

**ETHNOVETERINARY PERCEPTIONS AND PRACTICES AND THEIR
RELATIONSHIP TO HUMAN HEALTHCARE IN NYAN'GOMA DIVISION
BONDO DISTRICT, KENYA.**

**BY
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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

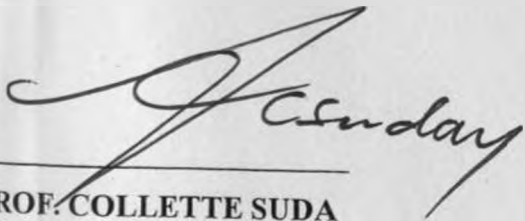


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This thesis has been submitted with my approval as the university supervisor



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DEDICATION

This thesis is dedicated to my parents Monica Odundu and William Nyamanga who brought us forth into this world and have always endeavoured to ensure our success in life including academic pursuits.

And

To all my siblings whose emotional, financial and other material support ensured an enabling environment for the completion of this work.

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ABSTRACT

This study was conducted among the Luo livestock farmers of Nyang'oma division of Bondo district, western Kenya. The overall objective of this study was to identify and discuss lay people's perceptions and practices about domestic animal healthcare and how these relate to those of human healthcare. The study subjects therefore comprised all persons within the division who keep livestock. The unit of analysis was an individual livestock farmer. However the study employed the purposive sampling technique with farmers who were perceived to possess more knowledge on animal healthcare being targeted for interviews. Individuals who possessed expert indigenous knowledge on animal healthcare were also sampled for key informant interviews.

Having been designed to obtain data on perceptions and practices regarding domestic animal healthcare within a short period of time, the study adopted a cross-sectional design and only qualitative methods of data collection were used. These included open-ended interviews, participant and direct observations, narratives, FGDs, key informant interviews as well as ranking techniques.

The study findings showed that farmers in Nyang'oma rely more on the available local knowledge while addressing animal health. It showed that it is the way a particular animal health problem is perceived that directs individuals to a given remedial action. It was also established that there is a close relationship between animal and human healthcare with certain concepts being shared. In terms of treatment certain conditions in human beings are addressed in similar way and with similar practitioners as in animals. Factors that determine choice of healthcare provision in animals were also found to be the same as those directing choice in human healthcare. These included availability, cost considerations, belief in efficacy as well as ideas about illness causation.

The findings show that a lot of perceptions and practices in animal healthcare have a lot of parallels with those of human healthcare. This study therefore strongly recommends the incorporation of the anthropological approaches in investigating not only human but animal health problems as well. Anthropology recognises the importance of emic perceptions in addressing human problems. Focusing on emic perceptions in addressing animal health is very important for the improvement of domestic animal health and productivity. The study also recommends that the local animal healthcare dispensers be considered for training to improve competency in services they render. Documentation of ethnoveterinary medicine and practices should be done to safeguard against the loss not only of herbal plants but even of traditional knowledge for the benefit of future generations. Such documentation may also be important in environmental conservation.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND INFORMATION

Various approaches to domestic animal healthcare are currently employed in many countries. These approaches comprise both traditional and modern veterinary practices. The integration of the two approaches has been found to widen the spectrum of available choices to farmers, veterinarians, and extension workers. It is one way of making services appropriate for local conditions and more cost effective (Martin and Mathias 1999).

Decisions regarding healthcare choices for animals are not a simple and direct process. Just as in human healthcare practice, these decisions seem to follow a clear pattern based on the perceptions of the cause of the health problem. Beliefs in the efficacy of a given approach as well as the cost implications particularly in resource poor households also influence these decisions (see Cohen and Atieno-Odhiambo 1989; Martin and Mathias 1999; Nyamwaya 1982; Sindiga 1995,).

Local perceptions and practices concerning animal healthcare have been referred to as ethnoveterinary knowledge (Bizimana 1994; Kokwaro 1993; Martin and Mathias 1999; Mathias *et al.* 1996). This encompasses both traditional and modern perceptions and practices utilized by members of a local community in their effort to address animal health problems. In many parts of the world currently, veterinary practices entail the choice between use of traditional animal healthcare techniques, purchase and use of modern pharmaceutical drugs, seeking services of untrained animal healthcare dispensers, contacting private veterinarians as well as resorting to government provided modern veterinary services.

