8% medicine seller, 30.5% neighbor farmers, 13.8% themselves and 10% others for taking advice to administer medicine though 13.93% farmers could not differentiate antibiotics from others medicine and 79% farmers had not clear idea about antibiotic. Those who went to medicine seller and neighbor farmers for taking advice were using

more antibiotics, the figure were 42.2% and 38.2% respectively ($p < 0.001$). This study also showed that 69.9% new farmers were used antibiotic whereas only 6.4% old farmers were used antibiotic frequently ($p < 0.001$). However no farmer did not maintain withdrawal period. For this reason, the effects on public health about the potential threat of the misuse of antibiotics are very much alarming in Bangladesh.

Keyword: Knowledge, attitude, practice, poultry, antibiotics.

Introduction

The poultry rearing plays an important role in employment, income generation and poverty alleviation in Bangladesh. But the poultry industries are facing various kinds of diseases problem. Combating these diseases antibiotics is required. Antibiotics belong to a category of drugs called antimicrobials, and include penicillin, tetracycline, amoxicillin and many other formulations that can kill or inhibit the growth of bacteria without causing significant harm to patients. Antibiotics are widely used in the therapy of infections. Besides the respective interactions between antibiotics and pathogens it seems that antibiotics also directly interact with the immune system (Pomorska and Pejsak, 2012). Some commonly used antibiotics are currently known to have effects on the immune response, as shown by in vitro, ex vivo and also in vivo animal experiments and clinical studies (Pomorska and Pejsak, 2012). Antibiotic as a growth promoter in

agricultural animal production has been practiced for about 50 year in the United States and other countries. In the United States, the authorities are recommended to reduce or eliminate the use of antimicrobials in the poultry (Dibner and Richards, 2004). Because of the public health risks associated with antibiotic resistance, there is a push to end the use of low doses of medically important antibiotics in order to slow the development of antibiotic resistant bacterial strains. Antibiotic residue in poultry meat and egg is a significant public health threat. The study was undertaken to understand the knowledge attitude and practice of Bangladeshi poultry farmers concerning the use of antibiotics.

Materials and Method

The research was conducted to survey the knowledge, attitude and practice of Bangladeshi poultry farmers concerning the use of antibiotics. An analytic descriptive study was conducted in 210 poultry farms of 21 different districts from 7 divisions by

telephonic interviews to explore knowledge, attitude and practice of poultry farmers on antibiotic use in Poultry in Bangladesh.

Sources of Data

Both primary and secondary data had been used for the purpose of this study. A structured questionnaire was designed to collect primary data in the light of the objectives of the study. Employees or owners of 210 poultry farms of 21 different districts from 7 divisions were requested to fill up the questionnaire.

Questionnaire Design

A structured, closed-ended questionnaire was given to respondents for collecting their opinion regarding job satisfaction. The blank questionnaire is filled up by the employees or owners of 210 poultry farms.

Study design:

Cross sectional study

Study Area:

Study area of 210 poultry farms of 21 different districts from 7 divisions in Bangladesh were shown in table 1.

Table 1: Study Area.

Division	District	Number of farm
Dhaka	Gazipur, Tangail & Manikganj	30
Rajshahi	Rajshahi, Bogra and Joypurhat	30
Chittagong	Chittagong, Feni & Comilla	30
Sylhet	Sylhet, Habiganj, & Maulavibazar	30
Khulna	Khulna, Jessore & Meherpur	30
Barishal	Barishal, Patuakhali & Pirojpur	30
Rangpur	Rangpur, Gaibanda & Kurigram	30

Duration

15 months (October, 2010 to December, 2011).

Sampling technique

Systematic data collection plan was implemented.

From seven divisions, 21 districts (three from each division) was

selected depending on poultry population.

Telephonic and direct interview to explore knowledge, attitude and practice.

Data were collected by using a pre-tested interviewer administered questionnaire.

Exclusion criteria

Those whose farm was empty were left out of the study.

Techniques Used for Data Analyses

For analysis of data, Microsoft Excel had been used. The coding option had been used to collect data at the initial stage. Both parametric and non-parametric statistical tools were used to derive a meaningful conclusion from the empirical data. In addition, the collected data was entered in SPSS software for analysis.

