CHAPTER 1

INTRODUCTION:

Poultry meat is the most effective and economic source of animal protein in shortest possible time, however it is unable to narrow down the animal protein supply and demand gap because of increasing future demands. Though the broiler meat and egg from commercial layer farms are able to meet the demand of present requirement (Chowdhury. EH, et al. 2009) people start feeling monotonous with its taste and palatability. Therefore another safe meat is highly desirable. As a result, many people start rearing of turkey to meet up the public demand and become economically independent. Turkey (Meleagris Gallopavo) is a large gallinaceous birds of the family Meleagridae that is the native of the North America, domesticated in Europe and are now importance source of food in many parts of the world (Marsden. J, et al. 1955). It is reported that, Columbus took turkey specimens to Spain in 1948. Reports on turkey were also found in Germany in 1530 and England by 1541. The first president of the United States of America, George Washington, issued a general proclamation in 1789 to celebrate "thanksgiving" on November 26. In 1893 president Lincoln proclaimed the last Thursday of November a national thanksgiving holiday. Later it was fourth Thursday of November, where turkey is established as main meal (Calenk. M, et al. 1997). Turkey became synonymous with Christmas. Turkey farming is very popular in western countries and the major turkey producing countries are United States of America, Canada, Germany, France, Italy, Netherlands and United Kingdom. Turkey occupies an important position next to chicken, duck, Guinea fowl and quail in animal protein source, which is playing a significant role in augmenting the economics and nutritional status of varied population. They are reared for both meat and egg production. The meat is the leanest among other domestic species. Turkey meat has nutritional and sensorial properties which makes it almost ideal raw material for rational and curative nutrition (Marsden, et al. 1955). The protein, fat and energy value of turkey meat are 24%, 6.6%, 162 calories per gram of meat respectively (K. T. Sampath, et al. 2012). Mineral like potassium, calcium, magnesium, iron, selenium, zinc and sodium are also present in turkey meat (K. T. Sampath, et al. 2012). It is rich in amino acid and vitamins like niacin, vitamin B6 and B12

(Aiello, et al. 1998). It is rich in unsaturated fatty acids and essential fatty acids and low in cholesterol (Levy, et al. 1952-Central poultry Development Organizations, India). Turkey farming is gaining popularity in Bangladesh day by day, More than 40 commercial farms established in the Gazipur district in the past one year. Many youths and housewives have started rearing the turkey birds on small scale in their home to cash in on the trend. Farmers recommended that, rearing of turkey is more profitable than poultry as the farmers entailed less investment, less space as well as less risk of diseases (Turkey farming spreads wings, The independent 10,09,2017). Commercial turkey farming is a profitable business idea for Bangladesh. Turkey grows faster like broiler chickens and become slaughter size for suitable purposes within very short time. Meat type turkey is more popular than egg producing turkey. Some people rear turkey as a pet. Turkey farming is similar to other poultry birds like chicken, ducks and quail. Turkey are very social with humans and raising turkeys is really very fun and enjoyable. Turkey rearing should be explored more as it one of the promising species for future income earning opportunities for many people, offering scope for reducing the unemployment problems in Bangladesh. However, as like broiler and layer different infectious and noninfectious diseases could be the major constraints for developing the turkey industry in Bangladesh. These diseases reduce the optimal growth and significantly affect the productivity and health status of turkey. Many diseases also have public health importance (Chowdhury. EH, et al, 2009). Occurrence of these diseases in a particular area depends on several factors like geographical conditions, management practices by the farmer, immunization status of the farm, quality of the poults, bio-securities status of farm and hatcheries e t c. Age of the turkey and weather of a particular area are also important factors which are related to the occurrence of diseases. Therefore, the present study was undertaken to determine the occurrence of diseases in commercial turkey farm at Coxsbazar district in Bangladesh. The occurrence of diseases were categories in different age group and seasonal influence on occurrence of diseases in commercial turkey farms were also investigated. The results of the current study will provide an overall scenario of diseases at commercial turkey farms at Coxsbazar district in Bangladesh. These findings may will assists researchers or poultry consultant to design and

implement priority based research on specific diseases and to take efficient control strategies against the diseases.

