

**Full Length Research Paper****PREVALENCE OF POULTRY DISEASES AT NARSINGDI, BANGLADESH**\*M B Uddin<sup>1</sup>, S S U Ahmed<sup>2,3</sup>, M M Hassan<sup>4</sup>, S A Khan<sup>5</sup>, M A Mamun<sup>6</sup><sup>1</sup>Department of Medicine and Surgery, Sylhet Agricultural University (SAU), Sylhet-3100, Bangladesh<sup>2</sup>PhD Student, Faculty of Life Sciences, University of Copenhagen, Denmark<sup>3</sup>Department of Medicine and Surgery, Chittagong Veterinary and Animal Sciences University (CVASU), Khulshi, Chittagong-4202, Bangladesh<sup>4,5</sup>Department of Physiology, Biochemistry and Pharmacology, CVASU, Khulshi, Chittagong-4202, Bangladesh<sup>6</sup>Department of Pathology and Parasitology, SAU, Sylhet-3100, Bangladesh

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**ABSTRACT**

A study was conducted to determine the prevalence of diseases in various age groups and different season in different poultry farms of some selected areas at Narsingdi district of Bangladesh. The diseases were diagnosed based on clinical history, clinical signs, symptoms prior to death, lesions observed after postmortem examination of dead birds and isolation and identification of causal agents. A total 1263 dead and sick birds were examined. Among the diseases Infectious Bursal Disease (IBD) was found in 24.96% followed by Chronic Respiratory Disease (CRD)/ Mycoplasmosis in 9.87%, Newcastle Disease (ND) in 8.92%, Aspergillosis in 7.98%, Salmonellosis in 7.68%, Coccidiosis in 7.32%, Colibacillosis in 5.70%, Ascites in 5.45%, Omphalitis in 2.64%, deficiency disorders/Stress in 1.34%, Necrotic Enteritis in 0.40%, Infectious Coryza in 0.32%, Fowl Cholera in 0.24%, and Infectious Bronchitis in 0.24%. In general, the highest number of cases were recorded in the age group of 8-20 days (42.64%), followed by 21-35 days age group (35.76%), 0-7 days age group (16.12%), 36-60 days age group (1.52%) and >60 days age group (3.96%) of poultry. Distribution and proportionate incidence of poultry diseases of Bangladesh reveals that the poultry diseases occur mostly in rainy season (47.09%), followed by summer (27.53%) and the least in winter season (25.38%).

**Key Words:** Prevalence, Poultry diseases, age, season, Narsingdi, Bangladesh

**INTRODUCTION**

Poultry rearing is an industry, superior to other sector in Agriculture, has seen a tremendous development in the recent past. Poultry industries play an important role in poverty alleviation and economic development of Bangladesh. However, poultry diseases are the major constraints for developing the poultry industry (Karim, 2003). The present study revealed 24.96% of IBD in Narsingdi region that was higher than those of Bhattacharjee *et al.* (1996), Islam *et al.*, (1998) and Talha *et al.* (2001), reported 10.99%, 16.0% and 19.16% cases of IBD on Dhaka and Mymensingh, respectively, but similar to Sylhet region of Islam *et al.*, (2002). This variation may be due to geographic variation. During the last few years commercial poultry farming become one of the profitable industries in Bangladesh. Many farmers change their traditional rearing system and become a modern commercial poultry rearer.

In Bangladesh, farmers face a wide range of poultry diseases, which reduce the optimal production of the flock. Ali (1994) has reported about 30% mortality of chickens in Bangladesh every year due to outbreak of several diseases. The prevalence of diseases in a particular area depends on various factors like geo-climatic condition, management practices, immunization status, social awareness etc. To establish commercial poultry farm, the incidence of poultry diseases of the area should be considered for prevention and control of diseases.

