

The Importance of Ethnoveterinary Treatments for Pig Illnesses In Poor, Ethnic Minority Communities: A Case Study of Nu People in Yunnan, China

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Project fund: International Development and Research Center (IDRC)

KEY WORDS: Ethnoveterinary treatment, pig illness, Nu people, Yunnan

ABSTRACT

This paper reports the results of research on farmers' pig health practices in three poor Nu villages in Yunnan, China. The research found that pigs are an important household asset; illness and disease are major constraints on pig rearing; farmers have rich knowledge of traditional ethnoveterinary practices; for most illnesses, farmers choose to use traditional curative practices rather than seek formal veterinary service providers. Factors influencing the farmers' choice of treatment and provider include: availability of alternatives, distance to providers, indirect costs of travel, and direct costs of treatments. Farmers' animal health care practices depend to a high degree on traditional knowledge and there are obstacles to accessing formal providers. In this situation there is potential value in validating ethnoveterinary practices and spreading

knowledge of practices that are found to be effective.

INTRODUCTION

Gongshan County is a typical area of agro-pastoralist livelihood in northwest Yunnan province, China. Animal production serves various crucial roles in Gongshan livelihood, contributes to local diets, provides cash, drought power, organic fertilizer, and is a means of transportation of heavy equipment (Shen et al., 2007).

Among different livestock, pigs are one of the main types of livestock raised by mixed farmers and agro-pastoralists in Gongshan. Most pigs are traditional breeds, such as the Tibetan Black pig and the recently identified Gaoligongshan pig. In recent years, some farmers have cross-bred these indigenous breeds with introduced varieties, such as the Duroc pig. Government agencies promote introduced varieties because of their supposed faster growth and higher yields. Meat weight of pig herd off-

take is a main indicator used in calculating the contribution of animal husbandry to the economy. Moreover, pigs provide the main family food (oil and meat), organic fertilizer for crops and have a social function, such as gift-giving (exchange), and in wedding, funeral and religious ceremonies in rural community (Shen and Qian, 2009).

However, there are certain limiting factors restricting the development of pig production in Gongshan, including lack of green fodder resources in winter and spring, disease, and poor housing quality. In 2008, the morbidity rate and mortality rate of pigs are 46% and 35% respectively (GAHB, 2008). Disease is a major factor causing pig mortality and constraining the development of animal husbandry.

The Nu ethnic group is one of the least populous ethnic groups in Yunnan, primarily residing in Gongshan. In Gongshan, there are 13,142 Nu people, who mostly live in Dimaluo village of Pengdang township, and Qiunatong village and Shuangla village of Binzhongluo township (GAHB, 2008). Due to cultural differences from other ethnic groups, Nu people have a great variety of traditional knowledge on livestock production and management, and natural resource use. However, there is limited documentation and research on animal production, disease treatment, and ethnoveterinary knowledge of the Nu people in Gongshan and Yunnan.

This paper investigated the pig rearing techniques, illness conditions, ethnoveterinary practices used in treating illnesses, and farmers' choices in seeking different providers for illness treatment among three Dimaluo, Qiunatong, and Shuangla Nu ethnic villages in Gongshan. The survey findings are very important to understanding the culture and livelihood of Nu people and promoting the use of ethnoveterinary practices in the animal health services in this poor, ethnic minority area.

METHODS

Study Area

Gongshan County is situated in the north-west end of Yunnan province, between 98° 08' – 98° 56' latitude and 27° 29' – 28° 23' longitude. To the West, it borders Myanmar; to the North, it borders Chawo County in Tibet; and to the East, it shares borders with Weixi County and Deqin County in Yunnan province. The Nujiang (Salween River) runs through the county roughly from North to South. The elevation is from 1170 m to 5128 m, and the typical climate is characterized by both a rainy season with 90% humidity and dry season of drought. The rainfall is about 2700-4700 mm per year. Gongshan is one of the counties in poverty according to state criteria. There are 15 ethnic groups, of which the minority nationality is 96% of total population (GAHB, 2008). The Dulong people and Nu people belong to the least populous ethnic groups in Yunnan.

