

Assessment of Poultry Products Supply and Market Prices During Avian Influenza Outbreak in Nigeria Evidence from Osun State

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Abstract: Avian Influenza outbreak was reported among Nigerian poultry farmers in 2006. The epidemic had serious implication for poultry farming development because several birds were destroyed and those that did not get infected lost market values due to reduction in demand. This study analyzed the impact of the epidemic on market prices of poultry products using survey data obtained from poultry product suppliers and consumers. The data were analyzed with simple descriptive statistics. Results show that 90% of the marketers reported drastic reduction in sale while 95% of the consumers reduced or totally abandon consumption of poultry products. Prices of poultry products also decline with turkey recording the highest reduction (₦5,000.00 per bird). It was recommended that stakeholders in the poultry industry should design consumer education and risk mitigation media programs for the public before any future outbreak in order to minimize future losses.

Key words: Poultry products, avian influenza, stakeholders, Osun State, Nigeria

INTRODUCTION

The Nigerias traditional livestock farmers have maintained the industry from time immemorial and now account for >80% of the meat requirements of the country. The role of poultry industry in Nigerian economic development cannot be underestimated. For instance, the industry contributed 4.29% of the Gross Domestic Product (GDP) in 2000. Production of poultry and its products grew from 0.08 million tons in 2001 to 0.11 million tons in 2004. Also, assuming that fowls carcass weight is 0.75 kg, poultry production increased from 117.3 million birds in 2000 to 144.2 birds in 2004. Nigeria has an estimated poultry production of around 140 million birds. Research findings have shown that the Nigeria poultry production has started growing in the last few years. It grew from 0.08 million tons in 2001 to 0.11 million tons in 2004 while its percentage contribution to livestock GDP also increase from 4.29-4.45% in 2001 and 2004, respectively (CBN, 2004).

Before the outbreaks of bird flu, demand for poultry products was increasing as a result of its protein contents. The poultry industry in Nigeria is largely made up of chicken and small number of other birds such as turkey, ducks, guinea fowl and geese. The bulk of poultry meat and eggs (about 90%) consumed in Nigeria is obtained from chicken. These chickens are of two types,

namely the local chicken and the exotic breed. The local chickens are the common ones which are found in nearly every home in small numbers. Enough management attention is not given to them and generally they are of low productivity compared to the exotic breed which are produced mainly for commercial purposes (Adene and Oguntade, 2008).

Poultry products, meat and egg are the commonest and cheapest source of protein food among all livestock animals. Before the outbreaks of bird flu in Nigeria poultry occupies the second position in term of meat supply after cattle. Compared to other domestic animals, poultry birds have the shortest generation interval. For instance, broilers are ready for market after about 10-12 weeks of age thus having quick economic returns to capital investment. Poultry contributes immensely to the Nigerian economic development. Livestock sub-sector is responsible for about 25% of the total agricultural contribution to the Gross Domestic Product (GDP). Because of these and other importance of poultry the demand and supply of poultry products keep on increasing every year until the outbreaks of birds flu. Before the bird flu arsis, producers made effort to increase the production and supply of poultry products so that the vast importance of poultry (both in terms of economic, nutrient or employment) could be tapped (Adene and Oguntade, 2008).

Avian influenza (bird flu) is a contagious viral infectious disease primarily affecting birds and sometimes mammals such as pigs tigers and humans. There are about 15 types that affect the respiratory, digestive and or nervous system of many species of birds such as ducks and domestic chickens. Avian flu has the potential to develop into a global pandemic that can be as devastating as the black death of the 14th century. The H5N1 strain (which is one of the strain of avian flu) has a unique capacity to cause severe disease with high mortality, in humans. Illness and death caused by this disease also have both economic and social costs. Migratory birds and live poultry spread the infection. The disease can be transmitted to human through exposure to infected birds or handling of infected carcasses (World Organization for Animal Health).

The outbreak of H5N1 avian influenza was first reported on the February 8, 2006 in Nigeria. The virus is now on the list of serious health problems facing many countries in the world it threatens the economic as well as the society. The incidence of this disease in a country like Nigeria where most village households maintain free range flocks of poultry as a source of income and food was a shock. The disease overran all other factors of demand and became the major factor that determined demand for poultry products (Obayelu, 2007; UNICEF, 2007).

