

# Quality Assessment of Poultry Farm and Product Processing Unit in Different Divisions of Bangladesh

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## Abstract

A total of 630 questionnaires were filled following face to face interviews under seven Divisions of Bangladesh from randomly selected poultry farmers to find out the existing status of poultry farming and poultry product processing plant. Lack of good farm management knowledge resulting farmers are using drugs indiscriminately from farm to marketing chain creates health hazard on poultry and human. The survey result revealed about 66.12% farmers marketed their birds before withdrawal period of drug 69.30% and 21.30% farmers sold their eggs and sick birds under treatment period of antimicrobial drugs indicates unsafe for human health. It was observed that 54.10% farmers had superficial knowledge on residual effect of antibacterial drug and Maximum Residue Limits (MRL's) in poultry products. From the survey, cost of drug incurs 23% of the total rearing cost. It was recorded that 32.45% of surveyed farmers marketed their products following the standard withdrawal period of antibacterial drugs but 66.12% farmers marketed before withdrawal period of drugs. Drug that were used by the surveyed Division where Enrofloxacin cases in Dhaka Division were higher (26.67%) than other Division 20.96% Oxytetracycline in Rangpur; 20.95% Ciprofloxacin in Khulna; 28.57% Salfonamide in Sylhet; 21.67% Gentamicin in Barisal; 32.14% Cloramphenecal and 41.46% Furazolidone in Chittagong Division respectively. It was observed during drug uses cases 44.62% farmers discussed and followed ULO (local veterinarian) suggestion and 28.92% collected from feed supplier. During marketing transportation, 34.67% farmers transported their broiler at morning, 19.39% at afternoon, 29.11% at evening and 16.82% at any time. During disinfectant using cases 54.70% farmers' disinfected before entering into the farm and 24.91% used disinfectant to wash eggs before sale. On average 57.00% farmers cleaned their eggs before marketing and 23.80% farmers following standard method for egg storage. It also observed that 45.00% farmers disinfected their dressing plant before slaughtering of birds where 61.00% farmers slaughter their broiler inside the plant, Irrespective of Divisions, 65.60% farmers had drainage system to discharge the liquid wastes of their de-feathering unit. Surveyed farmers were categorized on the basis of poultry management practice, whereas 9.38% farms followed standard practice of bio-security, 41.48% farms followed good practices, 32.53% farms fell in fair category and 16.59% farms remained in poor category. To get quality poultry product from farms to processing plant farmers must be trained on good management practices to create awareness on poultry and human health hazards.

## Keywords

Assessment, Quality, Survey, Poultry Farming, Product Processing Unit and Bangladesh

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## 1. Introduction

Poultry industry is growing very fast since the last decade in Bangladesh. Per capita demand for meat and fish products in developing countries has grown a rate of 3.7 percent over the last 20 years [9]. At the same time, the new intensive production systems of the developing world are facing more and more pressure to comply with the regulations that prevail in the global market. The growth rate of chicken production in Bangladesh to be 5.3 percent *per annum*, and predicted that consumption of broiler meat and eggs would grow by 95 percent and 78 percent, respectively, in the period to 2020 [23]. Most poultry is sold in live bird markets, and about 90 percent of the rural families keep small numbers of chickens [7]. Knowledge level in poultry production technology and lack of skilled management are the main barriers in flowering poultry farming in the rural area. This rapid growth involved diversified stakeholders in poultry production. In this transition many people come to engage themselves in different avenue of poultry business like; small farming, manufacturing of poultry equipment, feed mobilization and marketing of medicine and biologics without having proper training and knowledge in hygiene, bio-security and food safety measures. They started and practiced as they can. With this rapid growth of farms, farmers and dealers government and non-government agencies fail to meet up the matters of public health concern. Quality of poultry meat and egg is of great concern. Farmers are using growth promoter, antibiotic and toxin binder indiscriminately now a days to achieve maximum growth potential and survivability [10; 16; 18 and 35]. Antimicrobial agents are widely administered in therapeutic treatment of livestock and poultry and constitute a common cause of the presence of chemotherapeutic drug residues in the product and by products [1]. Improper dosages/discontinued course of treatment with antibiotic and residue of drug from animal and poultry origin food play the vital role for development antimicrobial drug resistance [2; 6; 8; 24; 28; 29; 32; 33; and 34]. It is very dangerous for birds and also for human health [3; 4; 21; and 27]. In most cases before the withdrawal period of antimicrobial drug, the livestock and poultry products and byproducts are marketed in our country. Even farmers are selling their product during the treatment period with antibiotic. Moreover peoples are reluctant to buy from the slaughterhouses or warehouses rather they are very fond of pre-cising live bird from the open market. The people are not so aware about hygienic in slaughter and meat processing. People of our country are rearing their flock and/or animals using traditional method. They have very little knowledge about the scientific methods of rearing livestock (on proper housing, management practices, efficient reproductive performances, disease