Methodology

The main objectives of this research are: to explore the traditional knowledge of pig illnesses and ethnoveterinary practices, and to document farmers' choices in seeking different providers for pig illness treatment in three Nu ethnic villages of Gongshan. The study area is focused on three Nu ethnic villages in Gongshan, which include Dimaluo village of Pengdang township, and Diunatong village and Shuangla village of Binzhongluo township. These three villages are the most inhabited areas by Nu people in Gongshan.

The field data collection was based on a questionnaire, interview, group discussion, key informants, and observation. The interview includes a structured and a semi-structured component, used for key informant interview at the village level. Group discussion and observation were conducted with a mixed group of genders and ages. The questionnaire covered the household information, the purposes of pig rearing, common pig illnesses, ethnoveterinary practices used in treating illnesses, and farmers' choices in seeking different providers for illness treat-

ment. The household samples were selected at random in three Nu villages of 40 Nu households each. All medicinal plants were collected and preserved, then identified at the Yunnan Agriculture University.

RESULTS

Pig Herd and Function

The survey found that 98% of households interviewed in three Nu villages have raised pigs, and the average herd size for pigs is 6.3. Dimaluo and Qianatong have larger herd size than in Shuangla because they have a large grassland area and abundant natural resources in comparison of Shuangla. However, Shuangla has more market information and labor opportunities for local farmers.

Pigs have a variety of functions in the three Nu villages, including economic and social contributions, such as gift exchange. As the data from the surveys shows, the primary function of pigs is household consumption. In 2009, almost half (49%) of pigs were slaughtered for this purpose. Also, the manure of pen-raised pigs contributes to the compost applied to corn fields. Pigs are rarely sold. A pig is sold only when the household requires a large sum of money for the children’s education, illness, or home maintenance.

The social contributions of pigs are more important for maintaining relationships. Piglets are frequently given away to other households, relatives, and friends. Such

gifts do not require repayment, but engender positive social relations. In general, pigs will be slaughtered for weddings and funerals in order to provide meat for the guests and neighbors.

Common Illness Conditions among Pigs

Surveys have found that disease is a major cause of mortality among pigs in the three Nu ethnic villages studied. In 2009, the morbidity and mortality rates of pigs were 39% and 24.2%, respectively. Also, piglets often die in the spring and winter due to poor housing quality and climate change. The death rate of piglets composed 81% of total annual pig fatalities.

Disease in pigs not only results in economic losses, but also requires villagers to spend money to recover. Sometimes, economic hardship causes villagers to change their livelihood strategies. The total expenses for pig disease treatment in 2009 accounted for 23.3% of total cash income from the animal and animal products sale.

Many villagers were unclear about what caused the various death-by-illness events. Most villagers think that livestock epidemic diseases have become increasingly severe since the 1990s. Wolf populations, which are believed to carry a variety of diseases, are often blamed. The purchase of infected pork from market sellers and improvements in roads also expand the spread diseases. Rapid spread of epidemics is often attributed to improper disposal of dead animals,

Table 1: Frequency and severity of pig illness symptoms in three Nu villages, Gongshan

Type of symptom	Perceived frequency (%)	Perceived severity (%)
Skin conditions	81.7	70.0
Diarrhea	56.7	55.8
Heat, fever, colds	55.8	46.7
Sores	42.5	52.5
Not enthusiastic to eat/refusing food	37.5	17.5
Constipation	33.3	20.8
Gaseous stomach	14.2	20.8
Twitching, shivering, breathlessness	13.3	33.3
Lying down all the time	12.5	28.3

Table 2: Ethnoveterinary treatments for commonly encountered pig illness conditions in three Nu villages, Gongshan