Influenza pandemics are rare but recurring events. Research has shown that avian flu typically occurred every 10-50 years throughout recorded history. It has found a permanent ecological niche becoming entrenched among domestic flocks. Avian flu has been recognized as a highly lethal generalized viral disease of poultry since 1901. In 1955, a specific type of influenza virus was identified as a casual fowl plague. This viral disease was however first noticed in a farm in South Africa in 1961. The virus are usually host specific with >100 subtypes that only infect birds and in rare instances, pigs and cause a wide range of disease syndromes, ranging from severe to mild in domestic poultry (WHO, 2005).

Strain H5N1 that causes the greatest number of deaths are called Highly Pathogenic Avian Influenza (HPAI). H5N1 strain originated with birds and moved to mammals and began to affect human after years of mutation. The first documented human infections with H5N1 avian influenza occurred in 1997 in Hong Kong when the virus caused severe respiratory disease in 18 persons of whom six died. Rapid destruction within 3 days of the Hong Kong's entire poultry population was estimated at around 1.5 million birds but opportunities for further transmission to human were quickly averted. Since 1997, the H5N1 strain has gradually extended its reach and has now become established within Asia. In 2003, there

was the re-emergence of avian flu in Hong Kong. By September 2005, H5N1 was detected in domestic and wild birds in Russia and Kazakhstan and in wild birds in Mongolia. Isolated outbreaks of H5N1 in birds have also been reported in Romania, Russia and Turkey (Obayelu, 2007).

Despite the efforts of most researchers, the H5N1 virus keeps on spreading, expanding beyond South East Asia and China into Central Asia and Europe have shown that they may lead to pandemic with time. At present the H5N1 virus has become more robust than 1997 strain capable of surviving longer under a virus has become increasingly pathogenic in poultry and has increased the range of species it can in fact, now including domestic cats (in laboratory experiments) and captive tigers (after being fed infected chicken carcasses in a zoo in Thailand) (Fasina *et al.*, 2009).

Only domestic poultry are known to have played a role in the transmission cycle of the virus from animal to human. Wild birds are the primary reservoir for influenza A and are often the vector that introduces new outbreaks into domestic flocks. The virus can be highly contagious in domestic flocks human activity becomes a risk for further transmission. Humans get avian flu virus infection through direct contact with bird feces and respiratory secretion, droplets and mechanical transfer through contact with contaminated surfaces such as clothing, footwear, farm and transportation equipment, cages, tools other materials.

The disease was first discovered in Northern Nigeria in Sanbawa farms, Kaduna on February 8, 2006 and later spread to other parts of the country. Nigeria's epidemic of this deadly disease spread south and infected poultry in three more states Anambra, Rivers and Benue. A highly pathogenic form of avian influenza in Oturokpo, Benue State and in Port Harcourt, River States, Zamfara State witness the outbreak of the bird flu disease in some part of the state. Investigation conducted by the Nigeria Tribune revealed that AL Nasar farm located in Gusau metropolis was greatly hit by the bird flu disease. It was reported that out of 5,000 birds in the farm, 4,150 had died as a result of the disease (UNICEF, 2007).

Also, there were reported cases of the outbreak of the disease in Tusho village of Maru local government area where >500 chickens were reported to have died. In the same vein about 2,000 chickens in Rufai farm in Talatan Mafara were also believed to have died as a result of the dreaded bird flu. Earlier, the epidemic had been limited to seven Northern and Central States-Katsina, Kano, Yobe, Kaduna, Bauchi, Plateau, Nasarawa and Federal Capital Territory (FCT). Its arrival in Port Harcourt, a major commercial center in the densely populated Niger

delta and Anambra was an indication of the fall presence of the virus in Nigeria. The Federal Capital Territory (FCT) administration disclosed the presence of the virus within the territory including the APO legislative quarters in Abuja (UNICEF, 2007).

The first human case of avian influenza was first reported on 13th February, 2006 in which blood sample from two sick children suspected of being Africa's first human victims of the deadly H5N1. The children lived a short distance away from Sambawa farm in Jaji which was quarantined after nearly 45,500 birds died of the flu. The death of a 22 years old woman in February 2007 confirms the transmission of the disease from animal to human (UNICEF, 2007). Bird human transmission is a source of concern and many households were afraid of eaten poultry products. Therefore, demand drastically declined and many poultry farmers ended up running at very huge losses. This study seeks to the nature of poultry products supply and price changes during the epidemic outbreak.