During last few years several emerging diseases like IBD, Aflatoxicosis, Chicken Anemia virus, Egg Drop Syndrome and some unknown cause and recently Avian influenza (bird flu) threat the poultry industry and causes huge damage to the farmers. Therefore, poultry industry of this country will be lying behind unless the practitioners know the causes of such mortality. The present study was undertaken to investigate the prevalence of different diseases at Narsingdi district of Bangladesh.

**MATERIALS AND METHODS**

The study was conducted to observing the prevalence of different diseases at Narsingdi district of Bangladesh. A total of 1263 either dead or sick birds were brought to the Upazilla veterinary hospital from various poultry farms of different areas of Narsingdi district during the period from July 2002 to June 2003. The diagnosis of different diseases was done based on the history of the flock, age of affected birds, clinical signs and symptoms, postmortem lesions, gross and microscopic examinations and isolation and identification of causal agents in some of the cases for respective diseases. Isolation and identification of causal agents were done in Central Disease Investigation Laboratory (CDIL) at Dhaka, Bangladesh. Data were collected with special emphasized on age and season considered as measurement tools and preserved on a registered book followed by diagnostic protocol and then analyzed.

## RESULTS AND DISCUSSION

Prevalence of poultry diseases at Narsingdi district of Bangladesh were shown in table 1, and table 2 respectively. The highest number of cases were recorded in the age group of 8-20 days (42.64%), followed by 21-35 days age group (35.76%), 0-7 days age group (16.12%), 36-60 days age group (1.52%) and >60 days age group (3.96%) of poultry. Among the viral diseases, IBD and ND constituted 24.96% and 8.92% of total mortality, respectively. Outbreaks of both IBD and ND occurred mostly in the 21-35 days age group and then 8-20 days age group followed by 0-7 days age group (Table 1). The present study revealed 24.96% of IBD in Narsingdi region that was higher than those of Bhattacharjee *et al.*, (1996), Islam *et al.*, (1998) and Talha *et al.*, (2001), reported 10.99%, 16.0% and 19.16% cases of IBD on Dhaka and Mymensingh, respectively, but similar to Sylhet region of Islam *et al.*, (2002). This variation may be due to geographic variation. In a study carried out in and around Dhaka and Gazipur districts Saleque *et al.*, (2003) reported that Gumboro disease is responsible for 33% of total death in broilers and 3.8% and 5.8% in commercial layer and breeder flocks respectively. Most of the flocks where IBD were recorded are vaccinated. Findings indicated that in most cases vaccination could not protect the birds. According to Godwin (2001), the factors causing vaccine breaks are either i) vaccine type, storage and handling, or ii) condition of the bird including the level of maternal antibody or iii) administration of vaccine. In the present investigation, 8.92% of ND positive cases were found but a higher 10.24% and 17.20% incidence of the disease was reported by Talha *et al.*, (2001) and Islam *et al.*, (1998), respectively. The present findings would indicate that the reemergence of ND in commercial flocks is still a threat to the poultry industry inspite of availability use of ND vaccines. It is important to be investigated if the reemergence of ND is due to vaccination failure or any other factor.