Symptom	Ethnoveterinary remedy [Common name, (kind, species)]	Agreeing of treatment's efficacy (%)	Method of application
Heat, fever, colds	Costusroot (<i>Aucklandia lappa</i> Deene)	66.7	Feed plants chopped and boiled together with fodder
	Root of Yunna cowparsnip (<i>Heraclium rapula</i> Franch)	33.3	Feed plants chopped and boiled together with fodder
Skin conditions	Motor oil or paraffin	75.8	Motor oil or paraffin applied to itchy area
	Garden Erphorbia Herb (<i>Euphorbia hirta</i> L.)	42.5	Fresh leaves and stems boiled in water and applied to itchy area
	Climbing Groundsel Herb (<i>Senecio scandens</i> <i>Buch.-Ham.ex D.Don</i>)	48.3	Fresh leaves and stems boiled in water and applied to itchy area
Diarrhea	Rhizoma coptidis (<i>Coptis teeta</i> Wall)	51.7	Feed plants chopped and boiled together in water
	Calamus (<i>Acorus tatarinowii</i>)	47.5	Feed plants chopped and boiled together with fodder
	Dock Root (<i>Rumex nepalensis</i> Spreng)	28.3	Feed fresh plants chopped and boiled together in water or with fodder
	Whiteback Hupeh Anemone (<i>Anemone hupehensis</i> <i>Lemoine f. alba</i> W.T.Wang)	33.3	Feed plants chopped and boiled together in water
Gaseous stomach	Beer fermenting agent	33.3	Feed beer fermenting agent mixed with fodder
	King Solomonseal Rhizome (<i>Polygonatum kingianum</i> Coll. <i>et Hemsl.</i>)	28.3	Feed roots chopped and boiled together in water
Lying down all the time	Hair, gunpowder and bee skin	42.5	Feed hair, gunpowder and bee skin burned with fodder
	Williams Elder Twig (<i>Sambucus williamsii</i> Hance)	50.0	Feed fresh leaves chopped and boiled together with fodder
	Tuqiannianjian (<i>Vaccinium fragile</i> Franch)	28.3	Feed fresh leaves chopped and boiled together with fodder
Constipation	Climbing Groundsel Herb (<i>Senecio scandens</i> <i>Buch.-Ham.ex D.Don</i>)	42.5	Feed plants chopped and boiled together in water or with fodder
	Dock Root (<i>Rumex nepalensis</i> Spreng)	48.3	Feed Fresh plants chopped and boiled together in water or with fodder
Sores	Maize (<i>Zea Mays</i> L.)	66.7	Feed maize popped by heating in fire-ash
	Alcohol	61.6	Rub affected area with alcohol
	Lightyellow snapweed (<i>Impatiens legions</i> Franch)	33.3	Fresh leaves and stems chopped and boiled in water, then rub affected area
Twitching, shivering, breathless- ness	Garlic (<i>Allium sativum</i> L.)	51.7	Feed fresh plants chopped and soaked together in water
	Calamus (<i>Acorus tatarinowii</i>)	39.1	Feed crushed juice of fresh leaves
	Delavay Falsepanax (<i>Nothopanax delavayi</i> (Franch.) <i>Harms ex Diels</i>)	42.5	Feed fresh leaves chopped and boiled together in water
Not enthu- siastic to eat/refusing food	Calamus (<i>Acorus tatarinowii</i>)	40.0	Feed plants chopped and boiled together with fodder
	Delavay Falsepanax (<i>Nothopanax delavayi</i> (Franch.) <i>Harms ex Diels</i>)	19.2	Feed fresh leaves and barks chopped and boiled together with fodder

resulting in diseases spread by dogs and other animals that come into contact with infected carcasses.

