



Research Article

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# SOCIOECONOMIC EFFECT OF HIGH PATHOGENIC AVIAN INFLUENZA ON POULTRY FARMERS IN RIVERS STATE, NIGERIA

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## Abstract


The study was carried out to evaluate the economic effect of the 2015 HPAI outbreak on poultry farmers in Rivers State, Nigeria. 44 farmers (farms) across three LGAs viz. Obio/Akpor (81.8%), Ikwerre (11.4%) and Port Harcourt City (6.8%) were affected, 23 (52.3%) of them being women and 21 (47.7%) men. The number of layers, broilers, turkeys and cockerels culled and compensated were 87,485 (₦47,808,250.00), 8,478 (₦3,190,950.00), 670 (₦467,500) and 65 (₦47,625.00) respectively. 27,900 eggs were destroyed and compensation of ₦209,250.00 was paid. Compensation was not paid for 23,565 layers, 1,480 broilers and 450 turkeys that died before reports were made. Although the Federal Government spent a whopping sum of ₦51,723,575.00 in paying compensation to the farmers, they lost ₦108,468,425.00 when considering the prevailing market price of the products at the time and value of the dead birds not compensated. They also lost an uncalculated amount on medication and veterinary consultations. Having lost their capital and considering that the waiting period was 2 years, 43% of the farmers were discouraged and never went back to poultry farming. To mitigate these effects in the future, I recommend therefore that poultry farmers should be trained to improve on and observe strict biosecurity measures to prevent the occurrence of the disease. In addition to having veterinarians attached to their farms, they should be taught the clinical signs of HPAI for early detection and reporting should outbreaks occurs. Farmers should as well be made to insure their farms to be covered during outbreaks and the Federal Government of Nigeria should improve on their compensation plans in the future to alleviate the sufferings of farmers.

**Keywords:** HPAI, Economic effect, Poultry, Farmers, Compensation, Discouraged

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## 1. Introduction

World Organization for Animal Health (OIE, 2004)

defined avian influenza as “an infection of poultry caused by any Influenza A virus of the H5 or H7 subtypes or by

any influenza virus with an Intravenous Pathogenicity Index (IVPI) greater than 1.2 (or as alternative at least 75% mortality)".

Influenza A viruses are highly contagious and widespread in birds and belong to the family, Orthomyxoviridae. They exhibit high variability and classified on the basis of their hemagglutinin (HA) and neuraminidases (NA) surface glycoproteins (Acha and Szyfre, 2003; Oladokun et al., 2012a).

High Pathogenic Avian Influenza (HPAI) is a zoonotic disease and of great economic importance that has led to high incidence and death rates in domestic animals and humans (Muzaffar et al., 2006; Olsen et al., 2006; Gauthier-Clerc et al., 2007). It has caused deaths in poultry and poultry handlers that were inappropriately exposed to aerosols generated from handling chickens (Oladokun et al., 2012b). The mortality rate can be up to 90-100% in a flock, devastating the poultry industry and leading to restrictions in trade (CDC, 2015). Swayne (2003) has described it as a disease of international significance requiring global collaboration to eradicate.

The first outbreak of HPAI in Nigeria occurred in January 2006, at Sambawa Farms, Jaji, Kaduna State and initially diagnosed at the Veterinary Teaching Hospital, Ahmadu Bello University, Zaria, Nigeria (Adene et al., 2006). On February 6, 2006, it was confirmed to be Avian Influenza A virus infection at the laboratory of the National Veterinary Research Institute, Vom. Subsequently, the OIE, FAO and National Reference Laboratory for Newcastle disease and Avian Influenza viruses in Padova Italy on February 7, 2006 confirmed it based on the amino acid sequences (PQGERRRKRGLFG) at the cleavage site of Haemagglutinin as HPAI H5N1 (NADIS INFO, 2006). By April 2006, the H5N1 virus has led to the destruction of more than 325,000 chickens in Nigeria and subsequently spreading to 22 States in 2007 (You and Diao, 2007; Monne et al., 2008). Ifende et al. (2015) reported that molecular analysis showed a new clade of the H5N1 virus which lead to the resurgence of the disease in 2015 after the last outbreak in 2008, affecting FCT and 20 states including Rivers where the virus was still circulating.

In Rivers State, the first outbreak was confirmed in a backyard poultry farm at Bori Camp, Port Harcourt in March, 2006 by National Veterinary Research Institute (NVRI) laboratory. The farm was depopulated and compensation paid. There was a resurgence of the disease in 2015, this time spreading beyond one farm and Local Government Area. There was no report or research on the devastating impact of HPAI on the wellbeing and economic life of poultry farmers in Rivers State, hence, the need for this research.