prevention and veterinary services). So human have to faced different food safety hazards; Biological (bacteria, viruses, protozoa); Physical and Chemical (Agricultural Chemicals/Animal Drugs and Environmental Contaminants). So all time those poultry and poultry products are contaminated with organisms. About 60% of human diseases come from animals, so the link between animal health and human health is strong. The general publics are becoming aware of food safety issues and the concerning about of potential for chemical and microbiological hazards in foods. The government has already taken drastic necessary action to control adulteration in food, drugs etc. But still the awareness has not developed about this matter. However, the proper implementation of risk-analysis tools requires certain basic components. These include efficient public health institutions, sufficient laboratory facilities, properly trained human resources and functional infrastructure [10].

To reduce the unusual uses of drugs in poultry products from farms to consumers supply chain a group of approaches have to be implemented for ensuring quality poultry products for consumers, especially for good human health concerned people. To strengthen this program, each and every stakeholder should come forward either from GO, NGO or private entrepreneurs following regular surveillance on poultry products residue in farm or market or processing plant areas where poultry products have more chance to contaminate with drugs. It also needs to train how to produce quality food from farm to packaging in every steps of supply chain. Infrastructure facility and transport facility should also to be needed for getting quality food. Those type that has already been discussed but not yet been studied. Considering these reasons, the present study was under taken with the following objectives.

### *Objectives*

- i) To know the status of poultry farming and poultry product processing in Bangladesh
- ii) To identify the scenario of drugs used in the poultry industry in Bangladesh

## 2. Materials and Methods

### 2.1. Location and Target Group

Preformed questionnaires were used for information collection from poultry farmers, aradder and dressing plant operators to know the status of poultry farming and poultry product processing. The data were collected by the author with the help of Scientific Officers and Field Assistants from seven Divisions of Bangladesh through several personal visits for ensuring data quality. The primary data were collected by direct interview from selected respondents.

## 2.2. Sample Size

A total of 630 questionnaires were filled from seven Divisions (Barisal, Khulna, Sylhet, Rangpur, Dhaka, Rajshahi and Chittagong). Ninety questionnaires were filled for each Division considered as a representative sample.

## 2.3. Survey Method

Face to face interview method together with pre-tested and well-structured questionnaire was used for this survey.

## 2.4. Statistical Analysis

After collecting all the information were tabulated, summarized and processed for further analysis. The target of this study was to build-up awareness for producing safe poultry meat and eggs regarding food safety issues. For this purpose data were generated on the present status of poultry farming and poultry product processing in our country. Simple descriptive statistics (Frequencies, Means etc) were used to analyze data obtained from the survey.

## 3. Results and Discussion

The information collected through questionnaire is divided into the following groups.

### i. Antimicrobial drug use by farmers;

- ii. Knowledge about the withdrawal period at marketing of poultry products;
- iii. Broiler marketing;
- iv. Egg marketing;
- v. Hygienic status of de-feathering unit;
- vi. Hygienic status of poultry processing in dressing plant; and
- vii. Assessment of poultry farm on bio-security practiced

## 3.1. Antimicrobial Drugs Use by Farmers

### a) Antimicrobial drugs use status

Quality of poultry meat and egg is a great concern. But this is totally absent in our country because when any kind of new business are started as profitable a sort of people are going to start that business without knowing of its ins and outs. As a result, after certain period of time people are facing problem and becoming looser. So prior to establish a poultry farm business, interested person should consult poultry experts. To achieve maximum growth and survivability, farmers are using improper doses of growth promoter, antibiotic, toxin binder. This misuse of feed additives and antibiotics is hazardous for human health [17]. The basic information of antimicrobial drugs use in seven Divisions of Bangladesh are shown in Figure 1.

