A Study on Backyard Chicken Rearing System at Sherpur Sadar, Sherpur

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Contents

List of Tables

List of Figures

List of Acronyms Symbols Used

Abbreviation	Elaboration
%	Percentage
No.	Number
>	Greater than
e.g.,	Example
etc.	Et cetera
sq. ft.	Square feet
et. al	And his associate
NGO	Non-government organization
GDP	Gross domestic product
ND	Newcastle disease
RDV	Ranikhet Disease Vaccine
BCRDV	Baby chick Ranikhet Disease Vaccine
SSC	Secondary school certificate
HSC	Higher secondary school certificate
CVASU	Chattogram Veterinary and Animal Sciences University

Statement of Author

I, Eftakharul Islam Evan, certify unequivocally that I have performed all the tasks detailed in this report. The data was gathered from books, national and international periodicals, and other sources. All citations have been properly acknowledged. Consequently, I am solely responsible for collecting, manipulating, preserving, and publishing all data compiled in this report.

The Author

Abstract

The present study was accomplished to investigate the backyard chicken rearing system at Sherpur Sadar Upazilla, Sherpur, from 17 February 2021 to 16 May 2021. Total number of farms were 28 which were selected randomly based on the availability of chicken. Data was collected through a pre-structured questionnaire. The study was aimed at observing the present status of backyard chicken farming. In this present study we found that most of the farmers are middle aged and among them 90% were females. No distinct patterns of breeds were found at the study areas where most (66%) of the farmers reared nondescriptive deshi breeds. In Sherpur Upazilla, majority of the farmers were medium producer where rest were low (34%) and high producers (18%). The results also showed that each household consumed between 6 and 10 chickens on average. Most farmers used a scavenging strategy to raise their chickens. Farmers added an additional 40gm to 50gm of feed per bird per day. The highest percentage was 1000-1500gm of adult-weight chicken. Every household's chicken produced a sizable number of eggs. Newcastle disease (25%), Infectious laryngotracheitis (17%), and Mycoplasmosis (15%) were the most prevalent diseases in chickens. Most of the farmers (87%) failed to immunize their flocks. The products are mainly sold in native market by local farmers. The cost to sell of one egg was Tk. 10 to Tk. 12 and for an adult chicken, it ranged from Tk. 350 to Tk. 400. The backyard chicken rearing system in study area is revealed as a source of income for the rural and marginal people of the rural areas.

Keywords: Backyard chicken, Egg production, Vaccination, Newcastle disease

Chapter 1: Introduction

Bangladesh is the eighth-most populated country in the world. It has one of the population densities is 1,265 people/sq.km. (BBS, 2020). A vast quantity of the population of this country still lives in villages and is extremely poor.

Chicken farming is thought to offer the potential to reduce poverty and increase food output (Sumy et al., 2010). It is appropriate for mass adoption because it is less expensive, requires fewer skills, is extremely profitable, and can be incorporated into home tasks. (Dolberg et al., 1997). The poultry sector will generate job opportunities for 10 million people as claimed by poultry leaders in the country (Source: Financial Express, Bangladesh 23 July 2010). The country's poultry sector has been successful in rising to the top. Despite beginning in the middle of the 1960s in this country, the industry has been evolving quickly for the past 20 years. From the standpoint of the nation's economic development as well as meeting fundamental necessities, keeping prices at a low level, and securing food, particularly animal protein for people, this industry has enormous potential. In Bangladesh, 74% of people rare poultry to improve their livelihood (Khatun et al., 2005). Statistics show that about 2.9% of the national GDP is covered by the livestock sector, and its annual rate of growth is 5.5%. About 20% of the population of Bangladesh earns their livelihood through work associated with raising cattle and poultry (Banglapedia, 2021). The average per capita meat and egg requirement is 43.25 kg and 104 numbers respectively and the available values are only 9.12 kg and 36 numbers per year. In 2019, 2 kg of the 4.6kg per capita poultry meat consumption came from backyard poultry in Bangladesh. The annual egg production from the 'backyard system' is estimated to be 4.4 billion, which is 67% of the total egg production of Bangladesh (Islam et al., 2015). It has contributed to about 19.75% of meat production (Dutta et al.,2013). The growth rate of meat and egg production in the last 10 years was 19.38% and 7.77%, respectively (Hamid et al., 2017).

Generally, 3 breeds of poultry are reared on backyard farms in Bangladesh, i.e., Naked Neck (NN), Hilly, and Non-descriptive Deshi (ND) (Khatun et al., 2005). Among them, Non-descriptive Deshi chicken (ND) is 90% of the indigenous poultry population (Islam et al., 2015). The rearing system of backyard poultry is scavenging in nature. The annual production of the egg from indigenous chicken is only 35 to 45 eggs (Azharul et al., 2005).