## 2. Material and Methods

### 2.1. Study Area

The study was carried out in Rivers State, located in the Niger Delta region of Nigeria with humid tropic climate

with latitude 4.8396° N and longitude 6.9112° E. HPAI outbreak occurred in 3 out of the 23 LGAs viz. Obio/Akpor, Ikwerre and Port Harcourt City (PHC).

In Obio/ Akpor LGA, located at 4°45' N - 4°60' N and 6°50'E, 8°00'E, the following towns were Egbelu, Eligbolo, Elioparanwo, Eliozu, Eneka, Mgbuogba, Nkpolu-Rumuigbo, Ozuoba, Rukpokwu, Rumuekini, Rumuokoro and Rumuosi. In Ikwerre LGA is located within 4°50'N 5°15'N, 6°30'E 7°15'E. Towns involved were Aluu and Igwuruta. In Port Harcourt City LGA is located within 4°46'38.71"N 7°00'48.24"E. Towns involved were Abuloma, Amadi Flats and Eagle Island.

### 2.2. Data Collection

Data of all the confirmed cases of HPAI in Rivers State from 14<sup>th</sup> January, 2015 to 17<sup>th</sup> November, 2016 were collated by reading the records of confirmed cases from NVRI at the Avian Influenza Desk Office, Rivers State Ministry of Agriculture, Port Harcourt. The type of bird, flock size, number of dead birds and number depopulated, number of eggs destroyed and the amount paid to each farmer were taken. A total of 44 farms were affected.

### 2.3. Data Management and Analysis

Collated data were entered into an excel sheet and analyzed using Statistical Package for Social Sciences (SPSS) software 16.0 version. Descriptive statistics were employed to summarize the data and expressed in terms of frequencies and percentages.

## 3. Results

The results show that the 2015 outbreak of HPAI in Rivers State affected only three LGAs; Ikwerre, Obio/Akpor and PHC, the worst hit being Obio/Akpor (81.8%), followed by Ikwerre (11.4%) and then PHC (6.8%) as seen in Table 1.

**Table 1.** Distribution of HPAI outbreak across the LGAs

LGA	Frequency	Percentage (%)
Ikwerre	5(44)	11.4
Obio/Akpor	36(44)	81.8
Port Harcourt City	3(44)	6.8

Forty four farmers were affected in all, 23 (52.3%) being females and 21 (47.7%) being males (Table 2).

**Table 2.** Gender distribution of the farmers and number who were discouraged and never returned to poultry farming and number who died before compensation was paid

Gender	Female	Male
Frequency	23(44)	21(44)
Percentage (%)	52.3	47.7
Number of discouraged and never farmed again	2	6
Number of dead	0	1

Eight of these farmers were discouraged and never went back to poultry farming and one died before

compensation was paid, although the death was not related to losses he incurred. 90.9% of the poultry population affected were chicken while 9.1% are turkeys (Table 3). Layers made up the bulk of the poultry depopulated (87,485), followed by broilers (8,478), then turkeys (670) and then cockerels (65). A total of 27,900 eggs were destroyed.

**Table 3.** Type of product

Type of product	Frequency	Percentage (%)
Chicken	40(44)	90.9
Turkey	4(44)	9.1

The amount paid for layers depopulated was ₦47,808,250.00. For the broilers, it was ₦3,190,950.00. ₦47,625.00 was paid for cockerels, ₦467,500 was paid for the turkeys and ₦209,250.00 was paid for the eggs. It took 2 years, from 2015 when the report was made to 2017 before compensation was paid. The number of dead layers before report was made was 23,565, broilers were 1,480, and turkeys were 450. These numbers were not compensated. The overall amount paid as compensation to the farmers was ₦51,723,575.00 (Table 4).

**Table 4.** Distribution of type of bird, number dead and culled, and amount paid as compensation and the year of report and year of payment

Type of bird	No. culled	Amt. paid as compensation for culled birds (₦)	Worth of culled birds at the time (₦)	No. dead	Worth of dead birds at the time (₦)	Year of Payment
Layers	87,485	47,808,250.00	104,982,000.00	23,565	28,278,000.00	2017
Broilers	8,478	3,190,950.00	12,717,000.00	1,480	2,220,000.00	2017
Cockerels	65	47,625.00	97,500.00	-	-	2017
Turkeys	670	467,500.00	6,700,000.00	450	4,500,000.00	2017
Eggs	27,900	209,250.00	697,500.00	-	-	2017
Total	-	51,723,575.00	125,194,000.00	-	34,998,000.00	-