MATERIALS AND METHODS

The study area: The study was carried out in Osogbo which is the capital city of Osun State, Nigeria. The town is centrally positioned with a large number of civil servants, members of the middle-income earners and high-income groups. Osogbo, therefore represents a high consuming center of poultry products and suitable for study of this nature. The markets that were selected for the purpose of this work are as follows:

Oja-Oba market: This market is located at Ataoja palace along the road leading to Ilesa. The market is a large market which deals mostly with foodstuff.

Oja Oluode: This is a major selling center of poultry products in Osogbo. It is located in the Western part of the town.

Sunbare market: This market is located at the center part of the town. Poultry selling activities in this market high there are various veterinary centers in the market that deal directly with live birds of different size and ages.

Igbonna market: This market is located along new Ikirun road. It also deals with foodstuffs, fruits and other agricultural produce (Table 1).

Table 1: Distribution of sampled poultry producer and consumer in Osogbo

Name of market	No. of questionnaires
Oja Oba	55
Oja Oluode	50
Sunbare	25
Igbonna	20
Total	150

Market Survey Osogbo in 2006

Sources of data and sampling methods: The data were collected through interviews that were conducted in the markets during the busy hours of the day normally between 10.00 am to 2.30 pm. For the purpose of this study, traders, veterinary doctor, feed millers and buyers were interviewed. Before the actual presentation of the questionnaires, preliminary oral interview had been conducted as a way of pre-testing the consistency and reliability of the instrument. The traders, farmers feed miller and veterinary experts were classified as suppliers while buyers were classified as consumer. In all, 150 people were interviewed comprising 50 suppliers and one hundred consumers. The questionnaires were designed to investigate general information about what they know about bird flu as a disease of birds and humans, their demand for poultry products before and during the outbreaks of bird flu, problem faced by the trader during the outbreaks of the disease.

Suppliers and consumer were interviewed using a one-stage cluster sampling technique. This method was used because of the ways the traders and buyers were sitting and roaming in the markets. The traders were sitting in the cluster while the buyers were roaming the markets looking for one goods or the other in the markets. A random sampling technique was then used to pick respondent from each of the clusters for interview. With this method, the 150 questionnaires were returned.

The limitation of the data arises due to the fact that most consumers did not want to discuss bird flu because of the fear attached to the disease during the outbreak. A few of them filled the questionnaires reluctantly. This might have influenced the type of answers they supplied in the questionnaires. Finally, some of the respondent gave their answers based on rumours and not what actually happened to them. This might have also influenced the data.

RESULTS AND DISCUSSION

Many small-scale and large-scale poultry farmers in Osun State were involved in poultry production and marketing before the outbreak of avian flu in Nigeria. The large commercial producers specializing in poultry merely supply domestic markets with birds and other poultry products. Avian flu outbreak in Nigeria was found to have affected those small as well as large-scale producers. They suffered from temporary loss of consumer confidence that have shifted their preference for other type of protein sources. All the sampled consumers of poultry products were regularly consuming poultry and its products before Avian flu outbreak. However, in the onset of the disease, demand for poultry products declined among 95% of the consumers and 90% of the suppliers (Table 2).

Table 2: Suppliers and consumers changing demand for poultry products before and after avian flu outbreak

Stakeholders	Demand increased before bird flu		Decrease in demand with bird flu	
	Frequency	Percentage	Frequency	Percentage
Poultry consumers	100	100	95	95
Poultry suppliers	50	100	45	90

Table 3: Average supply and demand of poultry products after bird flu outbreak in Osun state

Product type	Average supply	Average demand	Change (%)
Broilers	60	10	16.67
Layers	45	5	11.11
Turkey	10	2	20.00
Cockerel	90	30	33.33
Chicken eggs	120	15	12.50

Market Survey in 2006

The table shows the analysis of ordering for new poultry birds and consumption of poultry products before and after the outbreak of bird and after outbreak of bird flu in Osogbo markets.

