FACTORS AFFECTING CHOICE OF MOST-PREFERRED LIVESTOCK DRUG USAGE AMONG FARMERS IN RURAL SOUTHWEST NIGERIA

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ABSTRACT
Animal health is paramount and assists in realizing a high rate of Returns on Investment (ROI) by farmers either in cash or kind or both. The survey was conducted using a total of 142 livestock farmers comprising users of traditional (28), orthodox (74) and both (40) using copies of well-structured questionnaire as instrument of data collection. Socio-economic characteristics and the factors influencing selection of most-preferred drug used by farmers were the specific objectives stated and analyzed with Descriptive Statistics (DS) and Multinomial Logistic Regression (MLR). The average age, household size, monthly income, and farming experience were 44.2 years, 5 members, N305, 149.05k and 10.3years respectively. Orthodox medicine was found to be most preferred by the livestock farmer which was significantly influenced by extension contacts, household size, age, association membership, age and distance to veterinary hospital. It is recommended, among others, that more extension contacts and trainings should be made available to livestock farmers.
Keywords: Livestock Farmers, Traditional Medicine, Orthodox Medicine, Multinomial Regression

INTRODUCTION

Livestock farmers always proffer solution to farm animal diseases in order to ensure sustainable and profitable investment. Ethno-veterinary medicine or traditional animal health care comprises all practices, methods and indigenous knowledge which are applied to alleviate livestock pest and diseases (Kambizi, 2016; Mayer *et al*., 2017; Chitura, 2018). The use of orthodox medicine necessitates the prudent use of antimicrobials and antibiotics in treating livestock and the application of related management practices (Huffman, 2016). The choice and usage of traditional medicines by the livestock farmers might be due to the cost ineffectiveness of the modern veterinary services and allopathic drugs and their scarcity in some communities, hence the resort to the use of herbal remedies livestock farmering (Kumar, 2007; Chafe *et al*, 2008). It has also been reported by some studies that some farmers have failed to use ethno-veterinary medicine due to poor knowledge of application rates (dosage), inadequate diagnosis, lack of documentation and side effects of the concoctions (Mudzengi *et al*., 2014). In the same vein, Mafimisebi *et al.* (2012) also established the shortcomings of traditional medicines as being characterized by preparation, presentation, efficacy, disease diagnosis and treatment specifications. All these identified salient shortcomings prompted the call for validation of traditional medicinal products (Sanhokwe *et al*., 2016). The selection of the most preferred type of preventive and curative drugs by the livestock farmers have determining factors or cogent reasons behind the choice. The specific objectives for the study were to describe the socioeconomic characteristics of farmers and identify factors influencing the most- preferred medicine used by the livestock farmers in study area.

MATERIALS AND METHODS

Study Area

The survey was carried out in Oyo State located in the Southwest geopolitical zone of Nigeria. Oyo State covers an area of 28,453 square kilometers. It lies at latitude 8°00' North and longitude 4°00' East.

Source of Data and Instruments of Data Collection

The data used for the survey was primary and the instrument of data collection was copies of well-structured questionnaires. This exercise was achieved through the services of trained enumerators.

Sampling Technique

Random sampling procedure was used in the selection of livestock farmers from the four existing Agricultural Development Zones in Oyo State. From Ibadan/Ibarapa zone, Shaki zone, Ogbomoso and Oyo zone was the sampling of respondents; Egbeda (40), Kajola (40), Surulere (40) and Afijio (40) local government areas (LGAs) respectively. The selection was concluded with livestock farmers who used traditional medicine (28), orthodox (74) and both types (40) summing up to 142 livestock farmers used for the survey while eighteen responses were dropped due to inconsistent and bias responses.

Analytical Tools

Socioeconomic characteristics of the livestock farmers and different diseases and pests prevalent in the area alongside medicines mostly applied were analyzed using descriptive statistics (DS).

The multinomial logit model can be viewed as an extension of the binary logit model. For example, in case of three categories (J=3), it can be written the probabilities as below:

$$P_{i1} = P(y_i = 1|x_i) = \frac{1}{1+\exp(x_i'\beta_2)+\exp(x_i'\beta_3)} \quad 1$$

$$P_{i2} = P(y_i = 2|x_i) = \frac{\exp(x_i'\beta_2)}{1+\exp(x_i'\beta_2)+\exp(x_i'\beta_3)} \quad 2$$

$$P_{i3} = P(y_i = 3|x_i) = \frac{\exp(x_i'\beta_3)}{1+\exp(x_i'\beta_2)+\exp(x_i'\beta_3)} \quad 3$$

In here, $\beta_2$and $\beta_3$denote the covariate effects specific to the second and third response categories with the first category as the reference. Besides, a reference category (baseline category) is determined at first to compare and analysis.

