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Common sustainable ethno-veterinary practices on broiler chicken production in two local governments in Ogun State, Nigeria

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Abstract

Poultry diseases are responsible for majority of losses in livestock production leading to constraints in the development and enhancement of viable livestock production systems in Nigeria. The impact of these diseases is severe in rural areas. This study evaluated the importance of ethno-veterinary practices on food sustainability. The research design was survey method and sample size was determined using Taro Yamane formula from a population size of 100 (50 each) from both Local Government Areas. A structured questionnaire was administered to 80 persons (respondents) from the two local government areas (Abeokuta south and Odeda) in Ogun State, Nigeria. The result indicated that respondent were male (85%) and female (15%) with the male being the dominant and the respondents' shows high level of literacy. The result revealed that common diseases of broiler birds are coccidiosis (45%), Newcastle (18%), fowl cholera (8%) and others (25%). The poultry farmers make use of veterinary services has a therapy for poultry diseases with very few involved in both veterinary and herbal practice. Among the local herbs used were Moringa leaf, Christmas melon, basil, bitter leaf etc. However, farmers believed that the use of herbs causes poor growth, weight loss while the use of inappropriate dosage leads to death of birds which in turn will alter the level of poultry production.

Keywords: Ethno-veterinary; Broiler Chickens; Abeokuta South; Odeda local government area

Des Pratiques ethno-vétérinaires durables courantes sur la production de poulet de gril dans deux gouvernements locaux de l'État d'Ogun, au Nigéria

Résumé

Les maladies de la volaille sont responsables de la majorité des pertes d'élevage entraînant des contraintes dans le développement et l'amélioration de systèmes d'élevage viables au Nigéria. L'impact de ces maladies est grave dans les zones rurales. Cette étude a évalué l'importance des pratiques ethno-vétérinaires sur la durabilité alimentaire. La conception de la recherche était méthode d'enquête et la taille de l'échantillon a été déterminée à l'aide de la formule Taro Yamane à partir d'une taille de population de 100 (50 chacun) des deux zones d'administrations locales. Un questionnaire structuré a été administré à 80 personnes (répondants) des deux zones gouvernementales locales (le sud d'Abeokuta et Odeda) dans l'État d'Ogun, au Nigéria. Le résultat indique que le répondant était un homme (85 %) et les

femmes (15%) ; l'homme étant le dominant et celui des répondants montre un niveau élevé d'alphabétisation. Le résultat a révélé que les maladies courantes des oiseaux de chair sont la coccidiose (45 %), Newcastle (18 %), le choléra aviaire (8 %) et d'autres (25 %). Les éleveurs de volailles font usage des services vétérinaires avec un peu de gens qui se trouve dans la pratique vétérinaire ayant à base, des herbes locales. Parmi les herbes locales utilisées se trouvaient la feuille de Moringa, le melon de Noël, le basilic, la feuille amère, etc. Cependant, les agriculteurs croyaient que l'utilisation d'herbes provoque une faible croissance, la perte de poids tandis que l'utilisation d'une dose inappropriée conduit à la mort des oiseaux qui à son tour va modifier le niveau de production avicole.

Mots-clés: Ethno-vétérinaire ; Poulets de gril ; le Sud d'Abeokuta ; Zone du gouvernement local d'Odeda

Introduction

Livestock production is one of the rapid and affordable means of meeting the protein requirements for adequate nutrition of the human population, especially in developing countries (Wanzala *et al.,* 2005; Sule *et al.,* 2019). Livestock production has numerous functions and roles, including food provision, income, employment and draft (muscle) power, the dung being used as organic fuel and fertilizer (Pica- Ciamarra *et al.,* 2014). Moreover, livestock supports coping with adverse situations and food insecurity and plays numerous socio-cultural roles (Swanepoel *et al.,* 2010; Najma *et al.,* 2015). Ethno-veterinary is a holistic interdisciplinary study of indigenous knowledge and its associated skills, practices, believes and social structures in relation to the healthcare and husbandry of income producing livestock, which has emerged as a fertile field for the generation and transfer of appropriate and sustainable veterinary alternatives to people everywhere but especially to the third world livestock raisers (Adedeji *et al.,* 2014). In maintaining animal health, traditional healing practices have been applied for centuries and passed down orally from generation to generation (Phondani *et al.,* 2010).

