Influence of Information Sources on Farmers' Usage of Livestock Drugs and Vaccines in Isin Local Government Area, Kwara State, Nigeria

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ABSTRACT

This research work was carried out to examine the influence of information sources on farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria. This research was guided by the Health Belief Model (HBM). Three research questions and one hypothesis were raised to guide the study. Descriptive survey research design was employed. Study population comprised 110 livestock farmers in the LGA. Yamane Sampling formula was used to sample 86 farmers. Questionnaire titled "Influence of Information Sources on Farmers' Usage of Livestock Drugs and Vaccines Questionnaire, (IISFULDVQ, $\alpha = .795$) was used for data collection. Data was analysed using frequency, percentages and Pearson product moment correlation. Results showed majority of the farmers (50.4%) have good usage of livestock drugs and vaccines whereas 49.6% have poor usage of livestock drugs and vaccines; major sources of information for farmers on livestock drugs and vaccines are researchers/consultants such as veterinary doctors (75.6%) followed by fellow farmers (70.9%) followed by internet (68.6%) and radio (61.2%), seminars/workshops (62.8%) and books (55.8%). Lastly, information sources such as researchers/consultants such as veterinary doctors ($r = .332$, $p<0.05$), internet ($r = .322$, $p<0.05$), fellow farmers ($r = .320$, $p<0.05$), seminars and workshops ($r = .312$, $p<0.05$), family/friends ($r = .306$, $p<0.05$), extension services ($r = .302$, $p<0.05$) and books ($r = .300$, $P<0.05$), all have positive significant relationship with farmers' usage of livestock drugs and vaccines. It was concluded that information sources significantly influence farmers' use of livestock drugs and vaccines. It was recommended amongst others that farmers should be given more access to information to improve their use of livestock drugs and vaccines.

Keywords: Information Sources, Farmers Usage, Livestock Drugs and Vaccines

INTRODUCTION

The livestock sector globally is highly dynamic, contributes 40% of the global value of agricultural output, and support the livelihoods and food security of almost a billion people (Zelalem et al., 2019). In Nigeria, Livestock accounts for one third of the nation's agricultural GDP. It provides income, employment, food, farm energy, manure, fuel and transport. Livestock is also a major source of government revenue (Oluwole, et al., 2019). The livestock sector is thus irreplaceable in the livelihood of the population as a source of meat, milk, drought power, and income The number of people in the world is increasing exponentially and is projected to reach 9.8 billion by the year 2050, and there has been a corresponding, unprecedented expansion and growth of food animal production to meet the increasing protein demand to support human nutrition requirements (Lewis & Roth, 2020). This increased demand has driven the trend towards high volume, animal dense systems that provide many opportunities for the rapid spread of disease in both developed and developing countries of the world (Adugna et al., 2022).

The loss of an animal as a result of disease can have dire consequences on vulnerable households by reducing their ability to withstand food crises and to emerge from poverty. (Comfort et al., 2018). This can cumulatively affect the gross economy of a nation, most importantly, developing countries like Nigeria still grappling with

high poverty level (Oluwole, et al., 2019). Hence, there is need for proper drugs and vaccines administration. Vaccination of the livestock are a key component of disease prevention and control strategies in the universe. Therefore, vaccinations are an effective way in which to promote both good animal health, good animal welfare, and economic stability for the farmers and the communities (Samrawit et al., 2020). Livestock farmers also need to be able to use vaccines and drugs in livestock farming so as to prevent losses both present and future.

Despite the importance of farmers' use of livestock drugs and vaccines to the health, growth and development of livestock and prevention of losses, there is however a huge concern on the poor to average level of usage of drugs and vaccines among livestock farmers in Nigeria. Adeyemi et al. (2023) revealed that chemical anticoccidials were the only drugs used for prevention and treatment, and vaccines were not adopted in the control of chicken Coccidiosis in Lagos State, Nigeria. Al-Mustapha et al. (2020) showed that there was evidence of unprescribed use of antibiotics in poultry and a failure to observe antibiotic withdrawal periods. These constitute a risk of exposure to unacceptable levels of drug residues from poultry products and an increased risk of antibiotic resistance in Kwara State, Nigeria. Salisu et al. (2024) showed that 35% of livestock farmers were shown to be misusers of antimicrobials and Antimicrobial Resistance (AMR) in Katsina State, Nigeria. Mayaki and Talabi (2015) noted that the use of veterinary practice is very low as 54.6% of the respondents do either vaccinate their horses by themselves or used their groom in Kano, Northern Nigeria. The consequence of these findings is poor productivity of livestock which will eventually lead to lower yields and losses of livestock. This research sought to examine whether information sources for farmers' usage of drugs and vaccines could be a predicting factor.