Small commercial and backyard poultry producers suffered losses in term of assets and income and the largest loss was observed to be borne by them and by those on medium sized commercial chicken production. Poultry production business suddenly becomes a disaster to those who either directly or indirectly involved in it. About 90% of the poultry suppliers in the town have decided to stop ordering for new birds to their farms and were contemplating going into other business rather.

There was excess supply of poultry products compared to demand leading to reduction in price during bird flu. Table 3 shows that in the sampled markets, 16.67 of the broilers that were offered for sale were eventually sold. Also, 11.11% of layers that were offered for sale were sold. Demand for cockerel was highest with 33.33% of the number that were offered for sale being purchased.

The prices of poultry products were also affected. Consumers were not responding positively to decrease in prices due to bird flu outbreak. This is shown in Table 4. The table shows that in nominal term, there was a reduction of ₦5000.00 in the price of Turkey due to the disease outbreak. Also, reduction in the price of broiler was ₦650.00 due to the disease. Reduction in prices of the products made many farmers to record losses because prices of feeds did not change in many instances, except for layers mash that recorded a reduction from ₦1200 per bag to ₦1000.

Because of outbreak of avian flu, consumers shifted to other substitutes, whose demand and prices simultaneously increased. There is a shift in trading patterns with some markets moving to fill the gap left by chicken and eggs. Specifically, Table 5 shows that

Table 4: Prices of poultry products before and after bird flu outbreak in Osun State

Poultry and its products	Price before bird flu (₦)	Price during bird flu (₦)	Difference in price (₦)	Reduction (%)
Mature live broiler	1,200	550	650	54.17
Mature layer point of lay	750	400	350	46.67
Culled matured live	600	350	250	41.67
Cockerel matured live	800	400	400	50.00
Turkey (stag)	8,000	3,000	5,000	62.50
Day old chick cockerel	40	10	30	75.00
Pullet (chick)	185	65	115	62.16
Broiler (chick)	120	45	75	62.50
Day old Turkey (chick)	550	250	300	54.55
Turkey egg	150	45	105	70.00
Chicken egg	20	10	10	50.00

Market Survey in 2006

Table 5: Average prices of poultry products substitute before and during bird flu outbreak

Products	Price kg ⁻¹ before flu (₦)	Price kg ⁻¹ during flu (₦)	Difference in price (₦)	Remarks (%) increase in price
Fish herring (Sawa)	100	150	50	50.00
Titus (Abaran)	150	200	50	33.33
Kotte	120	160	40	33.33
Stock fish (Panla)	120	160	40	33.33
Argentina (Sabalo)	150	200	50	33.33
Cat fish (Abori)	350	400	50	14.29
Other meats (Beef parts)				
Liver	450	500	50	11.11
White bone	220	240	20	9.09
Heart and kidney	450	500	50	11.11
Bone meat	200	220	20	10.00
Tail	350	400	50	14.29
Leg (Bokoto)	350	350	50	14.29
Assorted (i)	450	500	50	11.11
Assorted (ii)	220	240	20	9.09
Head skin	300	350	50	16.67
Thick skin (Agemawo)	240	260	20	8.33
Rumen (Saki)	320	360	40	12.50
Intestine (Abodi)	300	340	40	13.33
Pork	200	250	50	25.00
Mutton	320	380	60	18.75
Snail	45/snail	Soper snail	5	11.11

Market Survey in 2006. () are the local names for such meat in Osogbo markets. Assorted i comprises of various small parts of beef except liver and rumen. The inclusion of the liver and rumen results in assorted ii

average price of a kilogram of herring fish increased by 50% while that for titus increased by 33.33%. The Table 5 clearly reveals that prices increased for all other meat products that are considered as substitutes for poultry products.

CONCLUSION

Future avian influenza outbreak poses serious challenges to livestock husbandry in Nigeria. Preparedness of the government for quick intervention is a welcome development in case of future reoccurrences. This study found that poultry farmer incurred tremendous losses in any event of outbreak of avian flu because despite that livestock feed prices are the same, reduction in demand for poultry products resulted into drastic

reduction in prices of the products. There is the need for proper education of the public on remedial actions that can be taken to avoid being infected with bird flu in case of future reoccurrence, instead of complete and total removal of poultry products from households commodity bundles. Such sensitization should be regular part of media programmes that can be sponsored by stakeholders in the poultry industry.

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