

Review

## Avian influenza pandemics in Bangladesh

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Poultry is classified as order Galliformes for chickens and as Anseriformes for the duck groups. The order Galliformes includes the domestic fowl *Gallus domesticus*, the Turkey *Meleagris gallopavo*, the Quail *Coturnix coturnix*, the Guinea Fowl *Numida meleagris*, and the Pheasant *Phasianus colchicum*. The Order Anseriformes, on the other hand, includes the domestic duck *Anser platyrhynchos* var *domestica*, the Muscovy duck *Cairina moschata*, geese *Anser anser* and *Anser cygnoides*. The chickens, the turkey, the quail, the guinea fowl and the pheasant belong to the Family Phasianidae. A laying economical hen to keep in the farm up to the age of 72-76 weeks. In 1996 in our Bangladesh 47,168 chicken farms and 26,944 duck farms but now a days this is minimum 1.5-3 lakh poultry farms at present and out of these 179-287 farms have been affected 12,000 crore taka already has invested in this sector for the betterment of the development of poultry industry. 236 commercial farm, 41 backyard farm, 130 parental stock farm, 136 hatcheries, breeders farm, 1% pigeon farm, 50 automatic feed mill, 450 small and medium sized feed mill, employee half crore to 5 million have been severely affected. From the investigation of the poultry farm there were around 200-500 chickens 48%, 501-1000 were 26%, 1001-3000 were 22% and above 3000 number of chickens 4% in Bangladesh.

**Keywords:** Avian influenza, bird flu, pandemics, Bangladesh

### INTRODUCTION

Avian Influenza (AI) was coined in 1357 from the Greek word 'avis' meaning bird and the Italian word 'influence' meaning effect (Amin, 2008). AI was in Italy in 1878 as a disease named fowl plague causing high mortality in chicken. AI, commonly known as bird flu, is one kind of fever of any birds which occurred in Spain first in 1918-19 as Spanish or swine flu where 4 core people died. There are a lot of alternatives of AI such as mega flu, killer flu, Hong Kong flu etc. AI was first known as duck plague. In 1957 AI was known as Asian flu and in South Africa it was known in 1961 and in 1968 as Hong Kong flu. Four major influenza epidemics were recorded between 1830-1848; the 1830-1831 epidemics may have originated in China and in 1833 influenza advanced westward out of Russia and Europe. In 1836-1837

influenza was diffused largely from north to south, and in 1847-48 the disease swept through the Mediterranean to southern France and elsewhere in western Europe. AI was reported first within the bar headed goose in China. Vietnam and China take uncooked chicken. Due to diarrheal disease over 2 million people die annually, due to malaria 3 million but due to AI only 225 died so far. But media has created panic in Bangladesh about the drastic effect of AI (Billah, 2008). The family of the virus contains five genera, classified by variations in nucleoprotein antigens: influenza A, B, C. Recently, a new type (H16) was isolated from black-headed gulls caught in Sweden and the Netherlands in 1999 and reported in the literature in

**Table 1.** Visited government and private diagnostic laboratories

Name of the lab	Located	Status	Tests available
Bangladesh Agricultural University (BAU)	Mymensingh	Govt.	Haematology, Biochemical, Serology, ELISA
Bangladesh Livestock Research Institute (BLRI)	Dhaka	Govt.	PCR, Haemagglutination, Quick antigen
Hajee Danesh Science and Technology University	Dinajpur	Govt.	Haematology
ICDDR,B	Dhaka	Private	Study on migratory bird, Influenza
Kazi Laboratory	Thakurgaon	Private	Food test, Haematology, Serology, Biochemical
Poultry Pally	Pabna	Private	Haematology, Serology, Biochemical

2005 (Fouchier, 2005). AI virus contains two types of glycoprotein- Neuraminidase (N) and Haemagglutinin (H); till now Haemagglutinin has 16 and Neuraminidase 10 subtypes (Islam and Giasuddin, 2007). The objective of this study is mainly to increase consciousness on avian influenza disease of the birds.

### Field survey

#### Visited poultry farm

For the study on avian influenza three times visit in a year of private and government farms of Bangladesh. Private farms were in Rajshahi, Saidpur, Nilphamari and Thakurgaon and government farms were in Rajshahi, Rangpur, Dinajpur and Bogra. Direct observation within the farm and their management system were observed and through questionnaires. The study period was from 2007 to 2008.