In general, farmers in the three Nu villages studied recognize several main types of symptoms that indicate ill health among pigs. From the data analysis of frequency and severity recognized by local farmers, it was found that the most common signs of ill health among pigs are: skin conditions, diarrhea, heat, fevers, and colds (Wanyama, 1997). Gaseous stomachs and constipation, breathlessness, twitching, shivering, and lying down all the time are less common (Table 1). Table 1 indicates that frequency and severity of illnesses are correlated. That is, the more common diseases also tend to be more severe. This further suggests the degree of risk and the burden that pig diseases pose for farming households.

Ethnoveterinary Practices for Pig Illnesses

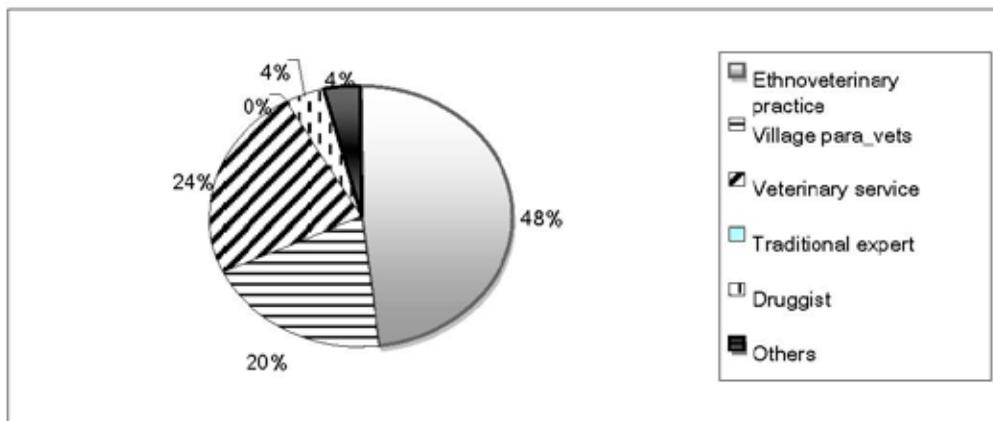
The survey of ethnoveterinary practices in the three Nu villages revealed 20 different treatments for illness conditions among pigs (Table 2). These treatments are typically made from plant preparations, although other materials such as alcohol, human byproducts, gunpowder, and bee skin, are occasionally used. Some plants are used to treat more than one disease, while others are used as mixtures. Some ethnoveterinary practices function as both disease treatments

and preventive measures.

Almost all ethnoveterinary knowledge and practices result from daily experience with livestock production of the Nu people. There are no publicly recognized traditional experts in ethnoveterinary medicines in the three Nu villages studied. Analysis of the survey data found that women are more likely to know ethnoveterinary practices than men, which is consistent with the household division of labor. Women commonly take on more responsibility for feeding and management of pigs (Shen and Qian, 2009). Older villagers were more likely to know these practices than others, but there was no significant difference between young and middle-aged people, suggesting that ethnoveterinary knowledge is still being passed on through its application in the daily practice of pig rearing. Villagers in Dimaluo and Qiunatong are more likely to know these treatments than the villagers in Shuangla. This can be explained by the lesser importance of pig rearing in Shuangla, and by easier access to formal veterinary service providers in that village.

However, it should be noted that the levels of consensus on several treatments were not high. Among these 20 treatments, there were only four that had relatively high levels of consensus on their efficacy (Table 2). Respondents rarely disagreed that a treatment was effective, but most respondents

Figure 1: Farmers' Choice for Pig Illness in three Nu Villages, Gongshan



did not know of most treatments' efficacy or otherwise.

Choice of Treatment Provider

The survey found that the factors influencing farmers' choices for pig disease treatment providers are: availability of local/traditional remedies, distance from provider, indirect time and travel costs, direct costs of medicines and other cash costs, and availability of effective treatments at different providers.

Surveys in the three Nu villages have identified some of the factors that villagers consider when seeking treatment for ill pigs (Figure 1). For most illness conditions, including the most frequent and the most severe conditions, villagers prefer to use traditional ethnoveterinary practices. In 2009, 48% of total households interviewed listed traditional ethnoveterinary practices as their first choice.

