ASSESSING THE IMPACT OF DIVERSE ANIMAL HEALTH MANAGEMENT PRACTICES ON DISEASE PREVENTION AND CONTROL AMONG SMALLHOLDER FARMERS IN DELTA STATE, NIGERIA

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ABSTRACT
This research assessed the impact of diverse animal health management practices on disease prevention and control among smallholder farmers in Delta State. The first, second and third stages involved a random selection of fifteen (15) Local Government Areas (LGAs); two communities each and a snowball sampling of twenty (20) of smallholder animal farmers from the State. 600 questionnaires were administered to the smallholder farmers. Smallholder farmers often experienced the effects of diseases on their animals due to poor management practices. Data generated from the study were processed and analyzed with percentages of their gender, educational qualifications and experiences and hypothesis tested with multiple regression statistics at 0.05 level of significance. The result revealed nuanced significant impact of regular vaccination, hygienic practices, proper nutrition, and farmer education, on disease prevention and control. Based on these findings, it was recommended that Delta State Government should implement a robust and targeted extension services to disseminate information and provide hands-on training to smallholder farmers.
Key words: Health, Management practices, disease, smallholder farmers, prevention, control, vaccination

INTRODUCTION

Livestock farming serves as a cornerstone of the livelihoods of smallholder farmers, playing a crucial role in ensuring food security and bolstering rural economies (FAO, 2019). In Delta State, Nigeria, agriculture takes center stage in the economic landscape, with smallholder farmers actively involved in diverse animal husbandry practices (Olayemi et al., 2018). However, the sustainability of this sector encounters formidable challenges, particularly in the aspect of disease prevention and control.

As the global demand for sustainable and ethically produced food grows, smallholder farmers stand at the forefront of this agricultural transition. Their ability to adopt and implement effective animal health management practices such as regular vaccination, hygienic measures, proper nutrition, and educational programs not only safeguards their livelihoods but also prevent and control diseases and contributes to broader goals of environmental sustainability and food system resilience (Igene, 2017). In this context, our research seeks to contribute valuable insights that can inform policy decisions, extension services, and community-based initiatives, ultimately fostering a more robust and resilient livestock farming sector in Delta State. The objective of this study is to examine the impact of animal health management practices on disease prevention and Control among smallholder farmers in Delta State.

MATERIALS AND METHODS

The field survey experiment was carried out in Delta State. It is made up of 25 Local Government Areas (LGAs) which are grouped into three senatorial districts. The study focused on the resource farmers who Animal health management practices on disease prevention and control among smallholder farmers in fifteen (15) Local Government Areas in Delta State (Figure 1).

Figure 1: Map of Delta State

A multistage sampling procedure was carried out. The first stage involved a random selection of fifteen (15) Local Government Areas (LGAs) in the State, identified as smallholder animal farmers. The second stage involved a random selection of two communities from each LGA. Thirty communities were selected as shown in Table 1. The third stage involved a snowball sampling of twenty (20) smallholder animal farmers from each community. Structured Questionnaires were administered to them.

Table 1: Distribution of smallholder farmers on animal health management practices in the study area

Senatorial District	Location LGAs	Community chosen	No. of smallholder farmers sampled
Delta South	Isoko South	Oleh	20
		Ada-Irri	20
	Burutu	Ave	20
		Abari	20
	Bomadi	Ogriagbene	20
		Essanma	20
	Warri North	Abi-gborodo	20
		Ugbenu	20
	Warri South-West	Ogidigben	20
		Ugbegungun	20
Delta Central	Ughelli South	Uwheru	20
		Agbarha	20
	Okpe	Adeje	20
		Adagbrasa	20
	Udu	Owian-Aladja	20
		Uwase	20
	Ethiope East	Eku	20
		Samagidi	20
	Ethiope West	Oghara	20
		Ijese	20
Delta North	Ndokwa West	Ogume	20
		Kwale	20
	Ukwani	Umutu	20
		Amai	20
	Aniocha	Nsukwa	20
		Isheagu	20
	Oshimili	Anwai	20
		Okwe	20
	Ika South	Abavo	20
		Alihopu	20
Total	**15**	**30**	**600**

The questionnaires were design to be able to elicit information on types of animal health management practices, gender, educational qualifications and years of experience. The data obtained from the study were analyzed using descriptive statistics (frequency, percentage and mean) and multiple regression inferential statistics using SPSS version 25.0. In a multiple regression model, we can express the relationship between the independent variables (X1, X2, X3, X4) and the dependent variable (Y) using the following equation: [Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon\] Specification regression models for impact of animal management practices on prevention and control diseases is as follows:

Where:
(Y \) is the dependent variable (prevention and control),
(X_1 \) is regular vaccination,
(X_2 \) is hygienic practices,

(X_3 \) is proper nutrition,
(X_4 \) is educating farmers,
(\beta_0 \) is the intercept term,

RESULTS

Table 2: Demographic Characteristics of Smallholder Animal Farmers Frequency Distribution

Variables	Number of observations	Frequency (%)
Age (Years)		
< 20	-	-
21-30	36	6.00
31-40	132	22.00
41-50	252	42.00
51-60	90	15.00
> 60	90	15.00
Gender		
Male	582	97.00
Female	18	3.00
Educational Status		
Non-Formal	-	-
Primary	18	3.00
Secondary	126	21.00
Tertiary	456	76.00
Flock size (no.)		
100 – 500	20	3.33
500 – 1000	50	8.33
1000 – 1500	80	13.33
1500 – 2000	150	25
2000 – 2500	200	33.33
> 2500	100	16.67
Years of experience		
1-5 years	12	2.00
6-10 years	24	4.00
11-15 years	48	8.00
16-20 years	168	28.00
21-25 years	120	20.00
26-30 years	180	30.00
31 and above	48	8.60
Types of Animals		
Cattle	09	1.50
Sheep	36	6.00
Goats	123	20.50
Pigs	33	5.50
Poultry	399	66.50
Types of Animal health Management practices		
Regular vaccination	125	20.83
Hygienic practices	200	33.33
Proper nutrition	232	38.67
Educating the farmers	43	7.17

Source: Survey Data (2023)

The background characteristics of the respondents are presented in Table 2. Majority (97%) of the respondent are male with majority having average age of between 41 and 50 years. The respondents had some form of formal education. Majority (46%) of them had flock size of 2000 to 2500. The respondents adopted animal health management practices of proper nutrition (38.67%), hygienic practices (33.33%), regular vaccination (20.83%) and educating the farmers (7.17%). Majority

(38.67%) of the respondents practices proper nutrition as a means of preventing and controlling diseases in the farm.

Table 3: The test of significant impact of animal health management practices on disease prevention and control among smallholder farmers

Independent variables	Coefficient	Standard Error	t-stat	P-value	Lower 95%	Upper 95%
X1	-0.1649	0.2073	-0.7953	0.4449	-0.6269	0.2971
X2	0.07276	0.2906	1.2689	0.7935	-0.5301	0.6756
X3	0.7098	0.2569	2.7628	0.0200	0.1374	1.2822
X4	0.4436	0.2628	2.6882	0.1223	-0.1419	1.0292

Table 4: Regression Statistics

	DF	Standard Error	Mean	F-value	Significant level
Regression	10	78.6236	19.6559	26.6470	5.2824
Residual	20	7.3764	0.7364		
Total	30	86			

In Table 4, the statistical evidence showed that the respective animal management practices are significant at 5.28 level of significance. These findings were in consonance with the words of Igene (2017) who opined that the ability of animal farmers to adopt and implement effective animal health management practices such as regular vaccination, hygienic measures, proper nutrition, and educational programs.

DISCUSSION

Vaccination programs significantly reduce the incidence and severity of infectious diseases, contributing to enhanced overall animal health. According to the Organization International Epizootic (OIE), vaccination is a pivotal strategy to mitigate the economic impact of diseases, safeguarding livestock productivity and food security (OIE, 2021).

Hygienic measures are very pertinent for the healthy living of animals. Proper sanitation, biosecurity, and hygiene practices significantly reduce the risk of infectious diseases. Regular cleaning and disinfection of animal facilities mitigate the spread of pathogens (OIE, 2021).

Educating animal farmers profoundly influences disease prevention and control. Farmer awareness programs on biosecurity, vaccination, and proper husbandry practices significantly reduce disease transmission (FAO, 2019).

Malnutrition can affect any living thing seriously. Proper nutrition significantly impacts disease prevention and control in humans and animals alike. Studies emphasize the role of balanced diets in preventing chronic diseases and supporting overall health (Martin et al, 2015)

CONCLUSION AND RECOMMENDATION

The findings reveal a nuanced relationship between practices such as regular vaccination, hygienic measures, proper nutrition, and farmer education, and their impact on mitigating the risk of diseases within livestock populations.

Furthermore, it is recommended that the implementation of robust and targeted extension services to disseminate information and provide hands-on training to smallholder farmers in Delta State.

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