Table 1: Poultry disease prevalence at Narsingdi district in different age group

Disease (s)	Age (Days)					No. of cases	Proportionate incidence %
	0-7	8-20	21-35	36-60	>60		
Gumboro Disease (IBD)	00 (0%)	148(11.69%)	164 (12.95%)	04 (0.32%)	00 (0%)	316	24.96
Newcastle Disease (ND)	02 (0.15%)	30 (2.37%)	58 (4.58%)	09 (0.72%)	14 (1.10%)	113	8.92
Colibacillosis	17 (1.34%)	36 (2.84%)	19 (1.52%)	00 (0%)	00 (0%)	72	5.7
Salmonellosis	21 (1.66%)	40 (3.16%)	13 (1.04%)	06 (0.48%)	17 (1.34%)	97	7.68
Omphalitis	33 (2.64%)	00 (0%)	00 (0%)	00 (0%)	00 (0%)	33	2.64
Infectious Bronchitis	00 (0%)	00 (0%)	03 (0.24%)	00 (0%)	00 (0%)	3	0.24
Infectious Coryza	00 (0%)	04 (0.32%)	00 (0%)	00 (0%)	00 (0%)	4	0.32
Fowl Cholera	03 (0.24%)	00 (0%)	00 (0%)	00 (0%)	00 (0%)	3	0.24
CRD/ Mycoplasmosis	06 (0.48%)	68 (5.37%)	47 (3.70%)	00 (0%)	04(0.32%)	125	9.87
Aspergillosis	69 (5.45%)	32 (2.53%)	00 (0%)	00 (0%)	00 (0%)	101	7.98
Coccidiosis	00 (0%)	22 (1.76%)	70 (5.56%)	00 (0%)	00 (0%)	92	7.32
Necrotic Enteritis	05 (0.40%)	00 (0%)	00 (0%)	00 (0%)	00 (0%)	5	0.4
Ascites	01 (0.08%)	45 (3.56%)	23 (1.81%)	00 (0%)	00 (0%)	69	5.45
Deficiency disorders	09 (0.72%)	08 (0.62%)	00 (0%)	00 (0%)	00 (0%)	17	1.34
IBD + Coccidiosis	00 (0%)	10 (0.80%)	19 (1.52%)	00 (0%)	00 (0%)	29	2.32
IBD + ND	00 (0%)	37 (2.94%)	22 (1.72%)	00 (0%)	15(1.20%)	74	5.86
IBD + ND + Coccidiosis	00 (0%)	18 (1.42%)	13 (1.04%)	00 (0%)	00 (0%)	31	2.46
Aspergillus + Salmonella	15 (1.20%)	20 (1.60%)	00 (0%)	00 (0%)	00 (0%)	35	2.8
Salmonella + <i>E. coli</i>	19 (1.52%)	18 (1.42%)	00 (0%)	00 (0%)	00 (0%)	37	2.94
Salmonella + Mycoplasma	03 (0.24%)	03 (0.24%)	01 (0.08%)	00 (0%)	00 (0%)	7	0.56
<b>Total</b>	<b>203</b>	<b>539</b>	<b>452</b>	<b>19</b>	<b>50</b>	<b>1263</b>	<b>100</b>
	<b>(16.12%)</b>	<b>(42.64%)</b>	<b>(35.76%)</b>	<b>(1.52%)</b>	<b>(3.96%)</b>		

\* Parenthesis ( ) indicates Proportionate Incidence

Apart from viral infection among the other diseases, it was observed that CRD (9.87%), Aspergillosis (7.98%), Coccidiosis (7.32%), Salmonellosis (7.68%), and Colibacillosis (5.70%), were the major causes of poultry diseases. Other common diseases were Omphalitis (2.64%), Deficiency disorders/Stress conditions (1.34%), Fowl Cholera (0.24%), Necrotic Enteritis (0.40%), Infectious Coryza (0.32%), and Infectious Bronchitis (0.24%). Mixed infections with two or more diseases such as IBD+ND, Aspergillosis+Salmonellosis, Salmonellosis+*E.coli*, IBD+Coccidiosis, IBD+ND+Coccidiosis and Salmonellosis + Mycoplasmosis were the causes of 5.86%, 2.80%, 2.94%, 2.32%, 2.46% and 0.56% of total mortality, respectively. In case of bacterial diseases, Talha *et al.*, (2001) reported 13.12% of Colibacillosis and 11.55% of Mycoplasmosis/CRD in Mymensingh region which are higher than the present findings 5.70% and 9.87% respectively; but in case of Colibacillosis the findings are near similar to Sylhet region (5.17%). The results indicated that the decrease of Colibacillosis and Mycoplasmosis might be due to better management of the farm and mass dosing of antibiotics. In the present study, 7.98% of cases of Aspergillosis were reported, but Talha *et al.* (2001) reported 4.20% of positive cases in Mymensingh region. This variation may be due to the cold climatic condition of the Sylhet region. In the present study, Coccidiosis constituted 7.32% of the total cases which is higher than the study of Talha *et al.*, (2001), but correlates with the results of Kutubuddin (1973) and Sarker (1976).