According to Babak and Samuel (2014), Aloe vera in broiler chicken feed, has great potentials for improving intestinal health, growth performance and controlling coccidiosis. *Annona squamosa* and *Tephrosia vogelli* through their powdered seeds effectively control lice in poultry (Nwude, 1997). Pawpaw leaves burnt into ashes are also used as topical agents to control lice in poultry while *Curcuma longa* or turmeric has been reported to be used for the treatment of endoparasites in broiler chicken (Al-Sultan, 2003). *Khaya senegalensis, Terminalia Avicennoides, Citrus Aurantifolia, Boswellia Dalzielli and Allium cepa are* used in the treatment of parasitic and protozoan diseases of poultry in Nigeria (Fajimi and Taiwo, 2005). A survey on the ethno-veterinary practices in Nigeria conducted by Uwagie-Ero *et al.* (2017) revealed the use of plants such as *Acacia albida* (Apple ring), *Alium sativum* (Garlic), *Annona senegalensis* (Wild custard apple), *Citrus aurantifolia* (Lime), *Citrus aurantium* (Lemon), *Curcumis sativus* (Cucumber) among others in the health management of livestock. Mathias and McCorkle (2004) reported that an animal disease remains one of the principal causes of poor livestock performance, leading to an ever-increasing gap between the supply of and the demand for livestock products. In the absence of funds, farmers face the challenge of scarcity, erratic supply and/or high costs of synthetic drugs or veterinary services and they usually revert to more appropriate and sustainable traditional systems of animal health care. Utilization of therapeutic plants is an

alternative to livestock farmers who are not permitted to use allopathic drugs under certified organic programmes or are unable to afford the utilization of allopathic drugs for minor health problems of livestock (Cheryl *et al*., 2007). Several researchers (e.g. Cheryl *et al.,* 2007; Adedeji *et al.,* 2013; Kidane *et al.,* 2014; Alhaji and Babalobi, 2015) have focused on ruminant animals in Nigeria and Africa with little or very few on poultry birds such as broiler chickens especially in Ogun State. This study therefore, aimed at evaluating the use of ethno-veterinary practices in boiler bird production in Ogun State.

Materials and methods

The research survey was carried out in Ogun State South-West, Nigeria, which borders Lagos, Oyo, Ondo State and Benue Republic to the South, North, East and West, respectively. Abeokuta is the capital and largest of all the cities in the state. Two Local Government Areas (**Abeokuta South** and **Odeda**) were used for the study. The study adopted a survey research design to obtain information on the respondents, by this method the researcher used structured questionnaires to obtain data from a sample of the population in order to make a generalization of the purpose of the study. Sample size for the study was determined using Yamane (1967) formula from a population size of 100 (50 each) from both L.G.As

$$n = \frac{N}{1 + N(e)^2}$$

Where; n= sample size, N=total population (100), e=degree of tolerance (0.05). Therefore: n=**80**

A total of 80 (40 each) structured questionnaires were administered using a **stratified random sampling techniques** to respondents (poultry owners, farmers, workers and those observed to have related businesses) from the two L.G.A.s with the support of a trained research assistant to ensure accurate administration. The main data in the structured questionnaire includes socio–demographic information, poultry management practices, the causes of loss, disease types and symptoms and treatment of common diseases in the local governments. Data were analyzed using Statistical Package for Social Sciences (SPSS version 21.0) to generate frequency distribution and percentage tables while Microsoft excel version 2013 was used for graphical presentations.

Results and discussion

Socio-demographic information

Socio-demographic information of the respondents summarized in **Table 1**, indicates that 85.0% were male while 15.0% were female. The age of the respondents shows that 50.0% were between 20 and 35 years old while 50.0 % were 36-51 years of age. Most (60.0%) of the respondents were single, 37.5% were married and 2.5% were divorced. Majority (77.5%) of the respondents were Christians while 22.5% were Muslims. Most (62.5%) had tertiary education and 32.5% had secondary education. Majority (81.3%) were farmers, 9.0% were civil servants and 5.0% were artisans.

Poultry management practices

The management practices used by the respondents for their poultry indicated that 63.7% uses extensive form of rearing, 18.8% uses intensive form while 15.5% uses semi- intensive form of rearing (Table 2). Majority (87.5%) of the respondents had over 30birds while 12.5% had less than 30 birds. Majority (87.5%) of the respondents had a rearing duration of 3-12 years while 12.5% had 13-22 years. Majority (95.0%) of the farmers feed their poultry concentrates and 2.5% each combines concentrates with kitchen waste and other types of feed for their poultry.