According to McCorkle (1995, cited in Mathias *et al.* 1996) Ethnoveterinary Research and Development (ER&D) is the holistic, interdisciplinary study of local knowledge and its associated skills, practices, beliefs, practitioners, and social structures pertaining to the health care and healthful husbandry of food, work and other income producing animals. She says that ER&D is always done to achieve practical development applications within livestock production and livelihood systems. The ultimate goal is to increase human wellbeing via increased benefits from stock raising. In their 1996 publication, Mathias *et al.* simply define ethnoveterinary knowledge (EVK) as people's beliefs, knowledge and practices pertaining to animal health. It therefore refers to indigenous knowledge pertaining to animal healthcare.

According to Warren (1992, cited in Marrewijk 1998) the term "indigenous knowledge" (IK) is used synonymously with "traditional" and "local" knowledge to differentiate the knowledge developed by a given

community from the international knowledge system sometimes also called “western system” generated through universities, government research centres and private industry. However, Grenier (1998, cited by Marrewijk 1998) on her part, defines indigenous knowledge as the sum total of the knowledge and skills which people in a particular geographic area possess, and which enable them to get the most out of their natural environment. Most of this knowledge and skills have been passed down from earlier generations, but individual men and women in each new generation adapt and add to this body of knowledge in a constant adaptation to changing circumstances and environmental conditions. They, in turn, pass the body of knowledge intact to the next generation, in an effort to provide them with survival strategies (Marrewijk 1998). Thus, both traditional and modern perceptions and practices fused together so as to become unique to a particular community is what constitute that community’s indigenous knowledge.

According to Madeley (1998, cited in Marrewijk 1998), indigenous knowledge is the largest single knowledge resource not yet mobilized in the development enterprise. However Borchgrevink (2002) states that over the past two decades, considerable interest has been shown in “indigenous knowledge” within the applied fields of development studies and rural extension with the underlying assumption being that a better understanding of local knowledge and practice will further development work. He states that the interest in indigenous knowledge within development circles stems from a new conception of the Third World peasant as neither conservative nor tradition bound, nor as an impotent victim of the world economic system, but as a rational choice making individual who responds strategically to market opportunities. Goldschmidt (1980) supports this when he says that the record of pastoral peoples in Africa demonstrates that, under aboriginal conditions, they have been astute in their management, imaginative in their organization and adaptive to changing circumstances in their procedures.

McCorkle (1995, cited in Imrie 1998) maintains that Ethnoveterinary Research, Development and Extension (ERD & E) has emerged as a “fertile field” that promises to benefit “rural and peri-urban stock raisers” not just in the Third World, but everywhere by virtue of the “generation or (regeneration)” of certain “animal health technologies”. She maintains that local knowledge should not be dismissed out of hand just because it is sometimes couched in seemingly nonscientific or supernatural idiom: it should always be investigated further.

Wanyama (1997) identifies Intermediate Technology (IT) Kenya as one organization that has recognized the usefulness of indigenous knowledge in promoting domestic animal production. He acknowledges that IT is committed to using existing local technical knowledge to design project activities that are responsive to community needs and aspirations and use available community resources. Wanyama says that “IT Kenya”

systematically collects information on ethnoveterinary knowledge and uses it in its animal health care programs. Such knowledge, just as other cultural practices, differs from place to place, from time to time and from one community to another even if there are numerous elements of commonality.

Disease attacks both human and animal populations. There seems to be a close relationship in terms of perceptions and practices regarding healthcare in the two cases. Indeed Schwabe (1996) has reported that much the same remedies and treatment techniques are applied to both livestock and humans and that in many Third World societies, the same healthcare practitioners often deal with both human and non human patients. In Kenya, Githae (1995) has reported the treatment of both livestock and human diseases at Karati Rural Service Centre. This study not only sought to find out the perceptions and practices in animal healthcare, but also intended to establish how these relate to the perceptions and practices in human healthcare.