#### Open market

Another survey was observed in the open market of Rajshahi, Thakurgaon and Saidpur for the study on avian influenza pandemics one time in a week during the research period. Various samples like faeces, feathers, blood and viscera and dead body of the chickens were collected from the open market and slaughtering places. (Table 1)

#### Visited labs for observing tests

#### AI outbreak in Bangladesh

Bangladesh Poultry Industry has incurred a loss of over Tk 4,100 crore due to AI in the period between February 2007 and January 2008, according to Bangladesh the loss had particularly hit the rural economy. According to BPIA (Bangladesh Poultry Industry Association), the bird

flu outbreak forced nearly 40 per cent of the 1.5 lakh farms in the country to exit production and about 10 lakh people to lose their jobs. He said the government did not permit them to import AI vaccine. Department of Livestock Services had counted 326 occurrence of bird flu in the poultry sector since its outbreak. So far, 16,96,072 birds have been culled and 12,60,112 eggs have been destroyed from the affected farms. The government had spent Tk 12 crore to compensate the farmers. A private firm of Jaipurhat district's Khetlal upazila tested positive for H5N1 infection on January 5. Finally in the Nilphamari district the Akmol Hossen Poultry Farm was affected with bird flu and culled birds were 2389 and eggs 3560 pieces. During the year 2008 from January to May, 152 outbreaks from 39 districts and 3,960 poultry workers reported H5 affected were observed. Lastly it was avian influenza triggered death of chickens at a poultry farm in Thakurgaon district that a total of 395 parent chickens at Kazi Breeders Limited Yakubpur branch had died (Hasib, 2010).

#### Virus spreading

Depending on the availability of AI virus, birds are categorized in three ways *viz.* reservoir, carrier and sufferer. All wild birds are the reservoir because they preserve a lot of virus. Our domestic or cage birds which go into the jungle and mix with wild one are also the same. So, they are the carriers and finally when these domestic birds enter into the farm, our farm or commercial breeds are affected with this virus and become sufferers (Medical forum, 2006). Laying breeds are much more responsible for spreading the AI virus by eggs and adult chicken whereas broilers are only for its flesh and it has less immunity. Wild birds worldwide carry the viruses in their intestines, but usually do not get sick from them. However, bird flu is very contagious among birds and can make some domesticated birds, including chickens, ducks, turkeys and pigeons, very sick and kill them. Infected birds shed AI virus in their saliva, nasal secretions, and faeces. Susceptible birds become

infected when they have contact with contaminated secretions from infected birds. Movements of the bird, equipments, utensils, and finally the poultry products may cause for spreading the viruses from farm to farm and locality to locality. Live bird market or wet market are important source of virus transmission.

### Symptoms of fowl

High fever usually 3-7 days increased upto 14 days; Cyanosis of wattles and comb; Coughing and nasal discharges with blood stains; Lay soft-shelled and sudden drop in egg laying; Haemorrhages may occur on leg, spleen, liver, kidney, pancreas, ovary and lungs.

In our newspaper there was news for the death of Rhea bird in Dhaka Mirpur Zoo. The media focused it as AI but the post mortem report proved that it was enteritis (Parveen, 2008). Most of the people infected with H5N1 influenza acquired the infection from poultry raised inside or near their houses (Dinh *et al.*, 2006, Sedyaningsih *et al.*, 2007). Approximately 80% of people in Bangladesh live in various rural areas, and almost 80% of households poultry farming (Fattah, 1998 and ICDDR,B, 2008), and this is one of the major cause for public health infection. Only six poultry workers reported influenza-like illness among 2,786 poultry workers who were evaluated for the entire follow-up period, and none had a serious respiratory illness requiring hospitalization from January to May 2008 (DGHS, 2008). The majority portion of the farmers in the home of Bangladesh steadily raise 77.29% chicken and 84.41% duck respectively of the total poultry (Khan, 2003).

### CONCLUSION

AI is not a food borne disease, it is handling borne disease and we try to avoid destruction policy and follow the construction policy (Haque, 2008) and boiling eggs is better than fry. So, minimum use of mask, apron, goggles, gum boot and some disinfectants are the important steps to free oneself from the virus. Besides these if anybody is affected by the AI virus, Tamiflu (Oseltamivir) tablet of Suisi Company, Rolenza (Zanamivir) as an inhaler, SK-flu (Eskayef) medicines can be used for the control or treatment. If we want to be free from this disease, we should take ginger, raw turmeric and garlic as an antidote for this disease because these elements carry some antiviral properties. Bangladesh Ministry of Health, Food and Agriculture Organization (FAO) have taken some initiatives against it and within 10 years this disease surely will be removed from our Bangladesh as well as from the world. Statistics on Bangladeshi people says that around 80% of the people cough in the open air, while 11% cough on hands and only 9% use a piece of cloths (BSS, 2009). Eat full boiled

eggs and eradication of slaughter is usual in chickens are important. We need to strictly ban to hunting migratory birds by any means. If a bird died in any place, burn/grave in the earth very cautiously without delay.

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