Table 1: Distribution of respondents' socio-demographic information

Parameters	Frequency	Percentage
Sex		
Male	68	85
Female	12	15
Total	**80**	**100**
Age Group		
20-35	40	50
36-51	40	50
52-67	0	0
Above 68	0	0
Total	**80**	**100**
Marital Status		
Single	48	60
Married	30	37.5
Divorced	2	2.50
Widow/widower	0	0
Total	**80**	**100**
Religion		
Christianity	62	77.5
Islam	18	22.5
Traditional	0	0
Total	**80**	**100**
Educational Status		
No Education	0	0
Primary	4	5.0
Secondary	26	32.5
Tertiary	50	62.5
Total	**80**	**100**
Occupation		
Farming	65	81.3
Trading	2	2.50
Artisan	4	5.0
Civil servant	9	11.2
Total	**80**	**100**

Source: Field Survey, 2019

Table 2: Distribution of management practices, number of birds and duration used by the respondents

The Management Practices	Frequency	Percentage
Rearing scope		
Extensive	51	63.7
Intensive	15	18.8
Semi-Intensive	14	15.5
Total	**80**	**100**
Number of birds		
5-11	2	2.5
12-19	6	7.5
20-29	2	2.5
Above 30	70	87.5
Total	**80**	**100**
Rearing duration (years)		
3-12	70	87.5
13-22	10	12.5
Above 23	0	0
Total	**80**	**100**
Types of feed		
Concentrate	76	95
Concentrate & Kitchen Waste	2	2.5
Others	2	2.5
Total	**80**	**100**

Source: Field Survey, 2019

The causes of loss, disease types and symptoms in broiler chickens in the study Areas

Over half (54.0%) of the respondents indicated that their birds are lost to diseases, 26.0% reported that birds were lost to diseases and parasites while 10.0% showed that predation, diseases and parasites accounted for their birds' losses (Figure 1).

The common diseases of broiler chickens indicated by the respondents were coccidiosis (45.0%), Newcastle (18.0%) and fowl cholera (8.0%) [Figure 2]. Figure 3 revealed that 49.0% of the respondents indicated diarrhea, sluggishness (20.0%), poor growth and loss of appetite (12.0%) as well as nasal discharge (4.0%) were the symptoms of broiler bird diseases in the study areas.

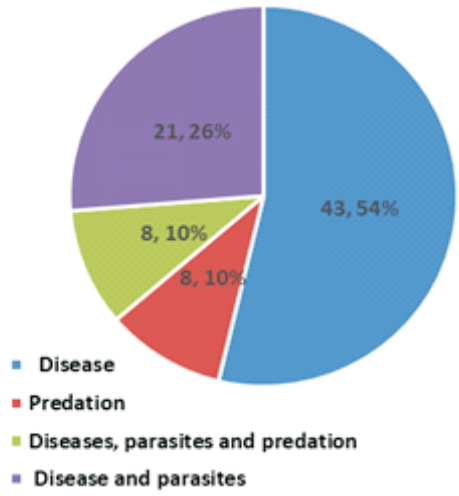

Fig. 1: Cause of broiler birds' loss in the L.G.As.

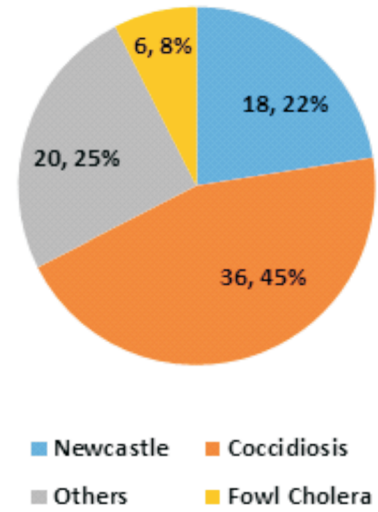

Fig. 2: Common diseases of boiler birds in the L.G.As

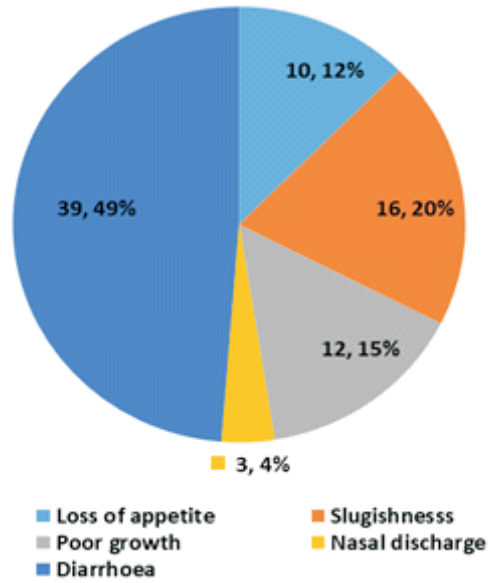

Fig. 3: Symptoms of broiler bird disease in the L.G.As.

