



EFFECTS OF AVIAN INFLUENZA H5N1 ON POULTRY PRODUCTION IN WUDIL TOWN OF KANO STATE, NIGERIA.

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ABSTRACT

The study examined the effects of avian influenza H5N1 on poultry production in Wudil town of Kano State, Nigeria. Questionnaires were administered to 40 respondents randomly sampled. Descriptive statistics and farm budgeting techniques were used for data analysis. The study revealed that more than half (67.5%) of the respondents were male with mean age of 38 years. About 65% were married with an average household size of 6 persons. The results indicated that about 77% of the respondents sold between 41-50 crates of eggs before avian influenza outbreak, 94.1% sold less than 10 crates during the epidemic while 50% sold between 31-40 crates after the epidemic. Most (85%) of the respondents used layer birds for production, the estimated mean flock size was 600 birds. Decline in demand of poultry products was realized during the disease outbreak. Poultry producers identified high cost of feed and diseases as their major constraints. It was therefore recommended that poultry producers should be encouraged to form agricultural co-operatives in order to pool resources together and negotiate jointly with input suppliers to limit high cost of production inputs and these cooperatives should also collaborate with ADP's and Ministry of Agriculture to design training programs for farmers on the precautions and preventive measures of averting the effects of avian influenza on the economy. This will increase the income of poultry producers in the study area.

Keywords: Avian, Effect, Influenza, Products, Poultry

INTRODUCTION

The poultry industry plays an important role in the development of the economy. It is a major source of egg and meat which have high nutritional value, particularly in the supply of protein as recommended by FAO. It also represents an appropriate system to feed the fast growing population and to provide income for small scale farmers. Therefore, the development of the poultry industry in Nigeria has been described as the fastest means of bridging the protein deficiency gap. Nigeria is threatened by problems facing livestock (poultry in particular) production which includes high cost of production and outbreak of diseases which recently include Avian influenza (AI) virus which is commonly referred to as Bird flu in Nigeria. Avian influenza (AI) is a viral disease of all domestic and wild birds characterized by respiratory, digestive and in some cases nervous signs, high morbidity and mortality (Saidu *et al.*, 2008).

There are many strains of avian influenza which are generally classified into two categories: Low Pathogenic Avian Influenza (LPAI), which occurs naturally and typically causes little or no clinical signs in birds and High Pathogenic Avian Influenza (HPAI), which can cause severe clinical signs and or high mortality in birds. HPAI also has high degree of virulence which raises concern not only in poultry but in wild birds as well as having the ability to infect mammalian species.

The avian influenza virus has incubation period of few hours to some days and mortality rate can reach up to 90%-100% often within 48 hours of showing clinical signs depending on the dose, route of infection and species of bird infected. Affected birds show severe depression,



sudden drop in egg production, respiratory symptoms, facial *subcutaneous oedema*, swollen and cyanotic combs, wattles shanks and sudden death (Bawa *et al.*, 2010).

These traits of HPAI usually cause negative demand shocks in the poultry sector (Beach *et al.*, 2007). For instance, after an outbreak of HPAI, poultry production is usually interrupted for several weeks with associated financial losses. Between January and May, 2015, there was an outbreak of avian influenza that affected 18 out of the 36 States in Nigeria (DV and PCS, 2015). Kano was among these States (21 out of the 44 Local Governments in the State were affected). Among the Local Governments experienced the outbreak of the disease was Wudil. Poultry production, consumption and marketing were impaired. The purpose of this paper was to analyse the **effects of avian influenza on poultry production in Wudil town of Kano State, Nigeria**. The specific objectives are to; describe the socio-economic characteristics of poultry producers in the study area; evaluate the extent of gain/loss before, during and after the incidence of avian influenza in the study area and analyse the constraints of poultry production in the study area.

MATERIALS AND METHODS

The Study Area

Wudil town is the headquarters of Wudil Local Government Area (LGA) of Kano State. It lies on the coordinates of Latitude 11.8167° E and Longitude 8.8500 N and is about 41km along Kano Maiduguri highway. It has an estimated population of 23,066 (www.TipTopGlobe.com). Average annual rainfall is about 980mm, the bulk of which falls from June through September. Wudil is generally very hot throughout the year, though from December through February, it is noticeably cooler with night temperature of 11-15°C (52 to 59°F). The Kano State University of Science and Technology is sited in the town.