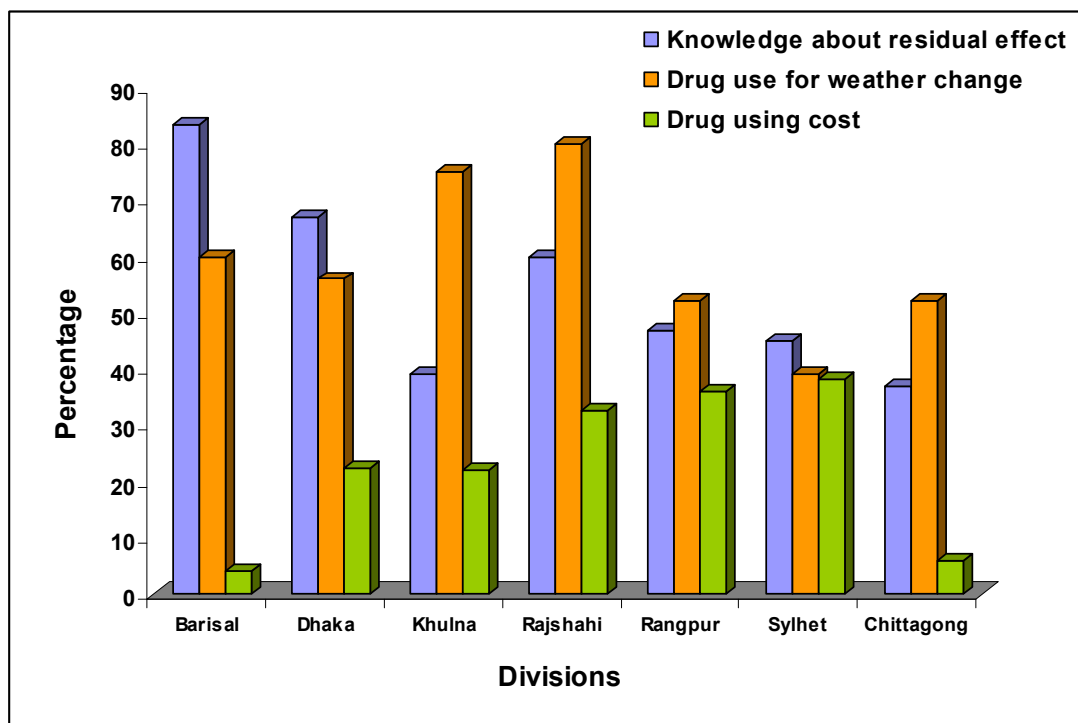


Figure 1. Knowledge, use and cost of drug use in seven Divisions of Bangladesh.

It was observed that 54.10% farmers have superficial knowledge on residual effect of antibacterial drug but they

did not know about withdrawal period of antimicrobial drugs, Maximum Residue Limits (MRL's) in poultry products,

residual effect of antimicrobial drugs on human health and cost of drug in chicken rearing which were similar to the findings of [5]. From the survey, cost of drug has been calculated near about 23% of the total rearing cost which was similar to the findings of [22]. It was also observed from the survey that average 90.90% farmers use different drug in poultry feed and rest of them use drugs in drinking water and injected to mussels of birds during the drug administration. A total 59.10% farmer used drugs during weather change which was extra stress on bird's health and it also unethical.

#### b) Pattern of Antimicrobial drugs use

The use of antibiotics as feed additives is currently discouraged in developed countries. Even many countries have already imposed a ban on it. [12] suggested that antibiotics should only be used for therapy following laboratory diagnosis of the illness in the flock. He also opined that to minimize the antimicrobial resistance problem following judicious application of antibiotics in the farms in accordance with qualified veterinarians, consultant or

Pharmaceuticals Company those are directly related with farm management, disease prevention and treatment also for production. The Antimicrobial drugs use pattern in seven Divisions of Bangladesh is shown in Table 1. During the survey, it was noted that 33% farmers use Ciprofloxacin, 29% Enrofloxacin, 27% Oxytetracycline, 22% Salfonamide, 19% Gentamicin, 9% Cloramphenecal and 7% Furazolidone. This finding has similar with the findings of [19; 27 and 30]. It also observed that Enrofloxacin used by the farmers in Dhaka Division were higher (26.67%) than other Division whereas 20.96% Oxytetracycline in Rangpur, 20.95% Ciprofloxacin in Khulna, 28.57% Salfonamide in Sylhet, 21.67% Gentamicin in Barisal and 32.14% Cloramphenecal and 41.46% Furazolidone in Chittagong Division respectively (Table 1). Findings of the present investigation clearly indicate that the present malpractice of antibiotics use patterns in our country is so alarming. Farmers training especially on biosecurity and management must be emphasized to overcome this problem.

**Table 1.** Antimicrobial drugs and their percentage use by the farmers in seven Division of Bangladesh.

Divisions	Antimicrobial drugs use by farmers (%)						
	Enro.	Oxyte.	Cipro.	Salfo.	Clora.	Genta.	Furaz.
Total use	29.00	27.00	33.00	22.00	9.00	19.00	7.00
Dhaka	26.67	7.78	13.33	9.29	10.71	15.00	-
Rajshahi	7.78	17.37	19.05	16.43	23.21	18.33	12.20
Sylhet	11.67	16.17	6.19	28.57	26.79	12.50	24.39
Rangpur	9.44	20.96	12.86	12.14	7.14	10.83	17.07
Chittagong	8.33	8.38	11.90	14.29	32.14	11.67	41.46
Khulna	11.11	17.96	20.95	7.14	-	10.00	-
Barisal	25.00	11.38	15.71	12.14	3.57	21.67	4.88