In the present investigation, the result of season wise distribution (Table 2 and Fig. 1) and proportionate incidence of poultry diseases of Bangladesh revealed that the poultry diseases prevalent mostly in rainy season (47.09%), followed by summer (27.53%) and the least in winter season (25.38%). This finding was in agreement with Mushi *et al.*, (2008) and Nicole *et al.*, (2000) who found the highest occurrence of the disease during the rainy season but did not match with Islam *et al.*, (2009) who found the highest prevalence of the diseases during the winter. Seasonal trend shown in Fig. 2. Linear trend of the disease incidence clearly shows the increment of disease incidence from winter to summer. The trend line has high  $R^2$  value (0.8205), which is indicative of the significance of the variation.

Table 2: Poultry disease prevalence in Narsingdi district in different season

Disease (s)	Rainy	Winter	Summer	No. of cases encountered
Gumboro Disease (IBD)	203 (16.03%)	34 (2.69%)	79 (6.24%)	316 (24.96%)
Newcastle Disease (ND)	39 (3.08%)	14 (1.10%)	60 (4.74%)	113 (8.92%)
Colibacillosis	19 (1.52%)	17 (1.34%)	36 (2.84%)	72 (5.70%)
Salmonellosis	47 (3.70%)	21 (1.66%)	29 (2.32%)	97 (7.68%)
Omphalitis	09 (0.72%)	00 (0%)	24 (1.92%)	33 (2.64%)
Infectious Bronchitis	00 (0%)	03 (0.24%)	00 (0%)	03 (0.24%)
Infectious Coryza	04 (0.32%)	00 (0%)	00 (0%)	04 (0.32%)
Fowl Cholera	03 (0.24%)	00 (0%)	00 (0%)	03 (0.24%)
CRD/ Mycoplasmosis	68 (5.37%)	47 (3.70%)	10 (0.80%)	125 (9.87%)
Aspergillosis	42 (3.31%)	50 (3.95%)	09 (0.72%)	101 (7.98%)
Coccidiosis	31 (2.46%)	37 (2.94%)	24 (1.92%)	92 (7.32%)
Necrotic Enteritis	05 (0.40%)	00 (0%)	00 (0%)	05 (0.40%)
Ascites	26 (2.05%)	11 (0.87%)	32 (2.53%)	69 (5.45%)
Deficiency disorders/Stress	02 (0.15%)	11 (0.87%)	04 (0.32%)	17 (1.34%)
IBD + Coccidiosis	10 (0.80%)	10 (0.80%)	09 (0.72%)	29 (2.32%)
IBD + ND	35 (2.80%)	22 (1.72%)	17 (1.34%)	74 (5.86%)
IBD + ND+ Coccidiosis	12 (0.96%)	14 (1.10%)	05 (0.40%)	31 (2.46%)
Aspergillus + Salmonella	15 (1.20%)	15 (1.20%)	05 (0.40%)	35 (2.80%)
Salmonella + <i>E. coli</i>	18 (1.42%)	15 (1.20%)	04 (0.32%)	37 (2.94%)
Salmonella + Mycoplasma	07 (0.56%)	00 (0%)	00 (0%)	07 (0.56%)
<b>Total</b>	<b>595 (47.09%)</b>	<b>321 (25.38%)</b>	<b>347 (27.53%)</b>	<b>1263 (100%)</b>

\* Parenthesis ( ) indicates Proportionate Incidence

The seasonal change has been found to have significant effect on disease prevalence which were (i) during the hot humid summer, almost all diseases reached at the peak, (ii) CRD was found the common problem during the rainy season, (iii) Aspergillosis and Coccidiosis were common during winter and (iv) Gumboro disease more or less did not have any seasonal variation.