Q= Types of treatment (Orthodox medicine = 1; Traditional medicine = 2; Both =3)

X_1= Education (in years); X_2= Livestock size (in No.); X_3= Farming experience (in years);

X_4 = Household size (in No.); X_5 = Age (in years); X_6 = Agricultural training (Yes=1; No=0);

X_7 = Association membership (Yes=1; No=2); X_8= Marital status (Married=1; otherwise=0); X_9= Access to credit (Yes=1; No=2); X_{10} = Extension contacts (No.); X_{11}= Primary occupation (Farming=1; otherwise=0); X_{12} = Distance to market(in km); X_{13}= Distance to veterinary hospital (in km).

RESULTS AND DISCUSSION

The socioeconomic characteristics of the livestock farmers are presented in Table 1. The average age is 44.2years, suggesting that the farmers are in their economically active age. Average size of household is 5 members indicating its moderation. About 73% of the livestock farmers are association members, this suggests an action for getting technical information, input bulk purchase and easy access to credit. Male farmers (58.5%) are more into livestock business probably due to being custodians of productive resource. Majority (91.8%) of the livestock farmers acquired primary education which is believed to assist them in the selection and administration of appropriate drugs in treating animal diseases. The average monthly income of the farmers in the previous season was N305, 149.05 in the previous season which is more than ten times the national minimum wage (NMW), this is an indication of household's welfare and opportunity of re-investment to upscale the business. The average years of experience of livestock farmers were 10.3years. This an indication that the farmers

Table 1: **Socioeconomic Characteristics of the Livestock Farmers**

Variable	Characteristics	Variable	Characteristics	Variable	Characteristics
Age (in years)	44.2 years	**Gender**	Male=58.5% Female=41.5%	**Experience**	10.3years
Household Size	5 members	**Education**	Literate=91.8% Illiterate=8.2%	**Drug-Use Farmers' Categories**	Orthodox=52.1 Traditional= 19.7 Both= 28.2
Association Membership	Member=73.2% Non-member=26.8%	**Monthly Income (in Naira)**	N305,149.05k		

Source: Field Survey, 2023.

will perform better in handling emerging cases of diseases on their farms proactively. Drug used by farmers revealed the users of orthodox (52.1%) as being the highest while 28.2% applied both and 19.7% used strictly traditional drug in treating their animals. It could be inferred from this result that livestock farmers have exposure to different methods of treating livestock diseases which are prevalent in their various localities.

Factors Affecting Choice of Most-Preferred Drugs by the Livestock Farmers

Table 1 presents MLE estimates of factors determining choice of livestock drugs used among the livestock farmers. The likelihood ratio (116.48; $p<0.01$) and likelihood ratio of -84.068 showed that the model used was fit and appropriate. Farming experience, distance to market, distance to veterinary hospital and primary occupation significantly increased the choice of traditional medicine by farmers while household size, extension contacts age and association membership increased use of orthodox medicine. Size of livestock, farming experience, agriculture-related training and distance to market positively increase the choice of both methods of livestock treatment while age and distance to veterinary hospital influenced the use of orthodox medicine.

Table 2: Multinomial Logistic Regression Estimate (MLE) of Factors Determining Choice of Livestock Drug Use Among the Respondents

No. of Observation	=141	Y = Pr(Drug type=0)
LR chi2 (26)	=116.48	= 0.6210
Prob.>chi2	=0.0000	
Pseudo R^2	=0.4092	
Log-likelihood	=-84.068	