Chapter 2: Materials and Methods

2.1 Study area and population:

The study was carried out for periods of 3 months and 20 days from 17 February 2022 to 16 May 2022. The data were collected from 32 households in Sherpur Upazila under the Mymensingh district. The survey was completed with a questionnaire based on farm-level epidemiological data through face-to-face interviews and by observation.

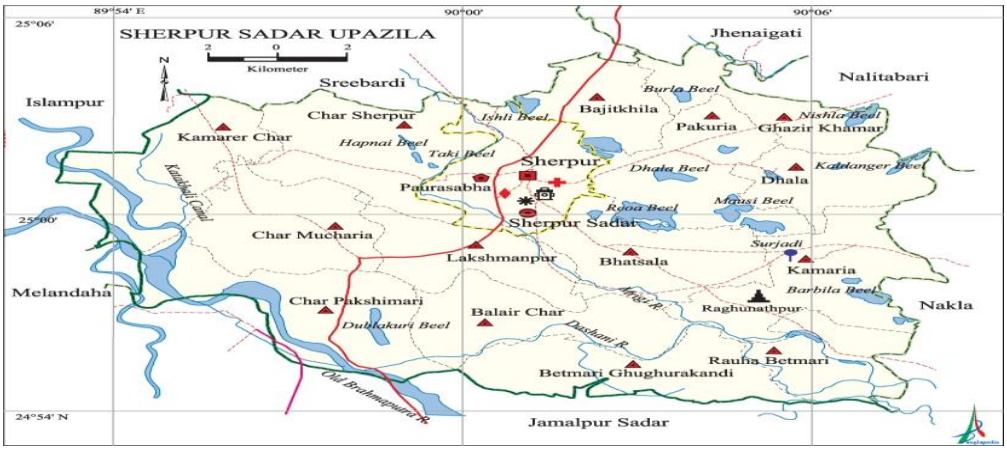

Figure 1: Geographical location of data collection site

2.2 Data collection process and tools:

The data were acquired through face-to-face interviews of farmers regarding the objectives of the study using an interview schedule. Following qualitative and quantitative parameters were collected during the study period are given below:

- Socio-economic status of the farmer
- Number and types of breeds of poultry reared
- Management system of the farm
- Diseases among the birds
- Mortality
- Annual income.

Chapter 3: Result and Discussion

3.1 Socio-economic status of the farmer:

The impact of the socioeconomic status of the farmer is very important in backyard chicken farming. There were 32 households under observation. Table-1 reveals that the land area of the household was classified into three categories i.e., low (up to 0.4 hectares), medium (0.5 to 0.7 hectare), and high (>0.7 hectares) where 89% had a medium farm size than low (8%) and high (3%). This observation was acceding with Islam (2015) who reported farm size per farmer was 1.74 acres. Table-1 was showed that medium-age farmers had a higher percentage (69%) than other categories to rear the backyard chicken.

Table 1: Socioeconomic status of Farmers:

Parameter	Category	Percentage (%)
Farm size	Low (≤ 0.4 hectares)	8
	Medium (0.4-0.7 hectares)	89
	High (>0.7 hectares)	3
Age	20-35 years	22
	35- 50 years	69
	>50 years	9
Sex	Male	10
	Female	90
Income level	Poor	43
	Middle	52
	Rich	5

Table 1 showed that the rearing percentage of the female and male farmers was 90% and 10% respectively. Sultana et Al. (2012) mention that women were most interested in backyard chicken. The study population was organized into the poor, middle class, and rich according to their income level. The percentage of the poor, middle class, and rich were 40%, 54%, and 6% respectively. The present result doesn't agree with (Sultana et al., 2012) where the percentage of the poor, middle class, and rich is 43%, 52%, and 5% respectively.

3.2: Breeds of poultry:

Several breeds of chicken have been reared in backyard farming i.e., Non-descriptive Deshi (ND), Hilly, and Aseel in Sherpur sadar, Sherpur, Mymensingh. The figure shows that 66% of the farmer reared Non-descriptive Deshi (ND), 13% Hilly, 7% Aseel and 14% others.