Sampling Procedure and Sample Size

Multistage sampling technique was employed. One LGA (Wudil) was purposively selected out of the 44 LGA's in Kano being one of the severely affected area; during the disease outbreak. Wudil town was also purposively selected being one of the most affected and had the highest population of poultry farms in the LGA. Among the existing poultry farms, forty (40) were randomly selected for the study. The farms were represented by their managers who provided the necessary responses to the content of the structured questionnaire administered for the study. In essence, total number of respondents selected for the study was 40.

Analytical tools

Descriptive statistics and farm budget technique was used for data analysis. Farm budget was used to determine how avian influenza affected quantity produced and sales of eggs while descriptive statistics was used to analyse the socio-economic traits of the respondents and the constraints they face. The analytical models are specified below;

Arithmetic mean: This is the set of scores divided by the total number of the observation.

Mean is written mathematically as:

$$X = \sum X_i / N \quad \dots(1)$$

where; \bar{X} = arithmetic mean; \sum = summation; x_i = individual observation; percentage. This was used to determine the population of respondents to a particular response.

Percentage is written mathematically as:

$$\text{Percentage (\%)} = x/n \times 100 \quad \dots(2)$$

where; % = percentage; x = individual observation

Farm budget analysis is mathematically expressed as:

$$TR = Q \times P$$

$$TC = TVC + TFC \quad \dots(3)$$



$$GM = TR - TVC \quad \dots(4)$$

$$NI = GM - TFC \quad \dots(5)$$

where; TR = total revenue obtained from sale of poultry product; P = unit price of poultry product; Q = total quantity of poultry product; TVC = total variable cost incurred in the production cycle; TFC = total fixed cost incurred in the production cycle.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Poultry Farmers

The socio-economic characteristics examined were age, sex, marital status, household size, level of education, flock size, years of experience, type of bird kept, type of management system kept and registration of farms with regulatory authority. The result presented in Table 1 shows that out of the sampled farmers, 67.5% were male while 32.5% were female. This indicates that poultry egg production was basically male dominated. This was expected given the drudgery nature, physical and energy demand as well as capital intensive nature of investment required to establish poultry egg farm enterprise (Mukhtar, 2012). The mean age was 38 years, while 50% of the poultry farmers were within the age bracket of 35 – 44 years who were physically strong and mentally alert to face challenges and are likely to adopt new innovation. This was in consonant with (Onubuogu *et al.*, 2013) farmers within 35-44 years are active, more receptive to innovation and could with stand the stress and strain involved in agribusiness activities, The mean house hold size was 6 persons. Majority (65%) was married while 35% were single; this was in conformity with the findings of Mukhtar (2012) that 75% of poultry egg producers in Bauchi LGA were married and 25% single. The implication of this finding is that majority of the respondents were responsible people who would likely take rational decision that would improve productivity and income. Most of the poultry farmers (60%) attended secondary school while (27.5%) attained tertiary level of education and (12.5%) had primary school certificate. This agrees with the findings of Ikheola and Inedia (2005) which indicated a high literacy level of about 85% among poultry farmers in Edo state. Education is very important in the management of poultry and it is known to affect adoption of modern farm practices there by enhancing productivity and profitability.

The poultry farmers mean production experience was about 14 years. It was generally expected that productivity increases with years of experience. The result was in line with the findings of (Esiobu *et al.*, 2014) who asserted that previous experience in agribusiness enable farmers to set realistic time and cost targets, allocate, combine, utilize resources efficiently and effectively and be able to identify production and marketing risks. Larger proportion (37.5%) reared 601 – 800 birds. This was followed by 22.5% having 801 – 1000 birds. The rest were those with less than 200, 201 – 400, 401 – 600 birds constituting 7.5%, 20% and 12.5%, respectively. Most (85%) of the respondents were into poultry egg production while (15%) were into broilers production. The management system used by most of the respondents (80%) was intensive while (20%) used semi-intensive. Majority (72.5%) of the poultry farmers registered their farms with relevant authority while (27.5%) were yet to register their farms. The implications that registration of farms legalized the operation of the business and enable farmers access bank loans and government compensation In case of any disease outbreak or emergencies and other incentives from private, State or Federal Governments.