The large majority of poultry farms in Bangladesh are engaged in small-scale farming. Mainly poor farmers, unemployed youths and distress women are mostly involved in small-scale farm operation to support their own livelihood. It was found in many cases that most of the farmers have no idea or training on commercial poultry farming. They started their business to see their adjacent farmers without taking any training or consulting the poultry experts or Upazilla Livestock Officer (ULO), Veterinary Surgeon (VS) etc. Profitability of such farms has not yet been experimentally determined but field reports show highly variable results. In general, the more the farms are scientifically managed, the less the mortality and higher is profit because they are receiving adequate technical advice from poultry consultants, veterinarians, ULO and also their input and suppliers.

Rate of suggestions are followed by the surveyed farmers before using of antimicrobial drugs and drug collection in seven Divisions of Bangladesh is shown in Table 2. It was observed in this table that 44.62% farmers discussed and followed suggestion of ULO in drug using time while

21.83% were self-users, 9.56% farmers followed others farmers suggestion and 42.67% farmers have taken their decision discussed with of all sources (vetarerian, self and other farmer). These results agreed with the findings of [5] who reported that all poultry farmers frequently use different antimicrobial drugs interchangeably for treatment and control of diseases. Because of frequent occurrences of different diseases in the farms and lack of proper veterinary extension services, farmers are forced to overcome the problem by indiscriminate use of antibiotics of which may do not follow proper dosing and lack of advice on withdrawal period.

#### c) Collection of Antimicrobial drugs and their use

Antimicrobial drugs can be purchased in most of the developing nations in local pharmacies as over-the counter preparations, without prescription. This practice makes drugs more accessible to the population. In Bangladesh most of the farmers have no idea about modern poultry management system and they do not know how to keep the farm free from diseases following strict bio-security measures. It was found many farmers were not in touch with modern technology to augment production. When farms were found with different

bacterial or viral diseases attacked, the farmers were worried about to combat this problem instantly. For this they were going firstly to the adjacent farms to know the solution of this problem. In this cases farmers are not bother about the disease nature or its preventive measure, he directly wants to instant recover from this problem. So the farmers had to go to the surrounding areas for drug collection as early as possible.

It was found at farm level for minimizing the poultry production losses are different on the basis of farmer's education, training, consciousness, and surrounding facilities what he has. Most of the farmers collected their drugs from feed supplier (28.92%) while 18.91% from market, 25.45% from marketing agent and 26.73% from medicine supplier. These results were similar to the findings of [5 and 25].

**Table 2.** Causes and ways of Antimicrobial drugs use by the poultry farmers in seven Divisions of Bangladesh.

Divisions	Causes of Antimicrobial drugs use (%)				Ways of Antimicrobial drugs use (%)			
	As per suggestion of vetererian	As per suggestion of other farmer	Self	All Mixed	Collect from market	Collect from feed supplier	Collect from medicine supplier	Collect from agent
Barisal	58.50	4.16	14.50	22.84	16.66	29.40	25.00	28.00
Dhaka	78.00	4.54	14.00	3.46	21.10	24.00	33.00	19.00
Khulna	30.00	-	-	70.00	21.00	40.00	12.00	34.01
Rajshahi	54.50	-	40.50	5.00	20.00	24.00	32.00	34.00
Dinajpur	33.00	-	16.00	51.00	23.08	15.00	32.40	15.66
Sylhet	35.00	-	28.00	37.00	-	-	-	-
Chittagong	23.33	16.00	18.00	42.67	11.60	41.09	26.00	22.00
Average	44.62	9.56	21.83	42.67	18.91	28.92	26.73	25.45

### 3.2. Knowledge About the Withdrawal Period During Marketing of Poultry Products

Different feed and Pharmaceuticals Companies marketed a lot of antibiotics, feed additives, and growth promoter to popularize their products to the poultry farmers about the beneficial effect of their drugs rather than bad impacts on poultry or human health or the actual withdrawal period have to be maintained. Each and every antibiotics or stimulates have a specific withdrawal period after administering on poultry or any living beings for treatment purposes. It was found except commercial large farmers or trained farmers are following the antibiotics uses along with withdrawal period in their farm. Most cases following withdrawal period for antibiotic use not found. Injudicious application of various

antibiotics by nonqualified persons is responsible for any alarming situation. Poultry product sales after drug administration in seven Divisions of Bangladesh are shown in Table 3. Generally, the withdrawal periods of most of the antibacterial drug are 7 days. It was observed that only a few farmers (32.45%) marketed their products following the standard withdrawal period of antibacterial drug. However, 18.56% farmers for 3 days, 25.01% farmers for 5 days, 27.86% farmers for 7 days sold their poultry products. Total 66.12% farmers marketed their birds before withdrawal period of drug. It was noted that 69.30% farmers sold their eggs and 21.30% farmers sold their sick birds during the treatment period of antimicrobial drugs which is unsafe for human health (Table 3). The actual withdrawal period of respective antibiotics that maintained for control the drug residues.