This study was conducted among the Luo livestock farmers of Nyang'oma division of Bondo district, western Kenya. Nyang'oma division lies at the shores of lake Victoria. It is within the equatorial region and experiences the equatorial type of climate. There are two rainy seasons in a year. The long rains occur between March and June with the short rains occurring between August and November (ROK 1997). The rainfall pattern is, however, unpredictable with the short rains sometimes failing to come. This often occasions acute water problem in Nyang'oma division. Piped water is only found at the Nyang'oma mission centre but this is only accessible for other domestic water uses. Livestock do not have access to this water. Livestock, apart from those of stockraisers residing closer to the lake, depend on pond water and during the dry season livestock owners have to drive their stock a distance of around 4-8 kms daily in search of water.

According to Ochola-Ayayo (1976: 17) the Luo of today practice a mixed economy. Much earlier they were considered to be a pastoral society but later incorporated both agriculture and fishing into their subsistence. Grain, fish and milk made up the main diet. The people of Nyang'oma grow such crops as sorghum, millet, maize, beans cassava and potatoes. These crops are grown mainly for subsistence though they are also partly sold to provide income. Fishing is a major economic activity and trade in fish is a flourishing business within the division. Cattle were the chief criterion of wealth, although sheep and goats were also kept.

The Luo are a polygynous and exogamous group with a patrilineal kinship structure (Hauge 1964). Inheritance is done on the male line. Ndisi 1974 insists that from long time ago the Luo have possessed sheep, goats and cattle. He insists that the main reason for the emigration of the Luo from southern Sudan following the River Nile and finally settling at the shores of lake Victoria where they fought and moved away the Bantu inhabitants of the land in Kenya, was mainly in search of pasture and water for their livestock. A part from

cattle, sheep and goats the Luo also keep poultry, donkeys, dogs and cats. These play differential roles and so as we shall see in later chapters, are valued differently by these farmers.

Some small-scale gold mining activities are going on in Nyang'oma division. Income accruing from this activity is used not only for subsistence purposes but also to improve livestock number and conditions.

1.2 PROBLEM STATEMENT

Since the domestication of animals some 10,000 years ago, livestock producers have naturally been concerned about livestock health (Bierer 1955, cited in Mathias *et al.* 1996). Poor livestock health still remains a major constraint not only in Kenya but also in many countries the world over. Wanyama (1997) has observed that modern veterinary inputs and services are not readily available. They are either too difficult to obtain or too expensive for the poor, marginal farmers and pastoralists.

Local veterinary practices in many communities, therefore, entail reliance on a combination of modern veterinary services (where available and affordable), purchase of pharmaceutical drugs which through locally acquired knowledge are individually administered to livestock, services of untrained animal healthcare providers who capitalize on the lack of trained veterinarians to offer relatively cheap and affordable services to farmers as well as on traditional knowledge of animal healthcare.

This complexity of practice is captured by Dietz (1987) where he observes, among the Pokot, the possession of a detailed knowledge of herbal treatments for sick or injured animals, deticking of animals by individual stockowners, vaccination as well as dipping where these services are available. He maintains that even the most remote pastoralists use animal drugs, if these drugs are available.

Thus, when it comes to practice, it would be important to isolate social, economic and even political factors that come into play in decision-making and choice of available health improving alternatives. Gender issues, family structure, religion, cost and availability of alternative therapies obviously restricts individuals to certain approaches of animal healthcare. Sometimes, relationships in the community, e.g., with political authorities do influence a people's activities.

Certain perceptions also have influence on the course of remedial action. People's notions about the efficacy, the side effects of drugs or the dangers inherent in a given approach to animal health problems, especially drawn from earlier episodes of the same health problem, also determine what choices to make. In a household, for example, factors such as gender and age determine who has control over what resources as well as who

es what. Opler (1985) has noted that in many pastoral communities, such as the Kalenjin, men traditionally inherited and controlled livestock with women only gaining access to cattle by virtue of their positions as managers of households and their obligation to provide food to its members. It is upon marriage that a woman could have cattle assigned to her "house" to provide milk to her and her children. Such arrangements, especially in a polygynous home will, to some extent, influence who gives care to which animal and animals will be identified as belonging to particular households.