CHAPTER 2

MATERIALS AND METHODS:

The study was conducted to determine the occurrence of diseases in commercial turkey farms at Coxsbazar district of Bangladesh during the period from January to October 2017. A total of 540 live commercial turkeys were investigated from five turkey farms located at Ukiah, Ramu and Sadhor Upazilla of coxsbazar district to diagnose the existing diseases. A questionnaire was developed for data collection from selected farms. Based on the questionnaire data, breed, age, sex, feeding, housing system were recorded. Data on diagnostic and therapeutic protocol in the farm were also recorded. The diagnosis of the diseases were done on the basis clinical history and clinical signs of the affected birds (Figure 2 & 3). The influences of the age on the occurrence of diseases were also analyzed for the age group of 1-3, 4-6 and >7months.

In case of clinical history, purchasing history, managemental history, feeding information, Immunization history, deworming history, Bio-security and surrounding environmental history were recorded.

For clinical signs, posture, gait, superficial skin wounds, Inappetance, depression, weakness, Sneezing, eye swelling, lacrimation, lameness, dull hunched birds with ruffled feather, diarrhea watery or mucous, greenish diarrhea, cheesy material in mouth, wet bedding, lose dropping, weight loss, pasted vents, sudden death, black colored head, swollen joints, swollen face .These sign were detected by using general physical examination of mouth, nostril, eye, feather, breast, mussel and feces were recorded in different birds of different farms.

Diagnosis was made on the basis of clinical history, presenting and physical signs of turkey.

CHAPTER 3

RESULTS:

During 9 months of study period a total of 7 types of diseases were observed from 540 selected turkeys. The occurrences of diseases of turkey were observed in the farm on the basis of age group. The groups were divided into three categories. Table 1 shows the number of diseases of turkey farm wise at coxsbazar district in Bangladesh. There were 540 turkey from 5 turkey farms among which 365 were non disease. The highest numbers of cases were observed in farm no. 1 at the age group of 1-3 months (83), followed by 4-6 months age group (48) and > 7 months age group (9). According to table 1, young turkeys were more susceptible for various infectious and non-infectious diseases.

Table 2 shows the occurrence of diseases of turkey on the basis of different age group. Highest numbers of diseases were observed for fowl pox in the age group of 1-3 months (14.8%) followed by 4-6 months (0.74%) and >7 months (0%) of age. Digestive disorder were highest in age group of 4-6 months (5.93%) followed by >7 months (3.34%) and 1-3 months (0%) of age. Respiratory disorder were highest in the age group of 1-3months (4.25%) followed by 4-6 months (2.23%) and >7 months (0%) . Turkey lameness were most prevalent in the age group of >7 months (3.34%) followed by 1-3 months (0.74%) and 4-6 months (0.74%). Swollen head syndrome were prone in the age group of 4-6 months (6.40%) followed by 1-3 months (3.70%) and >7 months (0.93%). Cannibalism was highest in age group of 1-3 months (1.30%) followed by the age group of 4-6 months (0.56%) and >7 months (0%). Turkey blindness were more prone in the age group of >7 months (1.85%) followed by age group of 1-3 months (0.56%) and age group of 4-6 months (0.56%).

Fowl poxes (14.82%) were mostly occurred at the ages of 1 month to 3 month ages of turkey. It may be due to vaccination failure or not to vaccine in the farm. As the mosquito can transmit fowl fox and play a significant role in spreading the virus from one flock to another flock and fowl pox is also spread from bird to bird by direct contacts, the occurrence of fowl pox found higher in this study. The insects then spread the virus when they feed on healthy bird. The virus