Information sources are avenues through which livestock farmers can get relevant, timely, accurate, cost effective, reliable and usable information on drugs and vaccines for livestock farming. These information sources include but not limited to radio, seminars and workshops, books, internet, extension services, Researchers/Consultants such as Veterinary Doctors, and so on and forth (Ajala et al., 2018; Okoedo-Okojie & Osabuohien, 2016). Although Mayaki and Talabi (2015) noted that poor usage of vaccination by horse owners reflects inadequate information about the importance of equine vaccination, there are however huge dearth of studies on the influence of information sources on farmers' usage of livestock knowledge of drugs and vaccines in Nigeria. This study was therefore carried out to examine the influence of information sources on farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria.

Statement of the Problem

Poor level of usage of drugs and vaccines among livestock farmers have been observed in Nigeria. Evidence from literature shows that vaccines are not adopted in the control of diseases, misuse of antimicrobials and Antimicrobial Resistance (AMR) and low use of veterinary practice in various part of Nigeria (Adeyemi et al., 2023; Mayaki & Talabi, 2015; Salisu et al., 2024). Perhaps, information sources for livestock drugs and vaccines may be a predicting factor. A search of literature shows dearth of scholarly works on the influence of information sources on farmers' usage of livestock drugs and vaccines. Although, Mayaki and Talabi (2015) noted that poor usage of vaccination by horse owners reflects inadequate information about the importance of equine vaccination, the study however focused on only vaccination ignoring drugs and also on horses not livestock. Moreover, the study did not focus on information sources. This study therefore investigated the extent to which information sources influence farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria.

Aim and Objectives of the Study

The aim of this study was to investigate the influence of information sources on farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria. The objectives were to:

1. ascertain the level of farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria;
2. find out the information sources for farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria; and

3. examine the relationship between information sources and farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria.

Research Questions

1. What is the level of farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?
2. What are the information sources for farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?
3. What is the relationship between information sources and farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?

Hypothesis

$H_0$1: There will be no significant relationship between information sources and farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria.

Significance of the Study

This study would create awareness on the subject matter. It would be of immense benefit to agricultural students and teachers, farmers, ministry of education, and researchers. To the students, the findings would equip them with the necessary insights to design effective educational programs, improve communication strategies, and promote evidence-based practices, ultimately contributing to the sustainable development of the agricultural sector. To the teachers, the results will ensure accurate and up-to-date information, promote responsible practices, encourage critical thinking and decision-making skills, address knowledge gaps, and facilitate collaboration between teachers and farmers. Teachers can better educate their students and contribute to a more sustainable and productive agricultural sector. Farmers can use the findings to promote informed decision-making, improve livestock health and welfare, prevent and control diseases, ensure compliance with regulations, and optimize the utilization of resources within the agricultural sector. Researchers can use the findings of this study as a point of reference for subsequent studies in the line of endeavour.

Scope of the Study

The scope of this study strictly centred on the influence of information sources on farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria. The variable scope covered one independent variable (information sources) and one dependent variable (farmers' usage of livestock drugs and vaccines). The geographical scope covered all livestock farming in Isin Local Government Area, Kwara State, Nigeria. The population scope covered all the livestock farmers in Isin Local Government Area, Kwara State, Nigeria.

LITERATURE REVIEW

Theoretical Framework

This study was hinged on the "Health Belief Model (HBM)".

Health Belief Model (HBM)

The HBM was originally developed in the 1950s by social psychologists working at the United States Public Health Service to explain why many people did not participate in public health programs such as TB or cervical cancer screening. The theory states that people's perception about the benefits and consequences of various health programs determined their seeking information about it and/or participation in it or not (Hochbaum, 1958). The key components of the health belief model include perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and expectations (which are the product/sum of perceived benefits, barriers and self-efficacy), cues to action (Adeline et al., 2019).

Perceived Susceptibility (Risk): A person's awareness of the risk of a disease will prompt him or her to go seek information on such diseases so as to gain knowledge and adopt healthier behaviours both for himself and animals (Adeline et al., 2019; Hochbaum, 1958).

