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Original article

Ethno veterinary practices for poultry and cattle in Zimbabwe: A case study of Takavarasha village

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ABSTRACT

Ethno veterinary practices are increasingly becoming important in the primary health care of livestock the world over. This is so especially for smallholder farmers in developing countries where conventional veterinary drugs are expensive, inaccessible and unaffordable. In this study, the traditional practices used in the control of livestock diseases in Chivi district of Masvingo province in Zimbabwe were investigated. A semi-structured questionnaire was administered to 60 farmers sampled through a two stage process. The questionnaire sought information on common cattle and poultry ailments as well as the respective ethno veterinary practices used to control them. Information on methods used to prepare the medicines and the form in which it is administered was also collected. Eighty two percent of the farmers regarded ethno veterinary medicines as very useful in the provision of primary healthcare for the animals. A wide array of traditional remedies and their preparation methods were documented. There was also evidence of a complementary link between conventional and traditional animal health practice. This shows that farmers have alternative ways of ensuring the safety of livestock which can be used together with conventional methods to ensure livestock health.

1. Introduction

Worldwide concern for animal health care options that are comprehensible, cost effective,available and sustainable has resulted in the pursuit for ethnoveterinary practice (EVP) interventions. These practices consist of community based local or indigenous knowledge and methods of caring, healing and managing livestock developed over time through trial and error experimentation (Wanzala et al., 2005). They provide valuable alternatives to and complement commercial synthetic veterinary products whose costs are ever rising (Madzimure et al, 2011; Isman, 2008). There are also increasing concerns about the development of drug resistant parasites and disease causing microorganisms due to over and improper use of commercial medicines and pesticides (Chah et al, 2009). Ethnoveterinary practices are relatively more accessible, easy to prepare and administer at little or no cost to the farmer. This makes them a viable option for most resource constrained rural farmers (Shen et al., 2010).

Matzigkeit (1990) reported that applied traditional practices have a long record of safety, making them even more attractive for use today. There is also a global increase in the demand for organically produced agricultural products for health reasons and again it shows that ethno veterinary medicines and practices will be a very important component of agriculture in the future (Mushi et al., 2000). However, despite the recognition of their medicinal and pesticidal value and growing acceptance, more work still need to be done to document and preserve the available knowledge on ethno veterinary practices before it is lost. Like all other traditional knowlegde systems that are handed down orally from generation to generation, it is a possibility that ethno veterinary practices may disappear because of rapid socio-economic, environmental and technological changes. There are also genuine fears that cultural heritage can be lost, diluted or distorted under the guise of civilisation and globalisation (Kumar, 2007). In this study, ethno veterinary practices mainly used in poultry and cattle production in a remote district of Zimbabwe, Chivi, were recorded.

2. Materials and methods

2.1. Study site

The survey was done in Takavarasha village in Chivi district of Masvingo which is a remote rural area where farmers have difficulties in accessing conventional veterinary services found some 150 km away. Located in agro-ecological region 4, the area is semi-arid with erratic average annual rainfall of below 500 mm with characteristic seasonal and severe dry spells during the rainy season. The mean maximum temperature ranges between 27 - 30oC. The soils are largely sandy and crop production is risky. The major farming activities include extensive livestock and crop production, the latter of which is based on production of drought resistant crops.

2.2. Data collection and analysis

A structured questionnaire was developed, pretested, adjusted and administered to 60 farmers selected in a two stage process. Farmers were initially purposively sampled to include only those who had cattle and poultry. Final survey sample was then randomly selected from the purposively sampled households. Administered in vernacular, the questionnaire sought information on the socio-economic characteristics of the sampled farmers, their major livestock species, routine herd/flock health management practices as well as the major diseases of cattle and poultry and their corresponding indigenous cures. The survey also determined the methods commonly used for preparation and the form in which the preparations were administered to livestock.

2.3. Statistical analysis

Frequencies of household demographics, ethno veterinary practices and major disease problems were computed using the Statistical Package for Social Sciences (SPSS) Version 16 software. Associations between the non-parametric variables were analysed using a chi-square test for independence and the Pearson’s rank correlations.

3. Results

About 82% of the interviewed households were male headed. With an average age of respondents of 46.76 years, age class was significantly associated with the use of ethno veterinary practices ($\chi 2 = 10.56$; $P<0.001$). This was consistent with the results of Kolawole et al, (2007), who also noted an association between utilisation of ethno veterinary practices and age of respondents.

Ownership patterns for indigenous poultry and cattle are as shown in Table 1. Most farmers (about 62%) had less than 10 cattle whilst 5% did not own any cattle. Farmers relied on livestock production because the area, being very dry, was not ideal for crop production. There was a significant association between the number of animals per household and use of ethno veterinary practices ($\chi 2 = 18.36$; $P<0.001$). The trend showed farmers with very small herds relying more on ethno veterinary practices for primary animals health care than farmers with relatively larger herds. Kolawole et al, (2007) also reported similar findings among Nigerian farmers.

Table 1
Cattle and poultry ownership in Takavarasha settlement.