Treatment of common diseases of broiler chicken in the two local government areas
Majority (96.0%) of the respondents' uses veterinary doctor while 4.0% uses both local herbs and veterinary doctor to treat their broilers (Figure 4). Common plants, and parts used for disease treatment of broilers by the respondents are Moringa leaf (treats diarrhea), Christmas melon (treats loss of appetite), Lemon grass and Basil (treat worm infestation), Bitter leaf leaf (treats any chronic disease and nasal discharge) and Bitter Gourd (treats bacterial infection).

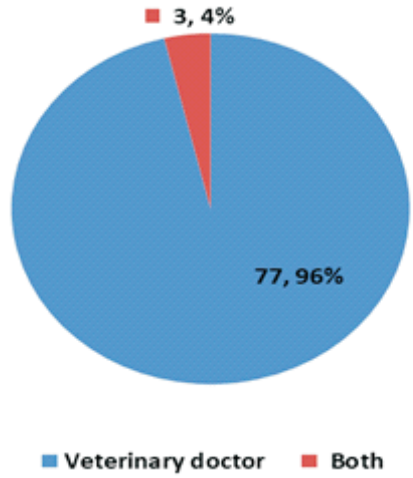

Fig.4: Treatment of diseases in broiler birds in the L.G.As.

Table 3: Common names of plants, plant part used and diseases treated by the respondents

Plant (common name)	**Plant Part Used**	**Disease treated**
Moringa	Leave extract	Diarrhea
Christmas melon (Itagiri)	Fruit extract	Loss of appetite
Bitter leaf (Ewuro)	Leave extract	Nasal discharge
Lemon grass	Leave extract	Worm infections
Basil (Efirin)	Leave extract	Worm infections
Bitter Gourd (Ejirin)	Leave extract	Bacterial infection

Source: Field Survey, 2019

Discussion

The higher number of male farmers (85.0%) in the study is in line with the work of Adedeji *et al.* (2014) who recorded 56.0% male in a study in Oyo state. However, Nwanta *et al.* (2006) reported that women were the major producers of rural poultry in African economy. However, it is widely known that poultry farming is predominantly a male occupation. The highest numbers of respondents were adults ranging from 20-35 and 36-51 years accounting for 50% each of the population while three quarter of the respondents were single followed by married individual corresponding to one-third of the population. Majority of the respondent practices Christianity (77.5%) and Islam (22.5%) respectively. There was a very high level of literacy among the respondents. However, the age range and the level of literacy reveals that poultry farming is serving as a good source of food and income for a wide range of individual. This result is not in good standing with the work of Adedeji *et al.* (2014), who documented high level of illiteracy in their study. The principal occupations of the respondents were farming**.** The management practices by respondents were largely extensive form

of rearing followed by intensive rearing while a large number (87.5%) had above 30 birds. 87.5% of the respondent has been rearing for duration of 3-12 years. Extensive form of housing is basically capital intensive and the ability for the farmer to maintain the poultry activities. Rearing duration indicates that poultry farming practices is in its infancy in the Local Government Areas. Although this is similar to **Adedeji *et al.* (2014) who documented 42% of respondents rearing for 3-12 years.** The feed type given to the birds are largely concentrate while few respondents uses a combination of concentrates and kitchen waste. Although, most of the kitchen wastes used as feed supplements were given not basically for the nutritional potency of such combination but to avoid wastage. Diseases have been found to be the major causes of losses by the respondents, the most common diseases are coccidiosis followed by other types of diseases, Newcastle and Fowl cholera. Contrarily, Newcastle disease has been identified as one of the most common poultry disease in Nigeria and other African countries (Nwanta *et al.,* 2008; Dafwang *et al.,* 2010). The disease symptoms noticed in the broiler birds were mostly diarrhea, sluggishness, poor growth, loss of appetite and nasal discharge. This is similar to the reports of Sonaiya (1999), Alders and Spradbrow (2001) and Olivier (2004) who reported loss of appetite and nasal discharge as common disease symptoms in poultry birds. Finally, the diseases mentioned by the respondents are treated in numerous ways. Majority of the respondents use veterinary doctors due to the confidence in modern medicine while very few use both herbs and veterinary. Few of the respondents believed that herbs such as the leaves of moringa, Christmas melon, lemon grass, basil, bitter leaf and bitter gourd when used constantly and in accurate proportion can help the broiler birds recover from common diseases.

Conclusion and recommendations

The study revealed that very few respondents' belief in the use and efficacy of the local herbs, while some respondents was of the opinion that the use of local herbs causes poor growth, weight loss and perhaps death of the birds due to the use of inappropriate dosage. The study therefore recommended that;

a) Laboratory investigation should be carried out on the efficacy of herbs on Broiler chickens,

b) Pharmaceutical and Toxicological research should be carried out on the potency of active ingredients of herbs and the determination of the appropriate level of dosage.

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