Knowledge levels also determine who takes what action. In many instances, adults are more knowledgeable about disease conditions as well as about remedial practices than children.

In terms of perceptions, it is important to explore people's notions about causes of animal health problems. For example, how is the disease transmitted? Do the people have the germ theory of causation? It is as well necessary to find out about people's perceptions about where in an animal's body the disease is located, their notions about disease prognosis as well as disease classification (Is it naturally or supernaturally caused?). Focus should be put on the ethno-diagnostics, i.e., how a disease is recognized and assigned a name. All these considerations influence the kind of treatment to be resorted to.

Religion is another factor for consideration in health seeking behaviour. It may either deter people from seeking medical attention for their animals or may determine whether remedy is sought from the natural or the supernatural planes of healthcare.

These perceptions and practices regarding animal healthcare seem not to be isolated from those of human healthcare. In fact, it has been shown that similar drugs, herbs and practitioners may tackle both animal and human health problems (see Githae 1995; Schwabe 1996,). Understanding the relationship would be important in designing an integrated approach to both human and animal healthcare. The perceptions and practices involved in animal healthcare should therefore be compared with what happens in the field of human healthcare with a view to bringing out points of similarity and differences.

Sleinman (1980) identified three overlapping and inter-connected sectors of human healthcare: the popular sector, the folk sector and the professional sector. It would be interesting to see whether the same dichotomy is applicable when it comes to animal healthcare and possibly to find out how farmers alternate between the three sectors in search of better health for their animals.

Research is necessary in this field of ethnoveterinary perceptions and practices, especially given that little effort has been put towards the same from an anthropological perspective. The residents of Nyang'oma are mixed agriculturalists practicing both animal and crop husbandry. They keep such animals as cattle, sheep and goats as well as dogs, cats, donkeys and poultry. All these are often faced with the problems of disease or injury under conditions requiring special care and treatment.

Research questions

The study sought to find answers to the following questions.

What are the perceptions of the people of Nyang'oma about domestic animal healthcare?

What are the local practices involved in domestic animal healthcare?

How does domestic animal healthcare relate to human healthcare in terms of perceptions and practices?

3 THE STUDY OBJECTIVES

3.1 Overall Objective

The overall objective of this study was to identify and discuss lay people's perceptions and practices about domestic animal healthcare and how these relate to those of human healthcare.

3.2 Specific Objectives

To describe local people's perceptions about animal health problems.

To identify and discuss the practices carried out by the people of Nyang'oma in domestic animal healthcare

To explore the relationship between human healthcare and domestic animal healthcare in terms of perceptions and practices.

4 RATIONALE OF THE STUDY

Livestock diseases remain a key constraint to livestock production in developing countries. In many countries, and Kenya in particular, livestock are a chief source of livelihood. They are kept to provide food in terms of meat, milk and blood. For a long time, they have provided dressings and bedding in the form of hides and skins. Animals also provide a cheap source of labour and are paid as bride wealth. They are a source of income received either from the sale of meat or animals themselves. These animals have been kept for wealth and prestige purposes. Depending on the number of animals one keeps, one is accorded appropriate status in the society. In the modern market economy, livestock is also used to pay school fees or rather as a "bank account" or as a means of capital accumulation, which can be mobilised when needed. Ensuring that animals are kept healthy is, therefore, a major preoccupation of the livestock farmers.

people's perceptions of a given situation determine their reactions to the situation. Local etiologies and diagnostics as well as the way a people understand the interrelationships, functions and malfunctions of different organs and systems (e.g., circulatory, nervous, etc.) will dictate the course taken in providing remedy whenever there is a health problem. Rather than dismiss these perceptions and practices, it is important to first carry out an investigation to find out what could be their scientific implications.

Understanding people's perceptions and practices regarding domestic animal healthcare is important in designing development programmes for them. Policy makers should focus on these perceptions and practices with a view to designing project activities that are responsive to community needs and aspirations in order to make the projects more sustainable.