**Table 3.** Poultry product sales after drug administration in seven Divisions of Bangladesh.

Divisions	Poultry product sales during the treatment period (%)				After drug administration, bird sales at different withdrawal periods (%)				
	Bird sales			Egg sales	3 days	5 days	7 days	10 days	
	Before withdrawal period	After withdrawal period	Sick birds						
Barisal	85.00	5.00	26.00	72.00	17.00	41.00	27.00	5.00	
Dhaka	61.78	38.22	20.00	57.00	14.28	23.50	24.00	38.22	
Khulna	57.00	43.00	-	100	-	17.00	40.00	43.00	
Rajshahi	67.00	33.00	14.00	68.00	19.00	13.00	35.00	33.00	
Dinajpur	67.00	33.00	18.00	75.50	14.00	19.00	34.00	33.00	
Sylhet	90.50	9.50	44.00	54.20	28.50	50.00	12.00	9.50	
Chittagong	34.55	65.45	5.900	58.50	-	11.55	23.00	65.45	
Average	66.12	32.45	21.30	69.30	18.56	25.01	27.86	32.45	

### 3.3. Broiler Marketing

#### a). Broiler transportation time

Transport and handling stresses can be aggravated greatly by

adverse weather conditions, especially during rapid weather changes. Animals should be protected from heat stress while in transport. If a loaded truck has to be parked during hot weather, fans or water should be provided to keep animals

cool. During cold weather, wind protections should be provided and also arranged adequate ventilation if the animals would spend more than a few hours in the transport vehicle. Increased fear [15], leg breakage [11] and mortality have been associated with poor catching and loading and transporting techniques (Weeks, 2007).

Farmers do not consider proper handling and loading procedure from farm area to poultry marketing due to their lacking of knowledge and awareness irrespective of animal welfare [31]. Irrespective of Divisions, 34.67% farmers transported their broiler at morning, 19.39% at afternoon, 29.11% at evening and 16.82% at any time (Table 4). To minimize the heat stress maximum farmers selected morning and evening to transport their broilers for marketing.

#### b). Spaces for broiler transportation

The carriers or cages which were used to carry the bird should have proper space for proper ventilation and proper movement. During transportation, the trucks or pick up cars

should have open wall box so that the chickens inside the baskets can get sufficient air supply. It is necessary to give attention to the height of the basket stack. The maximum stack for one truck is 6 baskets and 4 baskets for one pick up car. During the present survey it was found that about 50.14% farmers kept 40-50 birds/cage, 24.57% farmers kept 51-60 birds/cage and 25.43% farmers kept 61-70 birds/cage (Table 4) during transportation in a cage measuring 4×3×1 feet, where mostly provided spaces was not sufficient. These findings were more or less similar to the findings of [25].

#### c). Broiler transport cage

For comfort to the birds, the cage should have facility to proper aeration, good ventilation system, easy to handle, smooth and flexible. It was observed that 28.90% farmers used bamboo made cages whereas 71.10% farmers used steel made cage (Table 4). To minimize the heat stress and control the breast blister of birds, a suitable cage have selected for transportation of broilers.

**Table 4.** Status of broiler transportation in seven Divisions of Bangladesh.

Divisions	Time of transportation (%)				Type of cage for transportation (%)		Number of bird transported each time (%)		
	Morning	Afternoon	Evening	Any time	Steel	Bamboo	40-50 birds	51-60 birds	61-70 birds
Barisal	42.10	23.80	27.00	7.10	82.00	18.00	50.00	15.00	35.00
Dhaka	11.00	40.00	49.00	-	89.00	11.00	39.00	44.00	17.00
Khulna	45.00	15.00	0.00	23.09	71.40	28.60	66.70	0.00	33.00
Rajshahi	35.00	27.50	24.50	13.00	80.20	19.80	52.00	29.00	20.00
Rangpur	40.00	19.50	11.20	29.30	75.10	24.90	50.00	25.00	25.00
Sylhet	41.00	9.90	45.10	4.00	40.00	60.00	33.30	29.00	38.00
Chittagong	28.60	0.00	47.00	24.40	60.00	40.00	60.00	30.00	10.00
Average	34.67	19.39	29.11	16.82	71.10	28.90	50.14	24.57	25.43