	Traditional			Both			Marginal Effect		
Variable	Coeff.	Std Error	p>/z/	Coeff.	Std Error	p>/z/	dy/dx	Std Error	p>/z/
Constant	7.4399***	2.5689	0.00	-2.0709	2.5910	0.42	-	-	-
Education (in years)	-0.0834	0.1128	0.46	0.1207	0.1168	0.30	-0.0043	0.0228	0.85
Size of livestock (in No.)	0.0011	0.0007	0.11	0.0013**	0.0006	0.05	-0.0003**	0.0001	0.05
Farming experience (in years)	0.1844***	0.0611	0.00	0.2288***	0.0602	0.00	-0.0486***	0.0129	0.00
Household size (in No.)	-0.6020***	0.1985	0.00	-0.2954	0.1863	0.11	0.1057***	0.0396	0.00
Age (in years)	-0.1384***	0.0309	0.00	-0.0759***	0.0292	0.00	-0.0253***	0.0062	0.00
Agricultural training (Yes=1; No=2)	0.1772	0.7537	0.81	1.2596*	0.7074	0.08	-0.1893	0.1534	0.22
Association membership (Yes=1; No=2)	-0.4646	0.6271	0.46	-0.9165	0.6464	0.16	0.1614	0.1245	0.19
Marital status (Married=1; otherwise=0)	-0.7981	0.6726	0.24	-0.1232	0.7152	0.86	0.1021	0.1351	0.45
Access to credit (Yes=1; No=2)	0.0688	0.6102	0.91	0.0096	0.6238	0.99	-0.0093	0.1254	0.94
Extension contacts (in No)	-1.0389***	0.6338	0.00	-0.7093	0.6299	0.26	0.2021*	0.1212	0.09
Primary occupation (Farming=1; otherwise=0)	2.7582***	0.9382	0.00	-0.4828	0.8466	0.57	0.2700**	0.1356	0.08
Distance to market (in km)	0.6108*	0.3442	0.08	0.5962*	0.3512	0.09	-0.1420**	0.0706	0.04
Distance to veterinary hospital (in km)	1.1668**	0.4519	0.01	-0.0264	0.3959	0.95	0.1409*	0.0817	0.09

Source: Field Survey, 2023. **Base** Outcome: Orthodox Medicine ****, ** and * indicate significance @ 1%, 5% & 10% respectively.*

Conclusion

It could be concluded from the result that livestock farmers mostly used orthodox medicine, and this is significantly influenced by extension contacts, household size, age, association membership, age and distance to veterinary hospital.

RECOMMENDATIONS.

Based on the findings in the foregoing, it is recommended that more training on livestock health be organized for farmers to broaden their knowledge in the efficient treatment of livestock, more seasonal extension contacts should be provided as this will encourage passing of technical information on technical issues to farmers and veterinary hospitals should be provided close to farmers for prompt treatment of their animals. Also, stakeholders in animal health should invest more in the standardization of traditional drugs in order to reduce the cost of production incurred by the livestock farmers.

REFERENCES

Huffman, M.A. (2016). An ape's perspective on the origin of medicinal plant use in humans. In Wild harvest: plants in the Hominin and pre-agrarian human worlds, ed. K. Hardy and L. Kubiak Martens, 55–70. Oxford: Oxbow book.

Kumar, Y.D. (2007). Ethno-veterinary practices. A boon for indigenous cattle productivity in Gaushalas. *Livestock Research for Rural Development*, 19, Article No 75, Retrieved November 28, 2008 from http://www.cipav.org.co/lrrd19/6/kuma19075.htm.

Chafe, U.M., Musa, A. and Dogara, B. (2008). Studies of some health aspects of traditional camel management in North West Nigeria. *Livestock Research for Rural Development*, *20*, 6-11http://www.cipav.org.co/lrrd20/2/chaf20031.htm.

Kambizi, L. (2016). Indigenous plants for ethno-veterinary uses in the Pondoland, South Africa, *Acta Horticulturae*. 1125. ISHS 2016. DOI 10.17660/ActaHortic.2016.1125.40

Mafimisebi, T.E., Oguntade, A.E., Fajemisin, A.N. (2012). Local knowledge and socioeconomic determinants of traditional medicines' utilization in livestock health management in Southwest Nigeria. *J. Ethnobiology Ethnomedicine, 8* (2), 2-6.https://doi.org/10.1186/1746-4269-8-2).

Sanhokwe, M., Mupangwa, J., Masika, P. and Muchenje, V. (2016). Medicinal plants used to control internal and external parasites in goats. *Onderstepoort Journal of Veterinary Research, 83*, 1 (2016), http://dx.doi.org/10.4102/ojvr.v83i1.1016.

Chitura, S. *(*2018). Use of medicinal plants by livestock farmers in a local municipality in Vhembe district, South Africa. *Applied Ecology and Environmental Research*, *16*(5), 3-8.

Mayer, M., Zbinder, M., Vogl, C., Ivemeyer, S., Meier, B. (2017). Swiss ethnoveterinary knowledge on medicinal plants- a within-country comparison of Italian speaking regions with northwestern German speaking regions. *Journal of Ethnobiology and Ethnomedicine, 13*(1), 4-8.

Mudzengi, C., Dahwa, C., SkosanaJ. and Murungweni, C. (2014). Promoting the use of ethno-veterinary practices in livestock health management in Masvingo Province, Zimbabwe. *Ethnobotany Research and Application*, *12*, 397-405.