

Adoption of Vaccination Against Newcastle Disease by Rural Poultry Women Farmers in the North Central Zone of Nigeria

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Abstract: Newcastle disease is now claimed to be responsible for 70-80% of annual death in village chickens. Losses in hundreds of poultry birds of various ages and sexes in Ijumu local government area in the north central zone of Nigeria is attributed to the disease. The prevalence is always at its peak during the dry season (Hamattan) of every year in the last decade. Live Newcastle vaccines such as intra ocular, B1 strain, LaSota and Komorov have been produced by National Veterinary Research Institute (NVRI) Vom to prevent the occurrence of the disease. Structured questionnaire was designed to quest for adoption of the Newcastle vaccination from 107 poultry women farmers in the study area. The level of awareness of the vaccination was about 70% while, only 11.21% adopted the vaccination alone and 34.58% adopted both the vaccination and ethnoveterinary treatments. Age contributed positively (14.9%) but not significantly to the adoption of the vaccination. This implies that the adoption of the vaccination still need much extension service effort for improvement. This study recommends that both private and public extension outfit should make complementary effort to improve the adoption of the vaccination by the rural women.

Key words: Adoption, vaccination, new castle disease, rural poultry and women farmers

INTRODUCTION

Over 250 million poultry birds are found in Nigeria. Eighty percent of this figure are under extensive management in the rural areas (Lombin, 2002). This system of poultry management is responsible for 75-90% of poultry production in Nigeria (Muhammed *et al.*, 2002). In effect, poultry production constitutes an important form of livelihood for rural dwellers. Poultry farmers are spread all over the different ecological zones of the country and they engage in the production of meat, eggs day-old chicks poultry manure and so on. Poultry production has been found to be a familiar and successful income generating activity for poor women in the rural areas of Nigeria (FAO, 2002).

However, the mortality rate of these birds as a result of disease outbreak is alarming and this has limited supply of poultry meat and egg production. Disease in livestock could be caused by bacteria, parasite or virus. Acute viral infection tend to have a devastating effect on productivity, survival, investment in poultry productions. Newcastle is an endemic domestic fowls in tropical and temperate regions of the world. This disease was first reported in Newcastle upon-Tyne, England in 1926. This disease has since then assumed an important viral disease of poultry worldwide (Spradbrow, 1999). In Nigeria, the disease is seasonal and the prevalence becomes very high during the harmattan period. It causes a major setback in rural poultry production in the event of its outbreak. As at 1987 a conservative estimate of economic losses due to Newcastle disease was put

at N12 million when naira to dollar value compete favourably about two years ago, a day old chick now cost between N110 and N120 which by direct valuation amounts to 1.320-1.440 billion nairas losses due to Newcastle outbreak (Usman and Haruna, 2002). Newcastle is now claimed to be responsible for 70-80% of annual death in village chicken (Muhammed *et al.*, 2002).

There is no treatment for Newcastle disease yet, vaccination is the only major measure for the control of the disease (Huang *et al.*, 2004) vaccination is either by using live vaccines or inactivated vaccines. Live vaccines such as Intra-ocular, B1 strain laSota and Komorov are produced at the National Veterinary Research Institute (NVRI) Vom, Nigeria. Though improper handling of the vaccines or wrong timing of vaccinations still remain a major reason for vaccination failure that often result in clinical or subclinical infections (Aldous and Alexander, 2001). However, Live vaccines produced by NVRI are said to prevent the attack of Newcastle diseases as the level of antibody increases gradually and will remain at protection level for a longer period of time (Rahman *et al.*, 2002). Small-scale poultry keeping is one of the major farm activities of the women in Ijumu local government area in the North central zone of Nigeria where Newcastle disease is a regular occurrence. This local government was therefore selected for the study. It is not certain if the rural women in this study area, adopt the Newcastle vaccination. One may therefore, want to ask the following questions:

- C What are the social economic characteristics of the said poultry farmers?
- C Are the women aware of the said vaccine?
- C How many of them have adopted the Newcastle vaccination?
- C Do the social economic characteristics of the respondents influence the adoption of the vaccination against Newcastle disease?