In this era where environmental degradation has become a real threat to both animal and plant life, it is also necessary to document the various plants that have been useful in indigenous veterinary practice for purposes of conservation to safeguard against loss. Additionally, many of the plants used in animal healthcare are also used in human ethnomedicine. Thus, human, livestock, local fauna, and the environment stand to benefit from research in ethnoveterinary perceptions and practice.

Research is also important in this field just for purposes of advancing academic knowledge especially given that the field has not been given much anthropological attention. Certainly, this is going to be one of the pioneering studies in this field.

Establishing the relationship between human and animal healthcare could as well help in the integration of the two approaches in terms of training and healthcare delivery.

2.5 SCOPE AND LIMITATIONS

The field of ethnoveterinary perceptions and practices is quite wide. An exhaustive study requires not only longer time but also other resources such as more personnel to assist in the field as well as money. The major focus has been on people's notions about cause, transmission and prognosis of animal health problems and effects of the solutions resorted to. To obtain data on special knowledge concerning animal healthcare within a short time and with little financial resources, purposive sampling technique was used to reach informants with the desired information.

CHAPTER TWO

LITERATURE REVIEW

This chapter focuses on the work of various scholars who have written about ethnoveterinary perceptions and practices as well as on social, cultural and economic issues that have some implications on animal healthcare.

1 ETHNOVETERINARY KNOWLEDGE AS INDIGENOUS KNOWLEDGE

Over the centuries, through trial and error and deliberate experimentation, farmers have developed a wide spectrum of prevention and treatment methods as well as other animal healthcare techniques. Bizimana (1994), Kokwaro (1993), Martin and Mathias (1999), Mathias *et al.* (1996) have all called this knowledge, ethnoveterinary knowledge.

Ethnoveterinary knowledge, according to these authors, is defined as folk beliefs, skills, ingredients, methods, procedures and practices, of all kinds, whether material or not, used in diagnosis, prevention, and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observation handed down from generation to generation, verbally about domestic animal health care. This knowledge incorporates many effective home remedies and techniques such as use of medicinal plants, vaccination, branding, and bone-setting as well as the provision of shelters adapted to the local conditions, the exploitation of a wide range of fodder plants and many other management practices (Martin and Mathias 1999).

This knowledge has been very crucial in the husbandry of domestic animals worldwide. As Raikes puts it:

The survival of herding societies in the drier parts of East Africa depends in no small measure on the knowledge of people about grazing lands and water, combined in a rough but purposeful geomorphological mode. The skilled herdsman learns a number of crucial husbandry practices which are just as important to the health and survival of the herd as are the drugs provided by the veterinary service (1981: 34)

This knowledge is indigenous in the sense that it differs from community to community. Warren (1992, cited in Marrewijk 1998) observes that the term "indigenous knowledge" (IK) is used synonymously with "traditional" and "local" knowledge to differentiate the knowledge developed by a given community from the international knowledge system generated through universities, government research centres and private industry.

Marrewijk (1998) defines IK as the sum total of the knowledge and skills which people in a particular geographic area possess and which enable them to get the most out of their natural environment. Most of this

knowledge and these skills have been passed down from earlier generations, but individual men and women in each new generation adapt and add to this body of knowledge in a constant judgment to changing circumstances and environmental conditions. They, in turn, pass this body of knowledge to the next generation, in an effort to provide them with survival strategies. Thus, this body of knowledge is not static but changes over time. It only differs from western or universal knowledge in the sense that it is "local" as opposed to global knowledge.

Sillitoe (1998) maintains that today despite globalizing trends which lead to influence by others, bringing points of similarity and overlap, a people nevertheless will maintain their distinctiveness. They are informed by cultural repertoires that have evolved over generations, albeit not in isolation. They have their own indigenous knowledge.

Over the past two decades, considerable interest has been directed towards IK within the applied fields of development studies and rural extension. The underlying assumption is that a better understanding of local knowledge and practice will further development work. However, there is the inherent danger that an overly simplistic understanding of such knowledge may lead to serious misrepresentation and distortions. The study of indigenous knowledge therefore needs to be informed by anthropological insights (Sillitoe 1998, cited in Borchgrevink 2001).