Results and Discussion

In this study, developed questionnaires were filled up by the employees or owners of 210 poultry farms; the data were compiled and analyzed, and presented in different ways.

Knowledge of Bangladeshi poultry farmers concerning the use of antibiotics

Knowledge of Bangladeshi poultry farmers concerning the use of antibiotics were shown in table 2. In this study 21% farmers believed that antibiotic could destroy only bacteria whereas 39.5% thought that antibiotic could destroy both bacteria and virus, and 39.5% farmers did not have idea about antibiotics. 61.4% farmers believed that antibiotics had side effect

and 27.1% had no knowledge about the side effect of antibiotics whereas 11.4% thought that it had no side effect at all. Only 8.1% poultry farmers knew that antibiotic misuse might cause microbial resistance. Almost 100% farmers (some were strongly and some were moderately) believed that use of antibiotic as growth promoter had been proved as a potential public health danger by different research. 94.3% farmers were desired to switch to an alternative, if they found its use safer and cheaper than antibiotics.

In Bangladesh, antibiotics and antimicrobial drugs were used for the treatment and prevention of different bacterial diseases and growth promotion. Among the antibiotics nitrofurans were very harmful for the public health. For the prevention of diseases using antibiotics was also very much detrimental for public health. No withdrawal period is maintained for discarding chicken and eggs for human consumption. Till now there is no demarcation and restriction for using antibiotics in poultry in this country. The practice of using antimicrobial growth promoters (AGP) in general was under scrutiny in the United States (Angulo, 2004) and that consumer pressure was affecting commence to remove AGP from animal feeds (Dibner and Richards, 2005).

Antibiotics were used as effective prophylactic and therapeutic against different bacterial diseases of poultry in Canada and the United States, and even in all over the world (Gast, 1997). The farmers and chicken producers in Canada and the United States were very much conscious about the side effects of antibiotic than that of Bangladesh (Gast, 1997).

In this finding, 61.4% farmers believed that antibiotics had side effect which was corresponding with the findings of Chauhan and Roy, (2007); and Pomorska and Pejsak, (2012). Only 8.1 % poultry farmers were informed that antibiotic misuse might cause microbial resistance.

Table 2: Knowledge of actions of antibiotics of the farmers.

Knowledge	Yes	No	Do not understand
Action of antibiotic	44 (21.0%)	83 (39.5%)	83 (39.5%)
Side effect of antibiotic	129 (61.4%)	24 (11.4%)	57 (27.1%)
Resistance of antibiotic	17 (8.1%)	88 (41.9%)	105 (50%)

Attitude of Bangladeshi poultry farmers concerning the use of antibiotics

In this study, 11% farmers went to veterinarian, 34.8% medicine seller, 30.5% neighbour farmers, 13.8% themselves and 10% others for taking advice to administer medicine though 13.93% farmers could not differentiate antibiotics from others medicine and 79% farmers had no clear idea about antibiotic (Table 3). Those who went to medicine seller and neighbour farmers

for taking advice to use more antibiotics, the figures were 42.2% and 38.2%, respectively ($p < 0.001$).

The present study showed the highest numbers of farmers (34.8%) of Bangladesh used to go to the medicine sellers for their suggestion and they were frequently suggested to use antibiotics which were not possible to developed countries like USA and Canada (Donado-Godoy, *et. al.* 2012).

Table 3: Relationship between advice and frequently antibiotic administration

Antibiotic use	Veterinarian	Medicine seller	Neighbor farmer	Themselves	Others
Yes	3 (1.8%)	70 (42.4%)	63 (38.2%)	14 (8.5%)	15 (9.1%)
No	20 (44.4%)	3 (6.7%)	1 (2.2%)	15 (33.3%)	6 (13.3%)
Total	23 (11%)	73 (34.8%)	64 (30.5%)	29 (13.8%)	21 (10%)

$p < 0.001$

Practice of Bangladeshi poultry farmers concerning the use of antibiotics farmers were used antibiotic whereas only 6.4% old farmers were used antibiotic frequently ($p < 0.001$). Practices of Bangladeshi poultry farmers concerning the use of antibiotics were shown in table 4. This study also showed that 69.9% new farmers. However, withdrawal period of antibiotics was not maintained by the farmers.