In Dimaluo and Qiunatong, a farmer will seek help from the para-vet in the village only if these traditional medicines do not work, or if the farmer does not know any practices relevant to the symptoms. If the para-vets are not available, or if they do not have relevant medicines, some farmers will travel to the town veterinary station 40 kms away and purchase medicines.

Because Shuangla is closer to the town veterinary station, if there are no ethnoveterinary practices or if these do not work, villagers tend to go straight to the town veterinary station to purchase medicines. For less severe illness conditions, some villagers will purchase human medicine from a store in the village or from the village doctor.

Severity of illness is not a factor influencing farmers' choices. The factors influencing treatment decisions are related to farmers' access to services and to the characteristics of service providers. In the case of Dimaluo and Qiunatong, poverty and distance are considerable factors influencing access to formal providers. Other research has also documented constraints on formal providers servicing rural areas, including financial and institutional incentives (Shen et al., 2007). The cost and availability of

medicines and providers is a factor driving the use of alternative providers, including self-treatment using ethnoveterinary practices and purchasing medicines from human medicine sales points. In this situation, indigenous ethnoveterinary treatments play a very important role in farmers' efforts to maintain animal health.

CONCLUSION AND DISCUSSION

Pig Illness Conditions

Livestock play one of the most important roles in rural livelihoods in Gongshan. This survey also found that pigs are one of the main assets in the three Nu villages studied. Pigs are mostly used for household consumption and maintenance of good social relationships. However, disease is a major constraint on pig production. Because most knowledge of pig illnesses is based on the farmers' experience, local farmers are unclear about the scientific disease names and the causes.

The morbidity and mortality rates of pigs in the three Nu villages are lower than those of of Gongshan County (GAHB, 2008). One explanation is that these villages are far away from the township town and market. Another is that the farmers often use the ethnoveterinary medicines for pig illness treatment. Ethnoveterinary practices have played a very important role in the treatment of pig illness in the three Nu villages surveyed for this study.

The Potential of Ethnoveterinary Medicine

Research has found that ethnoveterinary treatments are the primary recourse for farmers when their pigs are ill. Results of surveys in Gongshan concur with findings from elsewhere (Mathias, 2004), indicating that farmers perceive the advantages of ethnoveterinary treatments to be their local availability and low cost. Given the costs associated with seeking formal providers and constraints on formal service provision, ethnoveterinary treatments are often the only available means for farmers to treat ill pigs. Similar results were also found in

other surveys of Gongshan relating to other livestock such as cattle, chickens and goats (Shen, 2008).

Unlike some other locations (Mathias and McCorkle, 2004), the three Nu villages studied have no widely recognized indigenous experts in ethnoveterinary medicine. Rather, ethnoveterinary knowledge is widely distributed among men and women of all ages within the communities. However, surveys in these three communities found that there was little consensus on which ethnoveterinary treatments are actually effective. One reason is that many treatments are unknown to some or many villagers. Moreover, even when many villagers know of a treatment, they may disagree on its efficacy.

Given the prevalence of ethnoveterinary practices in farmers' animal health practices, it is important to validate the efficacy of these practices (Tafara Matekaire and Taona M. Bwakura, 2004). Knowledge of practices that are found to be effective should be dispersed among villagers. Given the current distribution of ethnoveterinary knowledge in the three Nu villages studied, it is reasonable to suggest that farmers in this area would benefit from spreading knowledge within the same community, as well as between communities.

In some cases, it may be that cheap, allopathic treatments exist where no effective ethnoveterinary treatments can be verified. In this case, improving the diagnostic and

treatment skills of village-based para-vets in conjunction with ethnoveterinary medicine would ensure the local availability of important therapies. Community drug funds, to which all villagers have convenient access, is one way of improving supplementary veterinary treatment. It is likely that interest in these approaches would correlate with a community's reliance on animal husbandry and proximity to township veterinary stations.

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