### 3.4. Egg Marketing

#### a). Egg Cleaning and Disinfection

In local area the small farmers could not find suitable market to sale their egg instantly with a reasonable price. As egg is highly perishable, the local traders and commission agents reduce their wholesale price, which incurs less profit to the farmer. In the absence of storage and good marketing channel, the farmers are penalized with lower price and the consumers are deprived of quality products at reasonable price. For maintaining the quality of poultry eggs to the consumers as well as to get maximum price some intervention is needed at farms level that is practiced in developed countries. Unfortunately, in our country this is still absent. Whether, some farmers are found practicing for supplying quality eggs from their farm area to market place which is not remarkable. The disinfection status during egg marketing in seven Divisions of Bangladesh is shown Table 5. It was observed that, on an average 54.70% farmers' disinfected egg's vehicles before entering into the farm and

24.91% farmers used disinfectant to wash eggs before sale while 46.35% farmers used water to clean and germ free of eggs, 16.84% farmers used different disinfectants, 11.90% farmers used soap and 24.91% farmers used other disinfectant. On average 57.00% farmers cleaned their eggs before marketing, whereas 43.00% farmers never clean their eggs (Table 5).

#### b). Egg storage

As the proper storage system of whole egg has not yet been developed. Price fluctuation is very high within the years and the breakage and spoilage of eggs goes 2-4% [12]. The farmers do not get remunerative price throughout the year. For getting good price and keep the egg for certain period, some sorts of measures (Cleaning of eggs and egg's tray, storage egg properly, hygienic environment maintained) have to be undertaken. Research findings among the divisions noticed that, 2.90% farmers cleaned egg trays at 10-15 days interval, 40.10% farmers cleaned egg trays at 15-20 days interval and 57.00% farmers cleaned egg trays at 25-30 days interval (Table 5). It was also observed from this survey that

23.80% farmers used standard method for egg storage and 76.20% farmers said that they do not have any place for egg

storage. For getting quality egg from poultry farm, eggs should be stored with suitable tray and place.

**Table 5.** Disinfection status during egg marketing in seven Divisions of Bangladesh.

Divisions	Disinfection (%)			Type of disinfectants (%)					
	Eggs (before sale)	Egg's vehicle	Egg's Tray (%)			Water	Disinfectant	Shop	Other
			10-15 days Interval	15-20 days Interval	25-30 days Interval				
Barisal	27.80	65.60	22.10	26.70	51.20	40.00	47.50	10.00	2.50
Dhaka	19.60	60.00	5.00	35.00	60.00	47.50	6.30	26.30	19.90
Khulna	20.85	67.00	7.00	50.00	43.00	30.00	10.00	3.60	56.40
Rajshahi	24.10	64.00	25.50	42.50	32.00	35.00	8.10	4.90	52.00
Rangpur	27.60	50.00	6.70	46.30	47.00	41.50	8.00	3.50	47.00
Sylhet	20.45	64.00	29.00	12.00	59.00	61.00	27.00	12.00	0.00
Chittagong	34.00	12.50	29.00	23.00	48.00	64.00	11.04	23.00	1.96
Average	24.91	54.70	2.90	40.10	57.00	46.35	16.84	11.90	24.91

### 3.5. Hygienic Status of De-Feathering Unit

The hygienic status of de-feathering unit in seven Divisions of Bangladesh is shown in Table 6. It is observed that average 45.00% farmers disinfected of dressing plant before slaughtering of birds and 49.30% farmers disinfected of slaughtering instrument and rest of them was not disinfected their dressing plant and instruments, whereas 49.00% farmers said they used disinfectant 2 times daily (standard procedure)

to limit microbial contamination on equipment's and working surfaces which is agreed with the finding of [18]. They reported that the chlorinated-water were used for limiting microbial contamination on equipments and working surfaces and also found the campylobacter numbers of packaged carcasses were significantly lower to improve hygienic condition. But 32.30% farmers used disinfectant 1 time, 9.38% farmers used disinfectant 3 times and 9.32% farmers used disinfectant 4 times daily (Table 6).

**Table 6.** Hygienic status of de-feathering unit in seven Divisions of Bangladesh.

Divisions	Disinfection (%)		Type of disinfectant (%)			Disinfection of De-feathering unit and Instrument (%)			
	De-feathering unit	Instrument	Bleaching powder	Soap	Other	Once	Twice	Thrice	Fourth
Barisal	10.00	32.00	78.00	20.00	2.00	38.30	50.00	-	-
Dhaka	33.00	35.00	77.00	19.00	4.00	34.00	29.00	3.00	34.00
Khulna	70.00	35.00	65.00	20.00	15.00	30.00	50.00	15.00	5.00
Rajshahi	50.00	35.00	80.00	10.00	10.00	49.00	51.00	-	-
Rangpur	82.00	92.00	65.00	23.00	12.00	34.44	49.00	11.00	5.56
Sylhet	20.00	60.00	80.00	20.00	-	21.00	52.00	18.00	9.00
Chittagong	50.00	56.00	50.00	41.00	9.00	19.33	62.00	18.67	-
Average	45.00	49.30	70.71	21.86	7.43	32.30	49.00	9.38	9.32

