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Socio-economics Factors Associated with Poultry Production in Kano, Nigeria

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Abstract: This study was carried out to investigate the factors associated with low productivity among poultry farmers in Kano Metropolis. Questionnaires were used to obtain the primary data; 150 poultry farmers were sampled using a multistage technique from 3 selected Local Government Areas, including Ungoggo, Kumbotso, and Nassarawa. Fifty (50) poultry farmers were randomly sampled from each local government, respectively and the obtained data were analyzed using descriptive statistics. The result shows that males carried the highest proportion (82.67%) and are married (90.67%) at their younger age of 36-45 years (42.0%). About 66.6% of the respondents were rearing layers. However, 82.33% were not using antiseptic as a foot bath, while 18.67% were using it as a foot bath. All the respondents 100% adhered to the vaccination schedule, but they are still experiencing Newcastle, Coccidiosis, Gumboro, Chronic respiratory disease, fowlpox, and salmonellosis due to the inefficient biosecurity measures. About 80% were using a deep litter management system, while 20% were using a battery cage. The study proved that 83.33% of the low productivity was attributed to diseases and 26.67% to heat stress. It is recommended that, if possible, Poultry farmers should be encouraged to use an automatic sprayer and powerful fan in their poultry houses to cushion the level of heat stress to their poultry.

Keywords: Biosecurity, antiseptic, foot bath, vaccination.
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1. Introduction

Livestock possesses a vital position in human dietary requirements, a significant animal source of dietary protein, and a crucial income source (Appleby and Fuentesfina, 2015; MacLeod et al., 2018; Michalk et al., 2019; Roos et al., 2016). The poultry serves as the quickest way of meeting the protein requirements, especially useful in resource-limited regions like Nigeria (Akinnusotu et al., 2107; Akpabio et al., 2007; Alders et al., 2018; Wong et al., 2017). Being a healthy protein source, its affordability, nutrient richness, and lack of religious restrictions made poultry products among top priority to meet the dietary requirement (Vaarst et al., 2015).

Poultry production has a substantial role in any country's economy, especially Nigeria, as it is a potential tool for livelihood improvement and poverty alleviation (Adebayov and Adeola, 2005). The poultry industry consists of several business opportunities, including meat production, egg production, hatchery, and selling of various types of equipment associated with poultry production (Alloui and Bennoune, 2013; Garba et al., 2019; Hussain et al., 2015). Small-scale farming systems in developing countries significantly contributed to food security (Hailemichael et al., 2017). Smallholder poultry producers of Africa can potentially provide half of their egg and poultry meat requirements (De Bruyn et al., 2015; Etuah et al., 2020; Hetherington et al., 2017).

Previously, poultry production was not considered a significant business. After undergoing substantial advancements, it has been recognized to provide a rapid turnover of recovery (Amos, 2006; Mottet and Tempio, 2017). Increased poultry production helps meet the nutritional requirements of humanity (Folorunsho and Onibi, 2005; Nordhagen and Klemm, 2018). The poultry industry is growing faster than other protein sources, as it is a rapid supplier of protein (meat and egg) to the teeming population (Bohrer, 2017; Ukoha and Augustine, 2007). In the

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recent past, government policies encouraged large-scale modern poultry production (Ezeh et al., 2012; Ike, 2011). There was a rapid increase in poultry production and consumption in Nigeria in the last decades (Gona, 2009; Okoli, 2006). Poultry production is vulnerable to management practices, as compared to mammal production. Therefore, various constraints limited poultry production, especially smallholders (Abdelnour et al., 2018; Wong et al., 2017).

The current study was conducted to assess the poultry production in Kano, Nigeria, in response to various socio-economics factors.

2. Materials and Methods

2.1. Study area

The research was carried out in Kano Metropolis. Kano State, Nigeria, is characterized as Sahel area with about 9 million people, i.e., its highest population density. The Kano urban has a land area of 137km^2 with eight local Government areas (Kano Municipal, Fagge, Dala, Gwale, Tarauni, Nassarawa, Ungoggo and Kumbotso) with a population of 2,163,225 (NPC, 2006). The metropolitan area covers a total land of 499km^2.