Goldschmidt (1980) supports this anthropological approach but notes that anthropology also acknowledges the inevitability of change; it does not seek to retain native society in some pristine, imaginary pre-Europeanized condition, it does not want to create native enclaves. Nor does it take for granted that everything in the local culture is good and proper, that the customs of the people are inevitably and ultimately right. Indeed peoples' perceptions and practices could as well be a factor contributing to the poor health conditions of animals.

While appreciating and recommending the need to incorporate indigenous veterinary practices in the development of sound husbandry practices McCorkle (1995, cited in Imrie 1998) says "there is need to integrate what works in folk medicine with what works in scientific biomedicine". She says that there is need to discriminate between effective and ineffective therapies. For local knowledge to be broadly and responsibly put to use, some means of discriminating between effective and ineffective methods is required. She maintains that local knowledge should not be dismissed out of hand just because it is sometimes couched in seemingly nonscientific or supernatural idiom; it should always be investigated further. On the same note Martin and Mathias (1999) have recommended an integrated animal healthcare approach but they insist on

research and validation of alternative veterinary practices. de Haan and Bekure (1991) state that a major constraint to livestock disease control in Africa is the deteriorating quality of animal health care delivery systems. They associate this with attempts by governments to meet an increasing demand from farmers and pastoralists for veterinary services with dwindling set of resources.

Stockraisers have relied on these indigenous practices since time immemorial. However the Kenyan government policy is silent on this issue. Githae (1995) is more concerned about traditional African medicine and recognizes that even though the Kenya government recognizes the positive role played by the herbalists, there is lack of statutory provision to safeguard/protect them.

2 ETHNOVETERINARY PERCEPTIONS

Perception is a way of seeing, understanding or interpreting something. Ethnoveterinary perceptions refer to a way of seeing, understanding or interpreting animal health related problems. Stockraisers do have ideas about how animal illnesses are caused, transmitted and even about the prognosis of a given health problem. They use such knowledge in offering treatment and preventing diseases that would attack their animals.

Chillhorn van Veen (1996) has noted among many African stockraisers the practice by herders of trying to avoid Foot and Mouth Disease (FMD) by moving their animals upwind of an affected herd. This is done with the knowledge that the FMD is transmitted through the wind. The herders may also purposefully move their animals downwind of the affected herd with the knowledge that exposing the animals to a mild case of FMD confers immunity.

Maikes (1981) and Blench (1999, cited in Kohler-Rollefson 2001) have made similar observations. They have noted that African stockraisers believe that tsetse fly cause disease in animals. Blench especially recognized that the Fulani who inhabit the Sahel zone of Africa systematically and gradually expose animals to tsetse infested areas, resulting in the survival of cattle in environments that were previously considered unsafe for them. The germ theory of disease causation doesn't seem to be well developed among many African livestock farmers. Nyamwaya (1982) notes this among the Pokot but nevertheless acknowledges that the Pokot conceive of most illnesses as stemming from biological pathology. Such perceptions have obvious implications while seeking preventive or therapeutic measures as noted above with FMD and tsetse fly.

The perception about how a disease locates in the body of an animal points a finger to what cause of action to take when it comes to treatment. Most stockraisers tend to associate disease with blood. Heffernan *et al.* (1996) observes the belief by the Samburu that most diseases affect blood. The practice of venipuncture is therefore designed to reduce the amount of "bad" blood in the animal's body and thus expedite recovery.

peoples' perceptions are very important for it is through perceptions that diseases are diagnosed (see Yamwaya 1982). Stockraisers look at an animal and depending on symptoms and signs they will declare an animal sick and even assign a name to that sickness or disease. Treatment will then follow automatically from the diagnosis. However, disease is not explained only on the biological plane. Most Africans whenever faced with misfortune such as disease attack often ask the question "why?" (Ibid.). Supernatural explanations of causes of disease are not unique to human health but are extended to explain animal health problems as well.