The name of the major disinfectants which were used by the farmers was bleaching powder, soap, wheel powder, savlon, detergent, timsen, povicep. Irrespective of Divisions average 70.71% farmers used bleaching powder, 21.86% farmers used soap and 7.43% farmers used other disinfectants for cleaning and disinfection their dressing plant (Table 6). Findings of this results indicated that, slaughter house personnel or operator are not know of which disinfectant are corrosive or effective to reduce slaughter house contamination. Standard slaughter house remain environmental hygiene will consist of: proper fencing (public, dogs, etc.) pest control (rodents, insects), liquid or solid waste disposal and hand-washing facilities with adequate water supply. Clothing and hand gloves are

essential for slaughterhouse workers to protect the contamination.

### 3.6. Hygienic Status of Poultry Processing in Dressing Plant

With the increasing broiler production a hollowstic approach is required for collection, processing, storage and distribution to markets and finally to the consumers. To improve the present condition of dressing plant, it would requires launching promotional as well as motivational media activity to grow awareness among the consumers to consume the hygienically dressed chicken. The hygienic status of dressing plants in open market are shown in Table 7. Among the Divisions all farmers used normal dress during the processing of broiler on dressing plant and none of the farmers used

apron and also 26.70% used hand gloves in dressing plant. Average 61.00% farmers slaughter their broiler inside the plant, whereas rest of 39.20% farmers slaughters their birds outside the plant. About 38.30% farmers used drum for disposal of blood after bird slaughtering, whereas 61.7% used soil and on the other hand 41.00% farmers said they dispose offal and feathers in pond and 59.00% used pit. Irrespective of Divisions, 65.60% farmers have drainage system to discharge the liquid wastes of their de-feathering unit whereas 34.40% farmers did not use any drainage system (Table 7). Irrespective of Division, 71.20% farmers said they use flow water after de-feathering of birds whereas 28.8%

farmers used storage water to clean the birds properly.

The evisceration process of poultry should be done hygienically to limit/control microbial counts in broiler market condition. The result agreed with the finding of [36]. They reported that the evisceration process resulted in a significant ( $P > 0.05$ ) increase in microbial fecal contamination. Statistically significant lower microbial counts were observed in hygienically processed carcasses as compared with market carcasses. *E. coli* and fecal *Streptococci* are completely absent in hygienically processed carcasses.

**Table 7.** The hygienic status of dressing plants for poultry processing in seven Divisions.

Divisions	Personnel hygiene (%)		Slaughter of birds (%)		Waste disposal (%)						Cleaning the dressed birds (%)	
	Normal dress use	Hand gloves	Inside plant	Outside plant	Blood disposal		Offal and feather disposal		Drainage system		Flow water	Storage water
					Dram	Soil	Pit	Pond	Present	Absent		
Barisal	100	10.0	59.8	40.2	20.0	80.0	20.0	80.0	25.0	75.0	60.0	40.0
Dhaka	100	33.3	66.2	33.8	32.0	68.0	33.3	66.7	51.0	49.0	95.0	5.0
Khulna	100	10.0	89.0	11.0	74.0	26.0	100	0.0	95.0	5.0	95.0	5.0
Rajshahi	100	21.0	75.0	25.0	53.8	46.2	66.6	33.4	73.0	27.0	90.0	10.0
Rangpur	100	92.0	50.0	50.0	33.4	66.6	100	0.0	92.1	7.9	93.0	7.0
Sylhet	100	20.3	59.0	41.0	40.0	60.0	42.0	58.0	48.0	52.0	59.7	40.3
Chittagong	100	0.0	28.0	72.0	15.0	85.0	51.0	49.0	75.1	24.9	6.0	94.0
Average	100	26.7	61.0	39.0	38.3	61.7	59.0	41.0	65.6	34.4	71.2	28.8

The hygienic status of hot water bath at dressing plants in seven Divisions are shown in Table 8. Generally the hot water bath are using in dressing plants for poultry processing. Irrespective of Divisions, 83.30% farmers used tube well water, 16.00% farmers used pond water and 0.70% farmers used supply water to clean their hot water bath. It has been observed that, in all Divisions 96.40% farmers used hand for measuring water temperature (standard temperature is 60-70°F) and 3.60% used thermometer for this purpose. Average

66.60% farmers said that they use 5 liters water in hot water bath during dressing of birds whereas 29.40% farmers used 8 liters water and 4.00% farmers used 10 liters water. Irrespective of Divisions, 65.40% farmers said that they bath 30 broilers using same hot water while 29.60% farmers said they bath 40 broilers and 5.00% farmers said they bath 50 broilers. Average 90.50% farmers said they change of water once daily in hot water bath whereas 9.50% farmers changed water twice daily.