2.2. Sampling Procedure

The research consisted of a multistage sampling procedure in sampling the poultry farmers. Nassarawa, Ungoggo, and Kumbotso were purposively selected. There was also a purposive selection of Danbare, Medile, Yankusa, Danmaliki, and Dantsinke from Kumbotso Local Government, while Wurobagga, Walalambe, Ladanai, Tokarawa and Yarawa from Nassarawa Local Government, and Panisau, Jaba, Badunshare, Rimaye and Tsamiyar Kifi from Ungoggo Local Government. All are based on the availability of poultry farmers. Lastly, one hundred and fifty (150) poultry farmers were randomly selected to represent the population size.

2.3. Data Analysis

Data obtained were subjected to descriptive statistical tools to draw a sound conclusion and recommendation based on research results.

3. Results and Discussion

The socio-economic status of the respondents is presented in Table 1. According to the result, most of the farmers (42%) fall in the younger age group (36-45 years). Similarly, Sani et al. (2007) also reported that a higher percentage of poultry farmers are comparatively younger (41 to 50 years) are more receptive to innovations. Moreover, a significant portion of poultry farmers in the study area is male (82.67%), whereas female poultry farmers are in the minority (17.33%). The high male-female ratio was possibly attributed to their norms that contribute more to the farmers' lifestyle of the farmers, where males are decision-makers of the family.

The research shows that a considerable number (90.67%) of the respondents have wives, indicating the sense of responsiveness according to societal norms and therefore are likely to have some life experience. Oluwatayo et al. (2008) also reported that married farmers usually used family labour to reduce the cost of production. The majority of the farmers (77.33%) had less than a decade (1-10 year) experience in poultry farming. This finding supports the results of Oluwatayo et al. (2008), who reported that the farmers' experience determined the efficiency and profitability of poultry farming. The result shows that the majority of the respondents (52%) involves in medium production level ranging between 2,000-10,000 birds, and (40%) of the respondents are described as low-level producers producing less than 2,000 birds while (8%) of the respondents are high-level poultry producers with more than 10,000 poultry birds.

Table 1. Respondent's Socio-economic Status

Variables		Frequency	Percentage
Age Group (Year)	15-25	11	7.33
	26-35	54	36.0
	36-45	63	42.0
	45-Above	22	22.6
Gender	Male	124	82.7
	Female	26	17.3
Marital Status	Married	136	90.7
	Divorced	2	1.3
	Single	12	8.0
Education	Primary	10	6.7
	Secondary	64	42.7
	Tertiary	72	48.0
	Religious	4	2.7
Experience (in Years)	1-10	116	77.3
	11-20	30	20.0
	21-Above	4	2.7
Production Level	Low	60	49.0
	Medium	78	52.0
	High	12	8.0
Major Occupation	Farming	26	17.3
	Civil service	30	20.0
	Business	94	62.7

Table 2. Biosecurity Practices by the Farmers

Variables		Frequency	Percentage
Antiseptic	**Yes**	28	18.7
	No	122	81.3
Disinfectant	**Yes**	113	75.3
	No	37	24.7
Hand	**Yes**	12	8.0
gloves	**No**	138	92.0
Protecting	**Yes**	95	63.3
clothes	**No**	55	36.7

Moreover, the result shows that the majority (48%) of the respondents had tertiary education, which will reliably contribute to planning farming activities. Alabi and Aruna (2006) and Ndahitsa (2008) also funded the positive relationship between farming skills and education level due to the knowledge of several innovation and technologies by educated farmers.

The majority of respondents (62.67%) are businessmen; 20% are civil servants, while 17.33% are crop producers, indicating a significant economic contribution of poultry farming to the farmers. This result agrees with the finding of Amaza (2000), who shows how common it is for a household to indulge in other activities for complementing their livelihood.

A significant majority of the respondents (75.33%) in the study area use the disinfectant when establishing a new poultry setup by cleaning, washing, and disinfection. However, one-third of the respondents (24.67%) were not interested in the disinfection of new poultry setup, potentially reducing cost or thinking that it is not essential (Table 2). Moreover, about 122 farmers (81.33%) do not use any antiseptic foot bath, while 28 farmers (18.67%) use antiseptic foot baths. About 12 (8%) of the farmers use hand gloves while 63.33% use protective clothing for the personnel, and 36.67% were not using protective clothing.