Perceived Benefits: A person's awareness of the value or usefulness of a new behaviour in decreasing the risk of developing a disease will prompt him or her to seek information so as to decrease the chances of developing diseases in his or her animals (Adeline et al., 2019; Hochbaum, 1958).

Perceived Barrier: This has to do with an individual's own evaluation of the obstacles in the way of him or her adopting a new behaviour. Of all the constructs, perceived barriers are the most significant in determining usage. For information to be sought and new behaviour to be adopted, a person needs to believe or perceive that the benefits of the new behaviour outweigh the consequences of continuing the old behaviour. This enables barriers to be overcome and the new behaviour to be adopted or substance to be used (Adeline et al., 2019; Hochbaum, 1958).

Self-Efficacy: This has to do with the belief in one's own ability to get required information, and gain knowledge (Adeline et al., 2019). People generally do not try to seek new information unless they think they can do it (Bandura, 1997).

Action Cues: This suggests that a person will seek information and act on it when stimulated by events, people, or things (Adeline et al., 2019; Hochbaum, 1958).

Relevance of Health Belief Model (HBM)

This theory renders support to the influence of information sources on farmers' usage of livestock drugs and vaccines. The perceived susceptibility of diseases among livestock, perceived benefits of vaccines and drugs in reducing diseases among livestock, perceived barriers to getting information on livestock vaccines and drugs, self-efficacy in acquiring livestock vaccines and drugs, and motivation from fellow farmers can enable farmers to derive information from various sources which will ultimately help their usage of livestock vaccines and drugs based on what they have gathered.

Conceptual Model

The conceptual model for the study showed the relationship between the independent variable (information sources) and one dependent variable (farmers' usage of livestock drugs and vaccines) as depicted in figure 1:

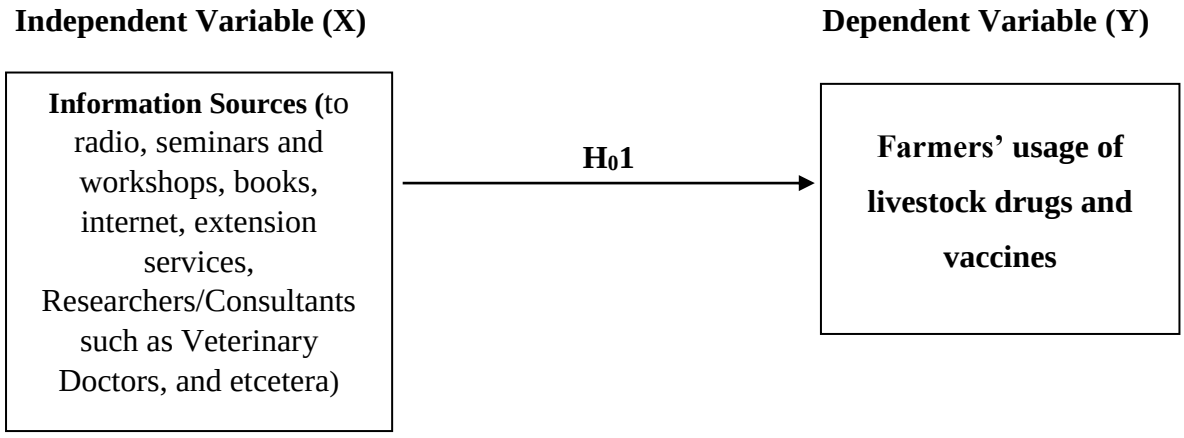

Figure 1: Conceptual Model (**Source:** Anifowoshe, A. A., 2024)

METHODOLOGY

This research employed the descriptive survey research design. The study population comprised one hundred and ten (110) livestock farmers in Isin Local Government Area, Kwara State, Nigeria. The Taro Yamane

sample size determination formula was used to arrive at a sample size of eighty six (86) livestock farmers. The formula is as follows:

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

Where **n** is the needed sample size,

N is the population size, and **e** is the level of precision.