Table 4: Relationship between farm type (old & new) and frequently antibiotic administration.

Antibiotic use	New (flock 1)	Old (> flock 1)	Total
Yes	130 (78.8%)	35 (21.2%)	165 (78.6%)
No	19 (42.2%)	26 (57.8%)	45 (21.4%)
Total	149 (71.0%)	61 (29.0%)	

$p < 0001$

Almost 100% farmers (some are strongly, some are moderately) believed that use of antibiotic as growth promoter had been proved as a potential public health danger by different research. 94.3% farmers were desired to switch to an alternative, if they found its use safer and cheaper than antibiotics. These findings were also reported by other authors (Shivoprasad, H. L. 1997; Pomorska and Pejsak, 2012). In this study, only 8.1% poultry farmers knew that antibiotic misuse might cause microbial resistance. The results of antibiotic resistant were also corresponded to other authors (Donado-Godoy, *et al.* 2012; Kim *et al.*, 2012 and Zhang, *et al.*, 2012).

Antibiotic resistance had serious clinical and public health implications as it imposed limits on the quantity and

quality of antibiotics which were widely used for the growth promotion, control, treatment and prevention of infection within animal populations. A longitudinal study with laboratory analysis to qualitatively be understood the posed threat of antibiotics in poultry in Bangladesh. A realistic communication among farmers is followed the instruction of manufacturers for withdrawal period. Enforcement is required the Bangladesh Veterinary Practitioners Act to reduce the risk of unnecessary use of antibiotics. It is essential to build up awareness to the farmers about the potential threat of misuse of antibiotics by the veterinarians or civil society. Further study is needed to quantify the public health risk of indiscriminate and unregulated use of veterinary

antibiotics and antimicrobial drugs in details.

References

- Angulo, F. J. 2004. Impacts of antimicrobial growth promoter termination in Denmark. In proceedings of the 53rd Western Poultry Disease Conference, Sacramento, CA. Pp. 16-19.
- BBS (Bangladesh Bureau of Statistics), Statistical Year book of Bangladesh - 2010.
- Chauhan, H. V. S. and Roy, S. 2007. Poultry Diseases, Diagnosis and Treatment. 3rd edn. New Age International (P) Limited Publishers. New Delhi, India, p. 23-27.
- Dibner, J. J. and Richards, J. D. 2005. Antibiotic Growth Promoters in Agriculture: History and Mode of Action. Poultry Science Association, Inc. Pp. 634-643.
- Donado-Godoy, P., Gardner, J., Byrne B. A., Leon, M., Perez- Gutierrez, E. Ovalle M. V., Tafur, M. A. and Miller, W. 2012. Prevalence, risk factors, and antimicrobial profiles of Salmonelle from commercial broiler farms in two important poultry-producing regions of Colombia. *J. Food. Prot.* 75(5): 874-83.
- Gast, R. K. 1997. Salmonella infections. Calnek, W. B. (ed.). Iowa State University Press, Iowa State, USA. Pp. 97-121.
- Kim, M. S., Lim, T. H., Jang, J. H., Lee, D. H., Kim, B. Y., Kwon, J. H., Choi, SW, Noh, J. Y., Hong, Y. H., Lee, S. B., Yang, S. Y., Lee, H. J., Lee, J. B., Park, S. Y., Choi, I. S. and Song, C. S. 2012. Prevalence and antimicrobial resistance of Salmonella species isolated from chicken meats produced by different integrated broiler operations in Korea. *Poult Sci.* 91(9):2370-5.
- Pomorska-Mol M and Pejsak, Z. 2012. Effects of antibiotics on acquired immunity in vivo-current state of knowledge. *Pol. J. Vet. Sci.* 15 (3): 583-8
- Shivoprasad, H. L. 1997. Pullorum disease Fowl typhoid. In: Diseases in Poultry. Calnek, W. B. (ed.). Iowa State University Press, Iowa State, USA, Pp. 82-96.
- Zhang, T, Wang, C.G, Jiang, G E., Lv, J. C. and Zhong, X. H. 2012. Molecular epidemiological survey on aminoglycoside antibiotics-resistant genotype and phenotype of avian *Escherichia coli* in North China. *Poult Sci.* 91(10):2482-6.