Table 3: Diseases Experienced by the Respondents

Diseases	Frequency	Percentage
Newcastle	38	25.3
Coccidiosis	32	21.3
Gumboro	25	16.7
CRD	9	6.0
Fowl pox	7	4.7
Salmonellosis	7	4.7
None	32	22.3

The primary risk associated with disease outbreak in the farms is inadequate biosecurity measures (Stephen, 2012). Biosecurity measures are very crucial in poultry farms, like wearing clothes and hand gloves. Similar results were reported by Nusirat et al. (2012), who noted that more than (35.1%) of the farmers were not using any protective cover. In comparison, 29.7% were using coveralls, while 18.9% were using hand gloves. Akirdaju et al. (2010) described the biosecurity level among small-scale farmers as low, making them more prone to diseases.

The results show that many sampled farmers adhered to the vaccination schedule while others vaccinate from time to time (Table 3). Some of the respondents were unable to recognize the diseases affecting their poultry, and most do not record disease incidents. However, about 38 of the respondents (25.33%) reported that Newcastle was the endemic disease in the study area. Moreover, 21.33% reported coccidiosis, 16.67% reported Gumboro, 6% reported CRD, 4.67% Salmonellosis, and 4.67% fowl pox, 22.33% does not experience any diseases.

Nusirat et al. (2012) reported some diseases according to their intensity as coccidiosis, Infectious bursal disease and Newcastle disease in Ilorin, Kwara State, Nigeria. Due to coccidiosis infection, the death rate is highly dominant in small-scale farming than large-scale poultry farms (Safari et al., 2004). Concerning the cause of disease in the study area, most respondents described it as an environmental problem, while others claimed it a management problem. Jones et al. (2005) described poor management and unfavorable environmental conditions as the causes of poultry diseases.

Reiter and Bessei (2000) reported poor poultry health due to the negative impact of unfavorable temperature and humidity. Ineffective health management and keeping the poultry beyond the recommended rearing period can be detrimental to the flock (Rahman, 2005). Akirdaju et al. (2010) reported that harsh environmental conditions and poor management implicate more flock diseases. The contributory factors of disease outbreak include stocking rate, keeping other species, and feed type (Anna, 2011).

Table 4. Factors Associated With Low Productivity Among the Respondents

Factors	Frequency	Percentage
Diseases	125	83.3
Heat Stress	25	16.7
Predators	0	0.0

Factors affecting poultry productivity among the farmers are shown in Table 4, indicating disease as the most critical factor. High percent (83.33%) of the respondents experienced a disease outbreak, which caused sudden and sporadic mortality and a sudden drop in egg production. Among the respondents, 25 (16.67%) were purely affected by heat stress. Moreover, even the disease is caused by a combination of heat stress and poor biosecurity, which cannot be separated from the tropical condition.

This agrees with Star et al. (2009), who reported that heat stress decreases egg weight by 3.41%. Mashaly et al. (2004) also observed that chronic heat stress of 5 weeks leads to l decreased in egg production by 28.8%, feed intake by 34.7%, and body weight by 19.3%. However, Farooq et al. (2000) reported that diseases result in reduced meat and egg production, it declines the output and profit with an increase in cost.

4. Conclusion

Disease incidents are major threat the poultry production. It was observed from the study that good biosecurity is not ensured in the majority of the farms, only a small proportion of the respondents were using foot bath. Few poultry farms are like a marketplace, as their selling units are located adjacent to the poultry houses and customers buying eggs can be a potential source of infections leading to the disease outbreak at a poultry farm. The entire respondents are using modern veterinary treatment rather than ethnoveterinary. Moreover, farmers have put huge investments; however, they have a very limited tendency to spend on the calibration of automatic sprayers used to reduce heat stress. The majority of the respondents have problems linked to illiteracy and insufficient knowledge regarding poultry production, especially biosecurity and health problems. Poultry farmers need to ensure biosecurity by promoting resistant poultry breeds, veterinary services, vaccination programs, and regular protection and precautions to avoid vaccination failure for sustainable poultry production. The findings of this study can potentially boost local poultry production.

Competing Interest Statement: All the authors declare that they have no competing interests.

Author's Contribution: Gasto and Hassan planned and conducted study, collected data, wrote and revised manuscript. Both authors are agreed with the content of paper.

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