It was calculated as shown below:

Total Population (N) = 110

$$n = \frac{N}{1 + N(e)^2} = \frac{110}{1 + 110(0.05)^2} = \frac{110}{1 + 110(.0025)}$$

$$= \frac{110}{1+ 0.275} = \frac{110}{1.275} = \mathbf{86}$$

Primary source of data was obtained through the use of a questionnaire titled: "Influence of Information Sources on Farmers' Usage of Livestock Drugs and Vaccines Questionnaire (IISFULDVQ)". This questionnaire consisted of three (4) sections. The first section contained demographic data of the farmers such as gender, age, educational level, years of farming experience, major area of livestock production, income level per month, scale of production, membership of livestock association and membership of cooperative. The second section consisted of eight items on the level of usage of livestock drugs and vaccines. The third section consisted of fourteen (14) items on the information sources for usage of livestock drugs and vaccines. The rating scale was a two scale of Yes (2) and No (1).

The questionnaire was validated using content and face validity and subjected to Cronbach's alpha method of reliability estimation. This means that the questionnaire was administered to ten (10) farmers using a pilot study. These farmers were excluded from the final study. After retrieval, the instrument was coded and entered into the statistical package for social science (SPSS) software, IBM version 26 and Cronbach's alpha was used to obtain a reliability value of .795 which was considered reliable for the study. The instrument was made into eighty six (86) copies based on the sample size and they were administered to the sampled farmers in the local government area. Socio-Demographic characteristics of the farmers were analysed using frequency and percentage. Research questions were answered using frequency, percentages, mean and standard deviation. Hypothesis was tested using Pearson product moment correlation at 0.05 level of significance.

RESULTS

Socio-Demographic Characteristics

Table 1: Socio-Demographic Characteristics of Livestock Farmers (n = 86)

Socio-Demographic Characteristics		**Frequency (n)**	**Percentage (%)**
Gender	Male	49	57.0
	Female	37	43.0
Age (Years)	Less than 20	5	5.8

	21-40	25	29.1
	41-60	42	48.8
	61 and above	14	16.3
Highest Level of Education	No formal education	7	8.1
	Primary education	11	12.8
	Secondary education	22	25.6
	Tertiary education	46	53.5
Years of Farming Experience	1-10	20	23.3
	11-20	42	48.8
	21-30	18	20.9
	31 and above	6	7.0
Income Level Per Month	Less than 100,000	42	48.8
	100,000-499,999	31	36.0
	500,000 and above	13	15.1
Scale of production	Small	32	37.2
	Medium	40	46.5
	Large	14	16.3
Membership of Livestock association	Yes	69	80.2
	No	17	19.8
Membership of cooperative	Yes	48	55.8
	No	38	44.2

Source: Field Work, 2024

Table 1 showed that 57.0% of the livestock farmers are males while 43.0% are females. It also showed that majority of the farmers (48.8%) are within 41-60 years of age which implies that they are in their mid-ages. Most of them (53.5%) have Tertiary level of education. A major fraction (48.8%) of the farmers have within 11-20 years of farming experience which is good. Most of them (48.8%) earn less than 100,000 naira per month. Majority (46.5%) are into medium scale of production. Many of the farmers (80.2%) are members of livestock association within the state or nation. Most of them (55.8%) are members of farmers' cooperative society.

Answer to Research Questions

Research Question One: What is the level of farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?

Table 2a: Farmers' Usage of livestock Drugs and Vaccines (n =86)

Items	**Frequency (n)**	**Percentage (%)**
I can administer drugs in the right dosage in the treatment of sick animals in my farm		
Yes (good)	41	47.7
No	45	52.3

I can administer drugs through the right routes in the treatment of animals		
Yes (good)	34	39.5
No	52	60.5
I am able to mix drugs in the right composition and administer them properly to my animals		
Yes (good)	40	46.5
No	46	53.5
I use the right vaccines to vaccinate my animals when the need arises		
Yes (good)	44	51.2
No	42	48.8
I carry out routine de-worming of my animals using the right drugs		
Yes (good)	58	67.4
No	28	32.6
I administer drugs and vaccines so well that there is no adverse effect on my animals		
Yes (good)	43	50.0
No	43	50.0

Source: Field Work, 2024

Table 2b: Overall Usage of Livestock Drugs and Vaccines by Farmers

Variable	Frequency	Percentage (%)
Good Usage	260	50.4
Poor Usage	256	49.6

Source: Field Work, 2024

Table 2a showed the level of farmers' usage of livestock drugs and vaccines in Isin Local Government Area of Kwara State, Nigeria. More than half (67.4%) are able to carry out routine de-worming of animals using the right drugs. Most of them (51.2%) are able to use the right vaccines to vaccinate my animals when the need arises. The remaining responses are shown in table 2a. Overall, table 2b showed that 50.4 % of the farmers have good usage of livestock drugs and vaccines while 49.6% of them have poor usage of livestock drugs and vaccines in Isin Local Government Area of Kwara State, Nigeria.