Dima (1970) notes among the Barabaig of Tanzania the belief that misfortune befalling somebody's animals could result from the actions of aggrieved ancestors, the gods or from the evil actions of a jealous or envious relative or neighbour. In such cases supernatural remedy is resorted to and these may include cleansing ceremonies to appease the gods or ancestors or search for counter-magic to offset or cancel the magical power of a suspected potion planted by the jealous person.

Sometimes veterinary action is taken because of the resultant good associated with the action. Castration is one such practice. Among many stockraising communities such as the Samburu studied by Ghirotti and Woudyalew (1996), castration is perceived to be a way of making bulls stronger and more tractable as well as being docile. It is also known to lead to better fat cover in animals.

Some of these claims are often questionable. McFarlane (1966, cited in Ghirotti and Woudyalew 1996) has refuted the claim that castration leads to fat deposition in zebu cattle. Thorough investigation into peoples' perceptions is thus necessary because if left unchecked they may also be factors contributing to poor health condition of animals.

Farmers' perceptions regarding the reactions of drugs also play an important part in the choice of treatment for their animals. Padmakumar (1998) has reported that farmers in Kerala, South India, preferred to use traditional medicine because it had no side effects. Citing Wilkinson (1984), he reports that any drug used in veterinary medicine has side effects, most of which are minor and usually go unnoticed. Certain drugs may inadvertently terminate a pregnancy, while others may cross the placental barrier and produce abnormalities in the foetus. On the other hand Majumdar (1989, cited in Padmakumar 1998) notes that the traditional drugs are believed to be having no side effects. According to ayurvedic experts this is because it has holistic properties, which in some cases can even be used to counteract the side effects of modern drugs. Ideas about toxicity of drugs will therefore determine whether a particular drug will be resorted to.

people's perception is therefore a very important aspect to consider while studying animal healthcare practices. It tells what treatment or preventive action to take. Some of these may mean use of certain drugs (herbal or biomedical), surgical operations, immunization, massage and pest, parasite and predator control as well as manipulation of reproduction (e.g. through castration or bull selection) and feeding habits.

The movements between alternative modes of animal healthcare, e.g. making choice between traditional and modern veterinary practices or between the supernatural and natural modes of treatment are guided by the perceptions regarding the problem in question.

PRACTICES REGARDING DOMESTIC ANIMALS

Just as with perceptions, various practices guide domestic animal healthcare. Family structure, gender, political considerations, religious affiliation as well as the socio-economic status of stockraisers influence the nature of care given to animals.

Gender and age do determine who has control over what resources as well as who can perform what tasks. Opler (1985) has observed among many pastoral communities (e.g. the Kalenjin) that men traditionally inherited and controlled livestock while women only gained access to them as managers of households and providers of food to members of that household. Upon marriage, a woman would have cattle assigned to her "house" to provide milk for her and her children (ibid.). In a polygynous family, this arrangement obviously has implications as to which animal can be taken care of by whom. Additionally, the man who is the de facto owner of livestock can only make important decisions concerning animal healthcare. Another aspect noted by Nyamongo (1998) is that in polygynous families the problems of the younger wife tend to be given preferential care. In this regard it may also be true that animals belonging to the younger wife's household may receive more urgent and effective veterinary attention where that attention is to be given by the husband.

These practices, however, also rely on the availability and costs of the alternative remedies. McCorkle (1995) has noted that when cost or lack of availability precludes the use of more effective pharmaceuticals, it makes sense to exploit herbal or traditional therapeutic agents likely to be safe and at least marginally effective.

In many African communities menstrual blood is known to be polluting and a woman in menstrual state is forbidden from participating in certain activities lest she caused harm there. They for example may not be allowed to come into contact with plants or animals (Helman 1994; Mbiti 1969; Nangendo 1996). Such beliefs obviously restrict the extent to which a woman can provide healthcare to animals.

efficacy of a veterinary action may also dictate whether it will be resorted to or not. It has been observed (Chirrotti and Woudyalew (1996) that the *madosha* (harmer) castration technique has continued to be popular among the Ethiopian stockraisers even in the face of the government introduced *burdizo* technique which is sometimes done free of charge. They find their traditional technique quite safe and so they have a lot of confidence in it. The introduction of the *burdizo* technique has therefore just added to the number of available alternatives.