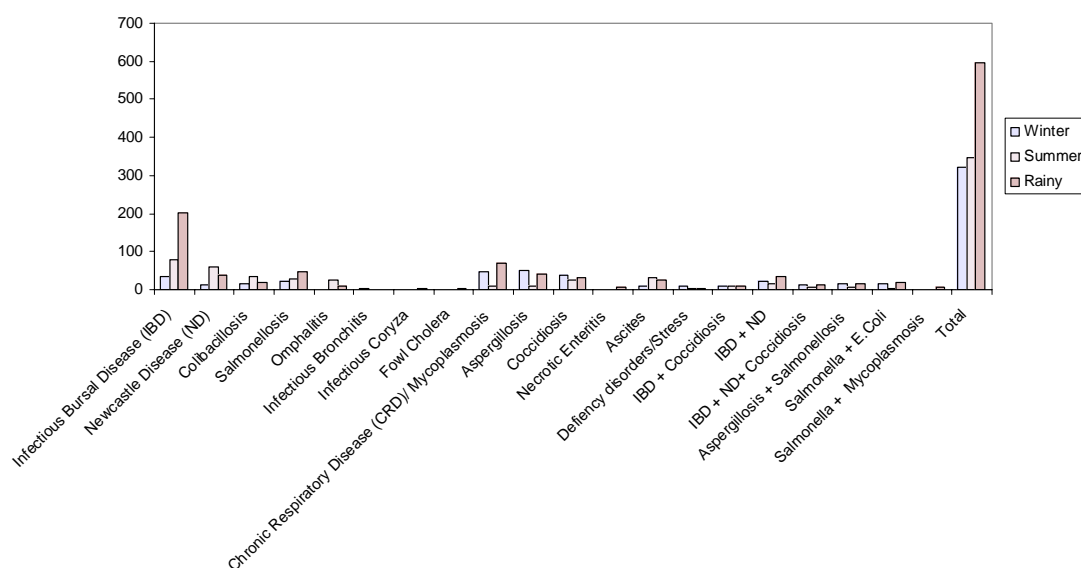
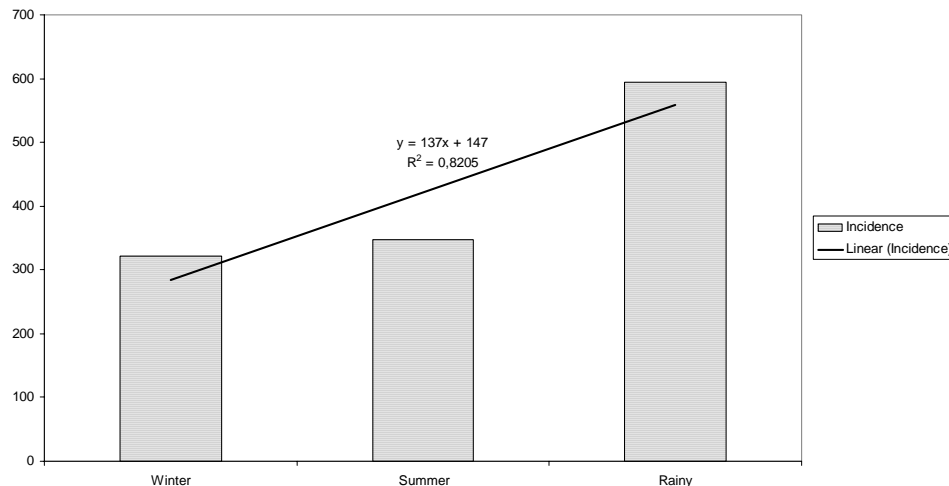


Figure 1: Seasonal distribution of the poultry diseases



**Figure 2:** Seasonal trend of disease incidence.

**Interpretation:** Linear trend of the disease incidence clearly shows the increment of disease incidence from winter to rainy season. The trend line has high  $R^2$  value (0.8205), which is indicative of the significance of the variation.