In an attempt to find solution to the problem questions stated above, the study formulated the following objectives which are to:

- C Describe the social economic characteristics of the said poultry farmers
- C Find out the level of awareness of the Newcastle vaccination
- C Identify the adoption pattern of the vaccination
- C Find out the socio-economic factors that influence the adoption of Newcastle vaccination

MATERIALS AND METHODS

The study area: The study took place in Ijumu Local Government Area of Kogi State in the North central zone of Nigeria. The state is popularly known as The Confluence State because of its location at the point where Rivers Niger and Benue meet. Ijumu Local Government is located in a land that cut across Kabballorin Federal Trunka road, on latitude 7°31' to 8°10' north of the equator and between longitude 6°15' East. The population of the local government is about 119,929 according to 2006 census. 55, 382 of the said population are females. Ijumu Local Government area shared boundaries with Ekiti State in the west, Kabba Bunu local Government in the East and Mopamuro Local Government in the North. The study area falls under derived Savanna region with fertile soil and an average rainfall of over 1000 mm per annum. The people of this local government are mainly farmers. Prominent among the crops grown in the area are; cocoa, coffee, palm produce, cashew, yam, cassava, cocoyam, maize, guinea corn and rice. Livestock kept include, sheep, goat, chicken (mainly local) cattle rearing.

Data collection: Structured questionnaire was used to quest for adoption of Newcastle vaccination from 107 rural poultry women farmers. The area was stratified into three, which represented the three districts while, random sampling was used to pick 40 poultry women farmers from each district. In all, 120 sets of questionnaire were administered while, 107 were retrieved.

Analytical techniques: Descriptive statistics like frequency percentage and pie chart were used to analyze objectives 1-3 while, linear regression was used

to analyze the influence of selected socio-economic factors on the adoption of Newcastle vaccination using the explicit form of the model as:

$$Y = bo + b1x1 + b2x2 + b3x3 + b4x4 + b5x5 + u$$

where:

- Y = Adoption of newcastle vaccination
- Bo = Coefficient of the model
- b1-b5 = Coefficient of selected socio-economic factors
- x1 = Age (years)
- x2 = Education (years)
- x3 = Number of birds (in number)
- x4 = Family size (in number of people living and feeding together)
- x5 = Farming experience (in years)

RESULTS AND DISCUSSION

Table 1 reveals that 43.93% of the respondents were within the age group of 41-50 years. This implies that a high percentage of the poultry women farmers are within economically productive age and can still be very active in adopting any technology that will improve their income. However, all age groups were found to be involved in poultry farming. This implies that poultry farming had no age limit among the rural women in the study area. This could be due to the simple and extensive nature of management where mere scavenging can keep the indigenous birds alive with little or no cost incurred. While, Table 2 also, reflects that about 83.18% of the respondents had little education while only 1.87% obtained first degree or it equivalent. This can be a barrier to the adoption of Newcastle vaccination as the vaccines may require some acquisition of technical know-how and understanding of instructions placed on its handling and use. In essence where, veterinary personnels are scarce, it may be difficult to use Newcastle vaccine.

Table 1: Distribution of respondents by age

Age group in years	Frequency	Percentage
21-30	7	6.54
31-40	16	14.95
41-50	47	43.93
51-60	24	22.43
Above 60	13	12.15
Total	107	100.00

Source: Field survey data 2007

Table 2: Distribution of respondents by level of education

Educational/qualification	Frequency	Percentage
Non literate	26	24.30
First school leaving certificate	63	58.88
O level certificate	16	14.95
First degree and above	2	1.87
Total	107	100.00

Source: Field survey data 2007

Table 3: Distribution of respondents by number of birds kept

Number of birds	Frequency	Percentage
1-10	87	81.31
11-20	11	10.28
21-30	7	6.54
31-40	2	1.87
41-50	-	-
Total	107	100

Source: Field survey data 2007

Table 4: Adoption pattern of Newcastle vaccination by the rural women poultry keepers

Adoption pattern	Frequency	Percentage
Adoption of the vaccine only	12	11.21
Adoption of the vaccine with ethnoveterinary treatments	37	34.58
Adoption of ethnoveterinary treatment only	58	54.21
Total	107	100

Source: Field survey data 2007

Table 3 equally indicates that about 91.59% kept birds between 1-20 while, only 1.87% kept birds of between 31-40. This implies that few birds were kept by the women. In this wise, it may be difficult to pool together adequate number of birds for vaccination. This is in agreement with Muhammed *et al.* (2002), who asserted that vaccination against Newcastle do not frequently take place because of the difficulty in pooling together enough number for vaccination.

Figure 1 reflects the awareness status of the Newcastle vaccination among the women poultry keepers. The pie chart in Fig. 2 revealed that far above average of the respondents were aware of the availability of the vaccines and its use for preventing Newcastle disease of poultry. This implies that little effort may be required to motivate and move the poultry farmers from awareness stage to trial and adoption of the vaccination all things being equal.