Research Question Two: What are the information sources for farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?

Table 3: Information Sources for Farmers' Usage of livestock Drugs and Vaccines (n =86)

Items (I derive usage of livestock drugs and vaccines from……)	**Frequency (n)**	**Percentage (%)**
Radio		
Yes	42	48.8

No	44	51.2
Seminars and Workshops		
Yes	54	62.8
No	32	37.2
Books		
Yes	48	55.8
No	38	44.2
Internet		
Yes	59	68.6
No	27	31.4
Television		
Yes	31	36.0
No	55	64.0
Researchers/Consultants such as Veterinary Doctors		
Yes	65	75.6
No	21	24.4
Leaflets/Newspapers		
Yes	26	30.2
No	60	69.8
Extension services		
Yes	47	54.7
No	39	45.3
Fellow Farmers		
Yes	61	70.9
No	25	29.1
Family/Friends		
Yes	41	47.7
No	45	52.3
Exhibition		
Yes	18	20.9
No	68	79.1
Campaigns		
Yes	27	31.4
No	59	68.6
Others not listed above		
Yes	42	48.8
No	44	51.2

Source: Fieldwork, 2024

Table 3 showed that the major sources of information for farmers on livestock drugs and vaccines are researchers/consultants such as veterinary doctors (75.6%) followed by fellow farmers (70.9%) followed by internet (68.6%) and radio (61.2%), seminars/workshops (62.8%) and books (55.8%). The least sources of

information for farmers on livestock drugs and vaccines include exhibition (79.1%) followed by leaflets/newspapers (69.8%), campaigns (68.6%) and television (64.0%).

Research Question Three: What is the relationship between information sources and farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria?

Hypothesis One: There will be no significant relationship between information sources and farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria

Table 4: Correlation Matrix

Information Sources		**Usage of Drugs and Vaccines**	**Information Sources**		**Usage of Drugs and Vaccines**
Radio	Pearson Correlation	.281	Extension Services	Pearson Correlation	.302*
	Sig. (2-tailed)	.069		Sig. (2-tailed)	.046
	N	86		N	86
Seminar and Workshops	Pearson Correlation	.312*	Fellow Farmers	Pearson Correlation	.320*
	Sig. (2-tailed)	.040		Sig. (2-tailed)	.037
	N	86		N	86
Books	Pearson Correlation	.300*	Family/Friends	Pearson Correlation	.306*
	Sig. (2-tailed)	.046		Sig. (2-tailed)	.044
	N	86		N	86
Internet	Pearson Correlation	.322*	Exhibition	Pearson Correlation	.185
	Sig. (2-tailed)	.034		Sig. (2-tailed)	.291
	N	86		N	86
Television	Pearson Correlation	.238	Campaigns	Pearson Correlation	.198
	Sig. (2-tailed)	.110		Sig. (2-tailed)	.284
	N	86		N	86
Researchers/ Consultants such as Veterinary Doctors	Pearson Correlation	.332*	Others not listed above	Pearson Correlation	-.262
	Sig. (2-tailed)	.030		Sig. (2-tailed)	.070
	N	86		N	86
Leaflets/Newspapers	Pearson Correlation	.175			
	Sig. (2-tailed)	.300			
	N	86			

*correlation is significant at 0.05 level of significance

Fieldwork, 2024

Table 4 showed that Researchers/Consultants such as Veterinary Doctors (r = .332, P<0.05), Internet (r = .322, P<0.05), Fellow farmers (r = .320, P<0.05), Seminars and Workshops (r = .312, P<0.05), family/friends (r = .306, P<0.05), Extension services (r = .302, P<0.05) and Books (r = .300, P<0.05), all have positive significant relationship with farmers' usage of livestock drugs and vaccines.