#### 4. Discussion

Three LGAs of Rivers State were affected by HPAI in 2015; Obio/Akpor (81.1%), Ikwerre (11.4%) and PHC (6.8%). Indeed, Obio/Akpor LGA, particularly Rumuagholu, Rukpokwu, Eneka, Nkpolu-Rumuigbo, Rumuokoro, Elioizu, Eligbolo, Elioizu, Rumuokini, Eliopranwo, Ozuoba, Egbelu, Mgbuoba and Ozuoba towns hold the greatest number of poultry farms in the state. This explains why it had the highest percentage of farms affected. The only towns affected in Ikwerre LGA, Aluu and Igwuruta share a common boundary with Rumuekini, Rukpokwu and Eneka in Obio/Akpor LGA. They host 11.4% of the affected farms. Towns affected in PHC were Amadi Flats, Eagle Island, and Abuloma with only 6.8% of the affected farms. This is probably due to the fact that PHC is the heart of the town with the fewest number of poultry farms. It is clear from this pattern that the more densely concentrated poultry farms are the higher the chances of HPAI spreading from farm to farm.

There were more female farmers (52.3%) affected than male (47.7%). This may not be unconnected with the fact that more women are into poultry farming because the entry costs are low and they could easily combine it with house duties (You and Diao, 2007). Nineteen out of the

forty four farms were closed down as the farmers lost interest and never went back to poultry farming even after compensation was paid. This could be due to discouragement. For instance, Obayelu (2007) reported that losses as a result of HPAI outbreak caused emotional trauma amongst farmers. These losses lead to loss of source of cash income and livelihood for producers and protein source for consumers (Abdu et al., 2005; You and Diao, 2007). One of the strategies the Federal Government of Nigeria adopted to curb HPAI besides public enlightenment was culling of affected birds and payment of compensations (Ugwu, 2007). A total of 87,485 layers were culled and compensation of ₦47,808,250 was paid at an average price of ₦546 per bird instead of ₦104,982,000 at ₦1200 per bird being the market value of spent layers at the time. A total of 23,565 layers (valued at ₦28,278,000 at the time) died before the confirmation of the disease and compensation wasn't paid because the policy doesn't allow for payment of compensation for dead birds. The resultant effect was that the farmers lost about ₦85,451,750 on their layers. However, in comparison to the compensation price during the 2006 HPAI outbreak (₦250 per bird), the ₦546 per bird was high because the effect of inflation was taken care of (Osakwe, 2006). A total of 8,476 broilers were

slaughtered and a compensation of ₦3,190,950 at an average price of ₦376 per bird instead of ₦12,717,000 at market value of ₦1,500 per bird at the time. The 1,480 dead broilers valued at ₦2,220,000 were not compensated for resulting in a loss of about ₦11,746,050. The number of cockerels depopulated were 65 and a total of ₦ 47,625 at ₦733 per bird instead of ₦97,500 at the market price of ₦1500 at the time leading to a loss of ₦49,875. 670 turkeys were culled and ₦467,500 compensation was paid at ₦ 697 per bird instead of ₦6,700,000 at the prevailing market price of ₦10,000 to ₦25,000 per mature turkey at the time. The 450 turkeys valued at ₦4,500,000 were not compensated for resulting in a loss of about ₦10,732,500 on the turkeys. 27,900 eggs were destroyed and compensation of ₦209, 250 paid at ₦ 7.5 instead of ₦697,500 at the prevailing wholesale price of ₦25 per egg at the time resulting in a loss of ₦488,250.

Asides the fact that the farmers were made to wait for one to two years before compensations were paid, the amounts paid were way below the selling prices of the layers, broilers, cockerels, turkeys and eggs at the time, resulting in a loss of ₦73,470,425. The value of the dead layers, broilers and turkeys not compensated was ₦34,998,000.00. Thus, a cumulative sum of ₦108,468,425.00 plus the uncalculated amount spent on drugs was lost by the farmers during the epidemic. Overall, Federal Government of Nigeria spent a whopping sum of ₦ 51,723,575 to compensate Rivers State farmers alone and in spite of this monetary cost on Federal Government, the farmers suffered more economic losses, in addition to psychological trauma which would be difficult to quantify economically. Indeed, the impact of HPAI on poultry industry is two dimensional – financial impact (losses incurred by individual farmers) and derived economic impact (social, psychological and political effects) (Ugwu, 2007).

I recommend therefore that poultry farmers should be trained to improve on and observe strict biosecurity measures to prevent the occurrence of the disease. In addition to having a veterinarian attached to each farm, the farmers themselves should be taught the clinical signs of HPAI for early detection and reporting should outbreaks occurs. Farmers should as well be made to insure their farms to be covered during outbreaks. The Federal Government of Nigeria should improve on their compensation plans in the future to alleviate the sufferings of farmers.

### Conflict of interest

The authors declare that there is no conflict of interest.

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