**Table 8.** Hygienic status of hot water bath at dressing plants in seven Divisions.

Divisions	Type of water use in hot water bath (%)			Amount of waters in hot water bath (%)			Change of water in bath (%)		Temperature measure (%)		Number of broilers bath in same hot water (%)		
	Tube well	Pond	Supply water	5 liters	8 liters	10 liters	Once/day	Twice/day	Hand	Thermometer	50 birds	40 birds	30 birds
Barisal	39.0	12.0	49.0	68.0	27.6	4.33	78.5	21.5	100	-	-	3.0	97.0
Dhaka	54.0	6.16	39.8	66.8	30.0	3.20	100	-	91.0	9.0	-	61.0	39.0
Khulna	53.0	15.1	31.8	86.0	12.7	1.24	99.0	1.0	100	-	3.0	56.0	41.0
Rajshahi	23.0	55.0	22.0	76.0	21.0	3.00	94.0	6.0	98.9	1.1	18.0	42.0	40.0
Rangpur	65.0	12.0	23.0	50.2	45.0	4.80	95.0	5.0	100	-	6.5	42.3	50.0
Sylhet	45.0	32.0	23.0	40.3	56.0	3.70	100	-	96.0	4.0	-	1.0	99.0
Chittagong	62.0	17.0	21.0	79.0	13.3	7.64	66.7	33.3	89.0	11.0	6.0	2.0	92.0
Average	83.3	16.0	0.70	66.6	29.4	4.0	90.5	9.5	96.4	3.6	5.0	29.6	65.4

### 3.7. Assessment of Poultry Farm on Bio-Security Practiced

Surveyed farmers were categorized as standard, good, fair/moderate and poor on the basis of poultry management

practice. It was showed that 9.38% farms followed standard practice of bio-security, 41.48% farms followed good practices, 32.53% farms fell in fair category and 16.59% farms remained in poor category securing 80 and above, 70-79, 60-69 and below 60% marks, respectively (Figure 2).



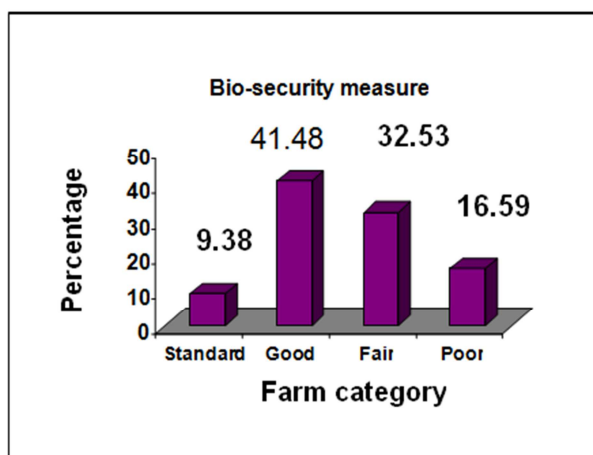


Figure 2. Assessment of poultry farms on Bio-security measure.

## 4. Conclusion

The development and growth of the poultry industry over last ten years has been proven to be one of the great achievements by the consequent application of latest technological and scientific knowledge of poultry farming and it plays an important role in the economy. Experiments were conducted to find out the present status of quality poultry products from farm to marketed condition in seven Divisions of Bangladesh and also to get the output of antimicrobial drug and feed additives residue in table chicken following the detection and analysis. In all parameters farmer's response was found heterogeneous and traditional methods were practiced which was not desirable for consumers regarding their food safety or quality food supply. Drug use cannot be isolated from the health care delivery system of poultry production. The major thrust to decrease the burden of infestation infectious diseases, improve economic conditions, immunization, sanitation and the medical care infrastructure. Developing countries need to strengthen their national drug policies, rid themselves of ineffective drugs and combinations, require more truth in advertising and restructure the system by which drugs are dispensed. However present poultry sector are facing some challenges related to structure, strategy and policy option which need to be properly addressed to make this sector more effective and sustainable operation by different stakeholders specially farmers need to train creating awareness build up about human health hazards related to quality egg and broiler production. The evidence suggests that efforts to improve food safety in poultry production should start at the village level with simple regulations directed towards addressing the most prominent deficiencies in the food-safety system into the food chain. Village-level education campaigns, directed at community workers such as teachers, and thus reaching the consumers, as well as at restaurants, would be essential.

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