DISCUSSION OF FINDINGS

This research work was carried out to examine the influence of information sources on farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria. The finding from research question one showed that majority of the farmers (50.4%) have good usage of livestock drugs and vaccines whereas 49.6% have poor usage of livestock drugs and vaccines in Isin Local Government Area of Kwara State, Nigeria. This finding disagrees with that of Adeyemi et al. (2023) who revealed that chemical anticoccidials were the only drugs used for prevention and treatment, and vaccines were not adopted in the control of chicken Coccidiosis in Lagos State, Nigeria. This finding also disagrees with that of Al-Mustapha et al. (2020) who showed that there was evidence of unprescribed use of antibiotics in poultry and a failure to observe antibiotic withdrawal periods by farmers in Kwara State, Nigeria. This finding somehow agrees with that of Salisu et al. (2024) who showed that only 35% of livestock farmers were shown to be misusers of antimicrobials and Antimicrobial Resistance (AMR) in Katsina State, Nigeria. This result completely disagrees with that of Mayaki and Talabi (2015) who noted that the use of veterinary practice is very low as 54.6% of the respondents do either vaccinate their horses by themselves or used their groom in Kano, Northern Nigeria.

The finding from research question two showed that the major sources of information for farmers on livestock drugs and vaccines are researchers/consultants such as veterinary doctors (75.6%) followed by fellow farmers (70.9%) followed by internet (68.6%) and radio (61.2%), seminars/workshops (62.8%) and books (55.8%). The least sources of information for farmers on livestock drugs and vaccines include exhibition (79.1%) followed by leaflets/newspapers (69.8%), campaigns (68.6%) and television (64.0%). This finding partially agrees with that of Oyeyinka et al. (2011) who revealed that 92.7% of farmers became aware of the recommended practices through Radio and (90.3%) from Television while a very few (18.9%) were aware of the practices through veterinary doctor and feed millers. Also those who got their awareness from the extension agents are few (30.1%) in Afijio, Local Government Area, Oyo state, Nigeria. This result partially agrees with the work of Adeyemi et al. (2023) who showed that 57(36.3%), 45(28.7%), and 37(23.6%) sourced information on poultry diseases from veterinarians, fellow farmers, and during training/workshops, respectively.

This finding almost completely agrees with that of Oladipo et al. (2016) who noted that a higher percentage (84.9%) of poultry farmers got their information on improved management practices on poultry production through Radio, 81.7% got the information from Family members/ Friends, 76.3%) of them obtained the information through other sources of information, 64.5% through Poultry Farmers' Association and 63.4% from Extension agents. However, very few (38.7%) were informed through Seminar while few (39.8%) got their information from the Internet. This finding almost completely disagrees with that of Okoedo-Okojie and Osabuohien (2016) who revealed that farmers obtain their knowledge of poultry drug usage from Neighbours followed by Retailers/Dealers, NGOs, Group meetings/Discussions, Demonstration and Radio.

The finding from research question three and hypothesis one revealed that researchers/consultants, internet, fellow farmers, seminars and workshops, family/friends, extension services and books all have positive significant relationship with farmers' usage of livestock drugs and vaccines. This result almost completely agrees with that of Okoedo-Okojie and Osabuohien (2016) who revealed that all the information sources identified (Radio, Television, Extension Agencies, Newspaper, Neighbours, Farmers' Cooperatives, Manufacturers (Labels) Retailers (dealers), Agric Journals, Bulletins, posters, Phone calls, Demonstration, Group meeting/discussion and Ministry of Agriculture) except campaign, exhibition, and workshop/seminar were significantly related to farmers' knowledge of poultry drugs in Delta state, Nigeria. This finding also corroborates that of Arowolo et al. (2012) who noted that 59.6% of poultry farmers were already using drugs and vaccines based on their awareness of anticoccidial drugs like amprolium, clopidol, chlortetracycline and

oxytetracycline and anticoccidial vaccines like paracox, livacox, coccivac and immucox in South Western Nigeria.

CONCLUSION

It can be concluded that information sources such as researchers/consultants, internet, fellow farmers, seminars and workshops, family/friends, extension services and books positively and significantly influence farmers' usage of livestock drugs and vaccines in Isin Local Government Area, Kwara State, Nigeria.

RECOMMENDATIONS

1. Farmers should all they can within their ability to use or practice whatever information they have derived from various reliable sources on administration of livestock drugs and vaccines;
2. More access should be given to farmers to derive more and useful information on livestock drugs and vaccines; and
3. Government and NGOs should support farmers by ensuring that the constraints to accessing relevant and useful information on livestock drugs and vaccines should be limited.

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