Livestock number range	% household ownership	
	Cattle	Poultry
0	5	5
1-5	32	27
6-10	32	23
11-15	2	8
16-20	20	22
21-25	7	8
26-30	3	7

Whilst all interviewed farmers were aware of ethno veterinary practices, only 82% felt the practices were very useful in primary animal health care although a lot less (62%) actually used the practices. This was probably because not all of the farmers appreciated the efficacy of these medicines in treating animals. Of those who acknowledged the usefulness of ethno veterinary practices, most (70%) used both conventional and ethno veterinary medicines. This concurred with Toyang et al. (2007) who reported a similar trend in many African societies where both conventional and ethno veterinary medicines are used in combination in the provision of primary animal health care. The remaining farmers used either only the conventional medicines (15%) or ethno veterinary medicines (15%).

Education levels among respondents were generally low (23 % having gone as far as Ordinary Level) and not independent from the use of ethno veterinary practices ($\chi 2 = 28.32$; $P<0.001$). The use of ethno veterinary medicines was elevated among those farmers who did not have higher levels of education. Most of the knowledge on ethno veterinary practices was passed down generations orally. Grandparents played a significant role (77%) in transmitting the indigenous knowledge to younger generations while some were trained by non-governmental organisations (41%) and a few got the knowledge from traditional healers and other local farmers (9%).

The common health problems identified by farmers for poultry were diarrhoea, coccidiosis, wounds, respiratory diseases and egg laying problems whilst diarrhoea, wounds, bloat, worm burden and ticks were the most commonly identified health problems for cattle. Table 2 shows a summary of the identified diseases for both poultry and cattle, identified animal health problems and the various ethno practices used in the primary health care of cattle and poultry by the Takavarasha community.

From these results, plants dominated the ethno produts used in the primary animal health care through use of either the bark, roots, leaves or stems. The remedies were mainly administered orally through drinking water. Yigar et al. (2012) reported similar findings on oral administration as the major route of administration of ethno veterinary medicines in Ethiopia. Although some of the plants were disease specific, a few were used as multipurpose remedies, used to treat more than one kind of ailments, for example Aloe spp, Strychnos madagascariensis and Bridella mollis. Such plants with multipurpose uses could be containing more than one type of biologically active compounds.

Aloe species were mainly used for treatment of coccidiosis and diarrhoea in poultry. Several studies have shown that Aloe species contain pharmacological, antibacterial, antivenin, and immunological properties that can be used to control a number of diseases in poultry including, fowl typhoid and Newcastle disease (Mwale et al,

2005; Mwale et al, 2006). Capsium annum, Xeroderris stuhlmannii were also reportedly used for diarrhoea treatment in poultry and cattle respectively. It is believed that they contain antibacterial properties. Nonetheless, most active compounds of many of these plant extracts and detailed phyto chemistry of the plant extracts are still not yet studied. This is a research area that is key in the full development and understanding of plant based veterinary products.

Table 2
Common poultry and cattle diseases identified by interviewed farmers.

Species	Health problem	% of farmers	Ethno product	Parts	[a]Preparation
Poultry	Diarrhoea	35	Aloe spp (Gavakava)	Leaves	Soaked and administered orally
			Capsicum annum (Mhiripiri)	Fruit	Crushed and administered orally
	Coccidiosis	48	Aloe spp (Gavakava)	Leaves	Soaked and administered orally
	Wounds	13	Albizia adianthifolia (Mutowa)	Roots	Crushed and pasted onto the wound
	Respiratory diseases	3	Aloe spp (Gavakava)	Leaves	Soaked and administered orally
	Egg laying	2	Lannea stullmanni (Musosoti)	Bark	Crushed, soaked and administered orally
Cattle	Diarrhea	35	Xeroderris stuhlmannii (Murumanyama)	Bark	Soaked and administered orally
	Wounds	35	Cissus quadrangularis (Murunjurunju)	Stem	Stems are crushed and pasted on the wound
			Cissus vitacea (Muvengahonye)	Leaves	Stems are crushed and pasted onto the wound
			Gavakava (Aloe spp.)	Leaves	Leaves are chopped and soaked and the animals given to drink
	Bloat	8	Bridellia mollis (Muhumbakumba)	Bark	Soaked and administered orally
	Goitre	3	Strychnos madagascariensis (Mukwakwa)	Roots	Boiled with water, cooled and administered orally
	Worm burden	30	Sarcostemma viminale (Rusungwe)	Twigs	Crushed, soaked and administered orally
			Strychnos madagascariensis (Mukwakwa)	Bark	Soaked and administered orally
			Moringa oleifera (Moringa)	Roots	Crushed, soaked and administered orally
	Lumpy skin disease	5	Bridellia mollis (Muhumbakumba)	Leaves	Boiled in water and administered orally
	Foot and mouth	8	Annona senegalensis (Nhengeni)	Fruit sap	Sap administered orally
	Dystocia	10	Pouzolzia mixta (Munanzva)	Bark	Crushed, soaked and administered orally

[a]All soaking was done in water overnight.

Some non plant remedies were also reported. These included use of ground millipedes to treat pink eye disease in cattle and ground tortoise shells to treat wounds in cattle and poultry. The use of these non herbal materials was also observed by Nirban (2006) who reported the use of powder from crushed millipedes and head of tortoises in the treatment of livestock ailments.

4. Conclusion

The survey showed a rich and diverse ethno veterinary products database which can be used for disease and pest control. While the findings were made in Takavarasha village there is scope to extend use to other areas with the same indigenous plants and cultural beliefs. It is also apparent that most farmers are primarily catering to the health problems of animals using both commercially available veterinary medicines together with traditional practices. This integration could provide a sustainable use of both indigenous products and synthetic products for an improved animal health care by smallholder livestock farmers.

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