is airborne and can infect birds through their eyes or skin wounds or when they breathe. Digestive disorders of turkey were mostly occurred at the age above 4 month ages of turkey. Digestive disorder can be caused by a number of harmful agents such as bacteria, virus and coccidiosis. Most of the farm housing floor remained wet condition. Digestive disorder of turkey can be also lead due to poor quality feed or excessive feeding. Besides dirty drinking water can harbor lots of bacteria to cause digestive disorder. Respiratory disorder of turkey can be caused by bacterial, viral or mycoplasma infection due to wet condition of the farm. Other infection were occurred for unhygienic management, improper feeding, problem of ventilation, unbalanced ration, irregular vaccination, surrounding environment and problems of housing system. These farmers have not enough knowledge about turkey rearing and management. Turkey farm is not enough in Bangladesh, so veterinarian is not more interest to know about turkey diseases management and farm management. So the farmers could not sufficient help from veterinarian.

Table 1: Given below the observation of number of diseases of turkey according to turkey farm in Coxs bazar district-

Farm no.	Total Turkey	Non diseased turkey	Disease turkey		
			Age group (Month)		
			01-03 Month	04-06 Month	O7-above Month
F-1	210	123	83	48	09
F-2	65	48	0	0	17
F-3	130	91	24	17	21
F-4	105	76	27	18	0
F-5	30	27	0	2	3
Total	540	365	134	85	50

Table 1: Show the number of diseases of turkey farm in coxsbazar district.

Table 2: Given below the occurrence of diseases of turkey farm in Coxsbazar district accourding to age group-

Disease name / Age	01-03 Month		04-06 Month		07-above month	
	Total disease turkey	Percentage	Total diseased turkey	Percentages	Total diseased turkey	Percentage
Fowl pox	80	14.8%	4	0.74%	0	0%
Digestive disorder	0	0%	32	5.93%	18	3.34%
Respiratory disorder	23	4.25%	12	2.23%	0	0%
Turkey lamenss	4	0.74%	4	0.74%	18	3.34%
Swollen head syndrome	20	3.70%	35	6.40%	5	0.93%
Cannibalism	7	1.30%	3	0.56%	0	0%
Turkey blindness	3	0.56%	3	0.56%	10	1.85%

Table 2: Show the occurrence of diseases of turkey farm in different age group.

Figure 1: Shows the relationship of the occurrence of diseases of turkey farm on the basis of age at Coxsbazar district in Bangladesh.