Table 4 however, indicated that only 11.21% adopted the use of the Newcastle vaccination alone against the disease while 34.68 adopted the use of the vaccination along with ethnoveterinary treatment while, 54.21% adopted ethnoveterinary treatment. This implies that ethnoveterinary treatment could be a cheap alternative to the vaccination. It also means that some farmers do not solely depend on the vaccination alone but complemented the use with ethnoveterinary treatments. The finding is in agreement with Okoh (2003) who observed that traditional veterinary care among the rural livestock producers in Nigeria constitute the first tier of animal health care delivery as most of the clinical cases presented to the veterinarian would have been first treated with traditional remedies. Inadequate knowledge and cost of the vaccines could also be responsible for the low adoption percentage.

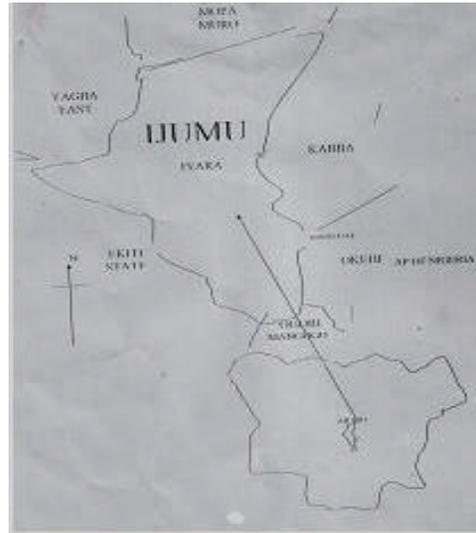


Fig. 1: Map of the area of study (Ijumu Local Government Area in the North central Zone of Nigeria)

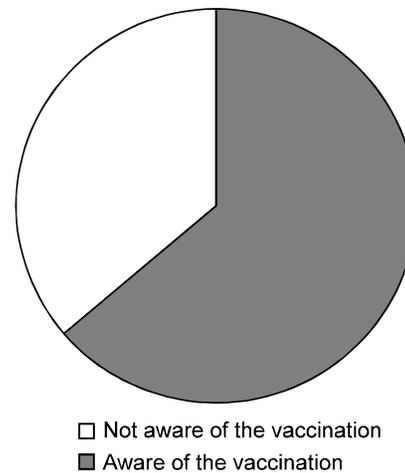


Fig. 2: Awareness of farmers on the use of Newcastle disease vaccination, Source: Field survey data 2007

Findings from Table 5 shows that socio economic factors do not significantly influence the adoption of vaccination against Newcastle disease. Farm experience contributed negatively and at only 13.6% and at significant level of 18.4 while, age contributed positively (14.9%) to the adoption of the vaccination at 13.1 significant level. This shows that there could be other important factors that could influence the adoption of the vaccination rather than socio-economic characteristics. This is in support of Agbam (2006), who said that an important factor such as level of farmers participation in technology adoption may play a more influential role in adoption of a technology than some socio-economic characteristics.

Table 5: Influence of women poultry farmers socio-economic characteristics on adoption of Newcastle vaccination

Explanatory variables	Unstandardized		Standardized		Sig.
	coefficient	Std error	coefficient	t. value	
(Constant)	1.091	0.613	0.059	1.780	0.078
Age x1	6580E.02	0.043	0.149	1.521	0.131
Education x2	-8.21E.03	0.071	-0.011	-0.116	0.908
No of birds x3	-8.39E.02	0.073	-0.115	-1.142	0.256
Family size x4	-109	0.088	-0.125	-1.235	0.220
Farm experience x5	-4.46E.02	-0.033	-136.000	-1.338	0.184

Source: Field survey data 2007

Conclusion: Vaccination against Newcastle disease has not been popularly adopted by the women poultry farmers in the study area. Ethnoveterinary treatments received more attention than vaccination. There is a need to study the ethnoveterinary treatments being used by the farmers and if found effective, away of harmonizing it with the vaccinations should be understudied.

Recommendation: From the study, one can clearly say that vaccination against Newcastle disease has not received the expected response from the rural poultry farmers in the study area while ethnoveterinary treatments remained the common preventive method used.

Researchers and professional veterinary drug manufacturers should arrange a collaborative study to test efficacy, identify active ingredients, determine dosage and mode of applying the two methods identified. Both public and private agricultural extension agents should give more attention to the adoption of vaccination against Newcastle disease while women poultry association should be formed to encourage possible avenue for pooling the few numbers of poultry birds kept together for group vaccination of birds against the deadly disease.

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