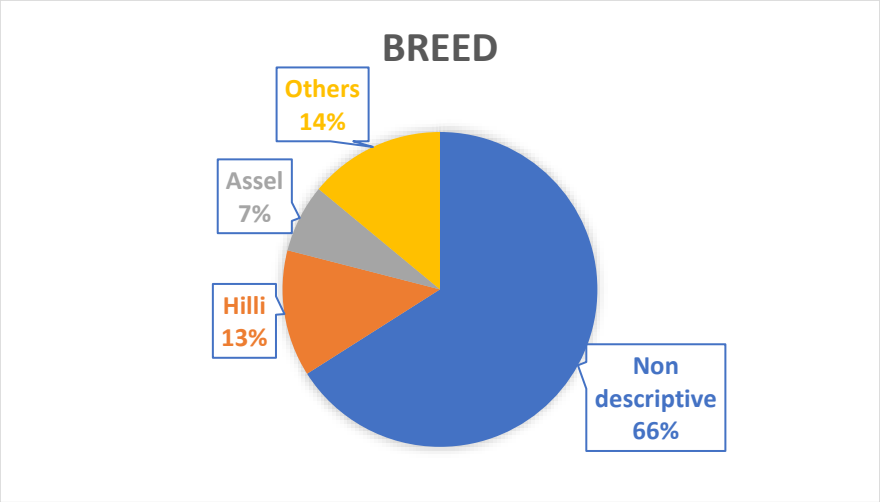

Figure 2: Breeds of Poultry

In Table 2, the number of chicken producers can be classified into three categories i.e., low producers having less than 5 numbers, medium producers having 6 to 10 numbers, and high producers having more than 10 chickens. From the table 2, it can be seen that 48% of farmers were medium producers than low (34%) and high (18%) producers. The present result does not agree with Alam et al., 2014 who indicated that the number of chickens reared per family was 6 to 7.

Table 2: According to the number of a family members:

Category	Percentage %
Low (<5)	34
Medium (5-10)	48
High (>10)	18

3.3: Housing system:

Housing is unquestionably more crucial for managing poultry. Bamboo, wooden planks, thatch grass, polythene sheets, and other readily accessible and inexpensive building materials can be used to build a poultry house. About 53% of people used up to 1 sq. ft. floor space where 37% required 1 to 2 sq. ft. and 10% required >2 sq. ft. floor space for rearing backyard chicken

(Table-3). Most of the bedding materials were ash and sand. Alam et al. (2014) reported that the mostly litter material was ash. Here the use of rice husk, sawdust, ash, treated litter were 20%, 10%, 25% and 5% respectively. About 68% of the farmers reared their chicken by scavenging system and 25%, 7% are reared the backyard chicken by floor, and night shelter respectively (Table-3). Islam et al. (2015) comment that, most of the backyard chicken farming was scavenging type.

Table 3: Housing system

Parameter	Category	Percentages
Floor-type	Low (<1 sq. ft.)	53
	Medium (1-2 sq. ft.)	37
	High (>2 sq. ft.)	10
Litter material	Rice husk	23
	Saw dust	12
	Ash	22
	Sand	41
	Treated litter	2
Rearing system	Floor	25
	Scavenging	68
	Night shelter	7

Figure 3: Housing and Feeding System of Chickens

3.4: Feeding of poultry:

Table-4 indicates the feed supplement of chicken which was categorized into low (up to 40gm), medium (40 to 50gm), and high (>50gm) intake. More than 61% of farmers were supplied feed around 40 to 50 gm per day. This finding was nearly the same as Yeasmin et al. (2003) which cited that supplied feed per day was 52.50gm.

Table 4: Amount of feeds supplied to poultry

Category	Percentages %
Low (<40 gm)	31
Medium (40- 50 gm)	61
High (>50 gm)	8

3.5: Productivity of chicken:

The study showed the adult weight, egg production, and hatching of chick per hen per year. In Table-5, the adult weight of chicken was categorized into low (up to 1000gm), medium (1000 to 1500gm), and high (>1500gm). The study showed that the adult weight of 59% chicken was medium (1000 to 1500gm) rather than low (27%) and high (14%). This observation is like Islam et al. (2003) and Sarker (2005) who they stated the adult weight of deshi chicken was 1200gm to 1500gm. The egg production was recorded from 35 to 55 per chicken per year. About 60% obtained less than 40 eggs per chicken per year (Table-5). This observation concedes with the previous report Dutta et al (2013). They reported that the egg production of deshi chicken was 35 to 40 per bird per year. The hatching of chick was ranged from less than 25 to 45 and classified into three categories i.e., low (up to 25), medium (25 to 40), High (>40).

Table 5: Production performance of backyard chicken

Parameters	Category	Percentage (%)
Adult body weight	Low (up to 1000gm)	27
	Medium (1000 to 1500gm)	59
	High (>1500gm)	14
Egg production	Low (up to 40)	60
	Medium (40-50)	34
	High (>50)	6
Hatching of chick per hen per year	Low (up to 25)	23
	Medium (25-40)	64
	High (>40)	13

3.6: Diseases of chicken:

Frequently occurring diseases in backyard chickens were Newcastle disease (ND), fowl pox, infectious laryngotracheitis (ILT), coccidiosis, fowl cholera, etc. From Table 6, it was realized that 16% of chicken was affected by parasites (ectoparasites and endoparasites), 25% was affected by ND, 15% was affected by Mycoplasmosis and 11% was affected by fowl pox. This

study also acknowledged that other diseases were salmonellosis (12%), infectious laryngotracheitis (ILT) (4%), infectious bronchitis (IB) (17%), and others (5%).