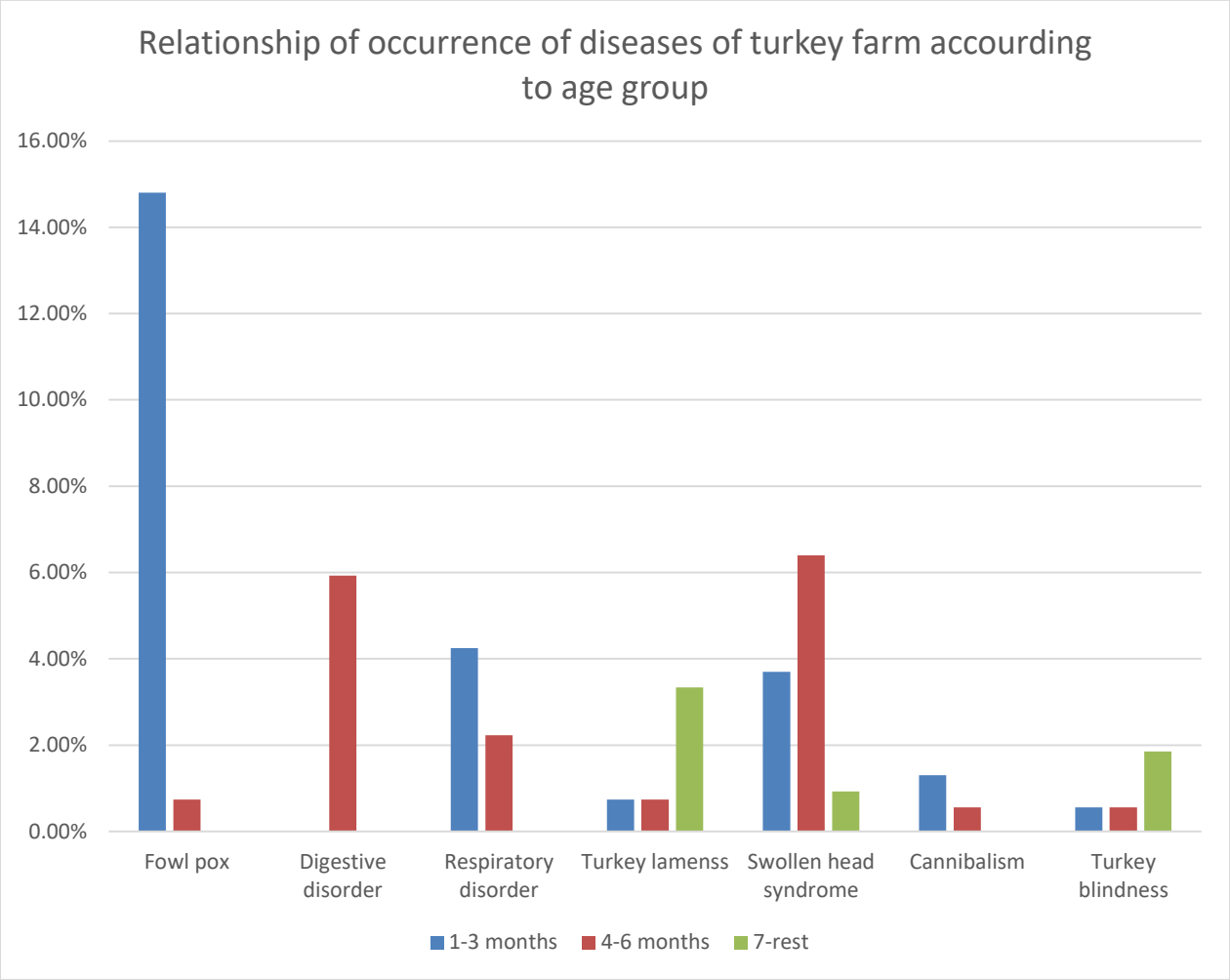

Figure 1: Show the relationship of occurrence of diseases of turkey farm on the basis of age group.

Visiting turkey farm for data collection

Figure 2: General physical examination of turkey

Figure 3: Observation of disease symptoms of turkey in farm

CHAPTER 4

DISCUSSION:

The study was determined to discuss the occurrence of diseases of turkey and study the control and prevention method in turkey farm at coxsbazar region in Bangladesh.

The occurrence of diseases of fowl pox was observed 15.5% (graph 4) in the turkey farm at Coxsbazar district which is higher than the prevalence of fowl pox in poultry which is 3.2% (Marsden, et al. 1955). Among two forms of fowl pox the cutaneous form was diagnosed which was characterized by nodular lesions of the head and upper necks of turkey (Aiello. J, et al. 1998). Some cases the lesions spread into feet and legs. Cutaneous lesions of the eyelids causes complete closure of one or both eyes. Fowl pox can be controlled by vaccination. However, most of the farm not vaccinating due to unavailability and unaware of vaccine. So the occurrence of the diseases was higher in those farms. Fowl pox outbreaks in turkey confined to houses can be controlled by spraying to kill mosquitos. However, if fowl pox is endemic in the area, vaccination is recommended. Do not vaccinate unless the disease becomes a problem on a farm or in the area.

The occurrence of diseases of turkey digestive disorder was observed 9.2% (graph 4) in turkey farm which is higher than the prevalence of this disease in case of poultry is 6.36 (Chowdhury. EH, et al. 2009). There was a number of possible causes for digestive disorder in turkey such as coccidiosis, worms, rotavirus and adenovirus, Clostridia spp of bacterial diarrhea, kidney damage and a feed too high in protein (Bender, et al. 2003). The diseases was diagnosed by the whitish or greenish dropping in the litter material. The disease may controlled by feeding good quality feed, ensure feed is fresh, dry and in date and suitable for species and ages of birds, supply fresh drinking water in clean drinkers, regularly clean and disinfected of turkey shed and deworming regularly

The occurrence of diseases of respiratory system was 6.4% (graph 4) which is higher than the prevalence reported poultry which is 3.96% (C. Larson, et al. 1996). The causes of respiratory disorder in turkeys could be the infection of Mycoplasma, turkey coryza and turkey rhinotracheitis and environmental factor (C. Larson, et al. 1996). Respiratory disease was diagnosed by runny nose, runny eyes and coughing of turkey. It can be controlled by rearing of good quality poults and vaccination of birds according to the schedule.