## CONCLUSION

In conclusion, it may be mentioned that chicks aged between 8-20 days and rainy season are most vulnerable to various diseases, and the most prevalent diseases like IBD, ND, Aspergillosis, Coccidiosis, Salmonellosis and Mycoplasmosis demand immediate attention for prevention and control.

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## REFERENCES

- Ali, M. J. 1994. Current status of veterinary biologics production in Bangladesh and their quality control. Proceedings of the BSVER symposium held on July 28, 1994 at NIPSOM auditorium, Mohakali, Dhaka, Bangladesh.
- Bhattacharjee, P. S., Kundu, R. L., Biswas, R. K., Mazumder, J.U., Hossain, E. and A.H. Miah. 1996. Retrospective analysis of chicken diseases diagnosed at the Central Disease Investigation Laboratory, Dhaka. *Bangladesh Veterinary Journal*. 30:105-113.
- Godwin, A. L. 2001. Common cases of vaccine failure in developing countries with special reference to Sri Lanka. Proceeding of the 2<sup>nd</sup> International Poultry Show and Seminar of World Poultry Science Association-Bangladesh Branch. February 16-17, 2001. IDB Bhaban, Dhaka.pp.101-104.
- Islam, A., Trisha, A. A., Das, M. and M. R. Amin. 2009. Retrospective study of some poultry diseases at gaibandha district in Bangladesh. *Bangladesh Journal of Veterinary Medicine*. 7 (1): 239 – 247
- Islam, M. R., Khan, M. A. H. N. A., Das, P. M. and A. S. M. Bari. 1998. Poultry diseases diagnosed at necropsy in 1997 and 1998 on the Department of Pathology, Bangladesh Agricultural University, Mymensingh. Proceedings of the fifth BSVER Annual Scientific Conference, December 3-4, 1998, Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Islam, M. R., Das, B. C., Hossain, K., Lucky, N. S. and M. G. Mostafa. 2002. A study on the occurrence of poultry diseases in Sylhet region of Bangladesh. *International Journal of Poultry Science*. 2 (5): 354-356, 2003.
- Karim, M. J. 2003. Current disease pattern in poultry with special emphasis on parasites and their methods of control. Proceeding of the 3<sup>rd</sup> International Poultry Show and Seminar of World Poultry Science Association-Bangladesh Branch. February 28-March 02, 2003. BCFCC, Dhaka.pp.119-123.

- Kutubuddin, K. 1973. Pathological investigation on the causes of mortality of chickens in the BAU poultry farm. M.Sc. Thesis, Department of Pathology, Faculty of Veterinary Science Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Mushi, E. Z., Binta, M. G., Chabo, R. G., Mogametsi, M. M. and E. K. Samakabadi. 2008. *Escherichia coli* infections in chicken broilers in Sebele, Gaborone, Botswana. *Research Journal of Poultry Science*. 2(2): 29-34
- Nicole, L., Musangu, N., Gabriel, B. and R. Joseph. 2000. Retrospective study of *Escherichia coli* in broilers subjected to postmortem examination and antibiotic resistance of isolates in Trinidad. *Avian Diseases*. 44: 155- 160.
- Sarker, A. J. 1976. The prevalence of avian diseases in Bangladesh Agricultural University Poultry Farm, Mymensingh. *Bangladesh Veterinary Journal*. 10: 61-66.
- Saleque, M. A. 2003. Pattern of poultry diseases in breeding farm and small poultry units in Bangladesh. Proceeding of the 3<sup>rd</sup> International Poultry Show and Seminar of World Poultry Science Association-Bangladesh Branch. February 28-March 02, 2003. BCFCC,Dhaka.pp.133-140.
- Talha, A. F. S. M., Hossain, M. M., Chowdhury, E. H., Bari, A. S. M., Islam, M. R. and P. M. Das. 2001. Poultry diseases occurring in Mymensingh district of Bangladesh. *The Bangladesh Veterinarian*. 18(1):20-23.