Table 6: Disease of chicken:

Disease name	Percentages
ND	25
Salmonellosis	12
Mycoplasmosis	15
Fowl pox	11
IB	17
Ilt	4
Parasitic infestation	16
Others	5

The mortality of chickens in this investigation varied from 20 to 35 percent. According to Table 6, the medium category (20 to 30) had the highest death rate (62%), followed by the low (17%) and high (21%). But according to *Ershad (2005)*, the mortality of Deshi chicken was around 14.

Table 7: Mortality rate:

Category	**Mortality (%)**
Low (up to 20)	17
Medium (21 to 30)	62
High (>30)	21

3.8: Methods of treatment:

Most of the farmers (around 70%) generally followed the traditional method of treatment for backyard chicken farming. Rest 30% of more concerning people were depended on registered veterinary surgeon.

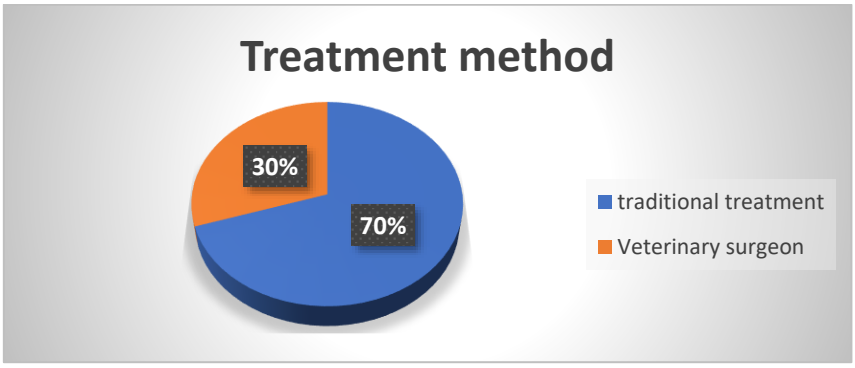

Figure 4: Method of treatment in backyard rearing

3.9: Vaccination:

Most of the backyard chicken farmers aren't well-educated & well-concerned, though the number is decreasing day by day. About 79% of farmers didn't apply vaccines. Other 21% of farmers gave BCRDV, RDV, and fowl pox vaccines to their chickens and chicks.

Table 8: Vaccination rate

Traits	Percentages (%)
Vaccination	21
No vaccination	79

3.10: Biosecurity:

Most of backyard chicken farmers aren't concerned about commercial biosecurity. In the study, only 8% of people were found who were concerned about this. Others followed the traditional system and biosecurity. In that case, farmer used ash as disinfectant to control ectoparasite and clean of floor. Some of them used lime as a disinfectant. 35% of farmer disposed of their waste product by burying it (**Table-9**).

Table 9: Disposal System of waste products:

Category	**Percentage**
Burying	35
Burning	15
Pit	10
Selling, consuming	30
Other	10

Limitation

In this investigation, there were certain restrictions. There were time restrictions on the study period, and only one specific place could be used. The adequate data collection from the chosen location was additionally hampered by an ongoing pandemic. The findings might not accurately represent the entire nation as a result.

Chapter 4: Conclusion

Backyard poultry farming is especially popular in rural and resource-poor regions of Sherpur Sadar Upazilla, where it offers revenue and nutritionally rich food sources (meat and eggs), boosts women and unemployed young, and closes the demand-supply gap for poultry eggs and meat. There are few infrastructural requirements for backyard poultry farming, and it is readily managed by women, elderly family members, and children. Poultry eggs and meat are the greatest and cheapest sources of protein that are readily accessible to fulfill the protein needs of rural peoples. The high death rate in chicks owing to a combination of diseases, lack of infrastructure, low production performance of desi birds, lack of scientific thinking, malnutrition, and climate exposure throughout the year are key challenges to backyard chicken farming. Experts from the government, research institutions, universities, NGOs, and other relevant sectors should collaborate to enable sustainable production and face obstacles together.

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Biography of Author

Eftakharul Islam Evan, son of Ziaul Haque and Latifa Easmin. He is an intern veterinary doctor under the Faculty of Veterinary Medicine (FVM) at Chattogram Veterinary and Animal Sciences University (CVASU). He passed his Secondary School Certificate (SSC) Examination in 2014 from the Dhaka board followed by Higher Secondary Certificate (HSC) Examination in 2016 from the Dhaka board. In the future, he would like to research work about the zoonotic disease and animal welfare those take public health in the country regarding one health framework.