The occurrence of turkey lameness was 4.8% (graph 4) in our study which is higher than the prevalence reported previously in poultry 3.3% (Marsden, et al. 2003).The main possible causes of lameness in turkey is Mycoplasma infection, Imbalanced body weight, mineral deficiency and any injury in leg (Savory. J, et al. 2005). In this study we diagnosed this disease by observing the clinical sings of lameness, swollen joint and unable to walk. The disease may controlled by keeping the disease out from shed, quarantine new birds and free from any injury.

The occurrence of swollen head syndrome in turkey was 11.1 % (graph 4) which is higher than the prevalence reported earlier in poultry which is 2.9% (Samad. MA, et al, 2013).The main possible causes of swollen head syndrome in turkey is pneumovirus, infectious bronchitis and mycoplasma infection or any injury in mouth (Das, PM, et al. 2005) . This disease was diagnosed by the clinical sings of swollen head, conjunctivitis, skin redness, opisthitonus. The disease may controlled by keeping the disease out from shed, quarantine new birds and free from any injury.

Cannibalism is also one of the important problems in identified in turkey farm. The occurrence of cannibalism was found 1.8% (graph 4) which is lesser than the prevalence found in poultry 15%(Savory. J. et al. 2004).The main possible causes of cannibalism in turkey is overcrowded, bright light, dietary deficiencies (esp. salt), insufficient feeding or watering, lack of space, or boredom (Rudenberg, et al.2008) . This disease was diagnosed by Birds may pluck their own feathers and other signs include blood and swelling at the vent . The disease may controlled by beak trimming, provide proper nutrition and water sources, provide high fiber feeds such as whole oats (free choice) during periods of feather picking or cannibalism to reduce these behaviors. Separate injured birds until their wounds are healed and will no longer attract the pecking of others in the flock.

Turkey blindness was also recorded in this study. The occurrence of blindness was found to be 2.9 % (graph 4) .The main possible causes of blindness in turkey is salmonella Arizona, fowl pox, vitamin A deficiency and any injury in eye (Marsden, et al. 2001) . This disease was diagnosed

by the clinical sings of eye opacity, conjunctivitis, eye redness, excess tearing , injury in eye. The disease may controlled by proper sanitation and fumigation.

Limitation:

I was unable to do the post-mortem of turkey due to the lack of co-operative by farmers. Another reason was unable to buy diseased turkey because of its high market value.

CONCLUSION

According to the study, the symptoms from this investigation suggested that commercial turkey rearing in farm at Coxsbazar in Bangladesh can be improved upon by controlling the diseases. It is recommended that commercial turkey farmers should be aware of vaccination against viral diseases especially pox viral disease. Besides the farmer should ensure the proper management of farm such as supply of balance diet, supply of fresh drinking water, need to avoid overcrowding of poults, should provide comfortable bedding materials, proper fumigation and sanitation and regular deworming of turkey for control and prevention of nutritional and other management diseases. The results may will assists researcher or poultry consultants to take efficient control strategies against the diseases of turkey.

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BRIEF BIOGRAPHY

I am Saddam Hossain, son of Mr. Abu Siddik and Mrs. Mobassara Begum. I am native to Coxs bazar. I have completed my secondary (2009) and higher secondary (2011) education from Chittagong successfully. Then I got myself admitted in Doctor of Veterinary Medicine Course under Chittagong Veterinary and Animal Sciences University. During my internship programme I got a short time research on occurrence of diseases of turkey farm in Coxs bazar district in Bangladesh. I believe all these will be helpful in progress of my career in future.