Table 1: Socio-economic Characteristics of Poultry Farmers

Characteristics	Frequency	Percentage	Mean
Age (years)			
15 – 24	3	7.5	38 years
25 – 34	9	22.5	
35 – 44	20	50.0	
45 – 54	8	20.0	
Sex			
Male	27	67.5	
Female	13	32.5	
Household size			
>5	20	50.0	6 persons
6 – 10	14	35.0	
11 - 15	6	15.0	
Educational level			
Primary	5	12.5	
Secondary	24	60.0	
Tertiary	11	27.5	
Poultry farming experience (years)			
1 – 10	13	32.5	14 years
11 – 20	21	52.5	
21 – 30	6	15.0	
Flock size owned			
>200	3	7.5	
201 – 400	8	20.0	
401 – 600	5	12.0	
601 – 800	15	37.5	
801 – 1000	9	32.5	
Types of poultry reared			
Broilers	6	15.0	
Layers	34	85.0	
Management system			
Intensive	32	80.0	
Semi Intensive	8	20.0	
Farm registration			
Registered	29	72.5	
Unregistered	11	27.5	

Weekly Sales and Prices of Egg Before, During and After Avian Influenza Outbreak

Table 2 and 3 indicates the quantity of eggs sold per week before, during and after the incidence of avian influenza in the study area. Before the outbreak, farmers sold an average of 41 – 50 crates of egg per week at prices between ₦ 710 – ₦ 800 per crate. Using the upper ranges of sales and price, income generated per week amounted to ₦ 40,000. During the outbreak less than 10 crates of egg were sold per week. The price within that period decreased to about ₦ 510 – ₦ 600 per crate. Hence, income drastically fell to ₦ 6000. After the avian influenza



outbreak, production steadily increased to 31 – 40 crates per week. There was an associated increase in demand and price (₦ 810 – ₦ 900 per crate) of eggs. This gave weekly income of about ₦ 36, 000.

Table 2: Distribution of Egg Crates Sold per week before, during and After Outbreak

Number of crates	Before Frequency	Outbreak Percentage	During Frequency	Outbreak Percentage	After Frequency	Outbreak Percentage
< 10	-	-	32	94.1	-	-
11-20	-	-	2	5.9	-	-
21-30	-	-	-	-	82	3.5
31-40	6	1	7.6	-	175	50.0
41-50	26	76.5	-	-	61	7.7
Above 50	2	5.9	-	-	3	8.8
Total	34	100	34	100	34	100

Source: Field Survey, 2016

Table 3: Distribution of Prices of a Crate of Egg before, during and after the Outbreak

Price/Crate (₦)	Before Frequency	Outbreak Percentage	During Frequency	Outbreak Percentage	After Frequency	Outbreak Percentage
510-600	-	-	32	94.1	-	-
610-700	-	-	2	5.9	-	-
710-800	28	82.4	-	-	7	20.6
810-900	6	17.6	-	-	24	70.6
910-1000	-	-	-	-	3	8.8
Total	34	100	34	100	34	100

Source: Field Survey, 2016

Constraints to Poultry Production

The most critical challenges confronting poultry production in the study area as indicated in Table 4 was high cost of feed (95%), pest and disease (90%), inadequate capital (60%), high cost of medication and vaccination (75%), and poor day old chicks (25%). These problems reduce income in poultry production.

Table 4: Poultry Production Constraints in the Study area

Constraints	Frequency	Percentage	Ranking
High cost of feeds	8	95.0	1 st
Pests and diseases	36	90.0	2 nd
Inadequate capital/funds	24	60.0	3 rd
High cost of medication and vaccination	30	75.0	4 th
Poor quality day old chicks	10	25.0	5 th

Source: Field Survey, 2016

CONCLUSION AND RECOMMENDATIONS

The study was designed to evaluate the effects of avian influenza in poultry production In Wudil town in Kano State, Nigeria. The results shows a sharp decline in egg sold per week during the outbreak of the disease as compared to period before the outbreak which leads to decline in the poultry farmers income. The poultry producers should be encouraged to form



agricultural cooperatives in order to pool resources and negotiate with input suppliers to limit high cost of production and also the cooperative should collaborate with ADPIS and ministry of agriculture to design training programs for farmers on precautions and preventive measures of averting the effects of avian influenza on the economy. Policies and programmes on poultry products importation should be enforced by the governments for the benefits of farmers and citizens.

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