Sometimes an approach is resorted to because of the cultural values attached to the practice. The *madosha* castration technique has been found to form an integral part of the Ethiopian community ceremonies (*ibid.*) The same is with the practice of venipuncture among the Samburu. Here venipuncture is used for ceremonial purposes as blood is collected and consumed during those occasions (Heffernan *et al.* 1996).

Omungo (1998) talks of the role of religious affiliation in illness behaviour. Religion, he says, may cause patients to seek medical attention or restrict them from going to hospital. It would be interesting to find out whether religion has a role to play in animal healthcare.

The way in which knowledge about animal healthcare is acquired also has implications for the popularity of a therapeutic action. Among stockraisers the bulk of knowledge about animal healthcare is acquired through experience as one observes what is happening in daily life (Mathias *et al.* 1996; Nalule 2000). Therapeutic approaches acquired in this manner become common knowledge. A livestock holder can prepare and use the remedy her or himself instead of relying on expensive, distant outside professionals (ITDG and IIRR 1996). Special knowledge is mostly treated as family property, an asset that should not be lost but which should be closely guarded and respected. Such knowledge is passed from parent to child secretly (Nalule 2000).

4 RELATIONSHIP BETWEEN ANIMAL HEALTHCARE AND HUMAN HEALTHCARE

Disease attacks both human and animal populations. There seems to be a close relationship in terms of perceptions and practices regarding healthcare in the two cases. Indeed Schwabe (1996) has reported that such the same remedies and treatment techniques are applied to both livestock and humans and that in many third World societies, the same healthcare practitioners often deal with human beings and animals. In Kenya Mithae (1995) has reported the treatment of both livestock and human diseases at Karati Rural Service Centre.

In both human and animal healthcare blood is taken to be a vital force. As noted above lay people associate sickness in animals with blood and so venipuncture is designed to remove the "bad" blood and expedite recovery.

Among humans disease is associated with blood in several ways. Illness can be associated with changes in blood *volume* ("high blood", due to much blood), *consistency* ("thin blood", causing anemia), *temperature* ("hot illness" caused by "heat in the blood" in Morocco), *quality* ("impurities" in the blood, from constipation) or polluting power (menstrual blood causing "weakness" in males) (Helman 1994)

Menstrual blood is taken, in many societies to be harmful to both humans and to the natural world. Ngumbane (1997, cited in Helman 1994) has noted that a woman in menses should avoid sick people or their medicines during her period, and crops may be ruined or cattle fall ill if she walks among them. Thus, we see that peoples' perceptions and practices especially those concerning gender seem to play similar roles both in animal and human healthcare. Both natural and supernatural modes of disease classification are also evident in both cases especially from these perceptions about blood. Factors related to cost, availability and even the efficacy of a given therapeutic option also influence choice in both human and animal healthcare (see Nyamwaya 1982; McCorkle 1995; Nyamongo 1998).

As noted above, religious affiliation also dictate whether one may go to hospital or not (Nyamongo 1998). In the same way religious affiliation may have influence on what remedial action one will resort to in case of livestock health problem.

Perceptions and practices in human healthcare therefore seem to correspond with those regarding animal healthcare. Kleinman (1980) identified three overlapping and interconnected sectors of human healthcare. The popular sector is the lay, non-professional, non-specialist domain of society especially the household level where disease is first detected and first treatment offered. Secondly, there is the professional sector i.e. that domain where we find the organized, legally sanctioned healing professions, such as modern western scientific medicine also known as allopathic or biomedicine. Finally we have the folk sector, which refers to that domain where certain individuals specialize in forms of healing which are either sacred or secular, or a mixture of the two. The specialists here include bonesetters, midwives, tooth extractors or herbalists, to spiritual healers and shamans. Kleinman noted that individuals do alternate between these three sectors in search of treatment for health problems. Ethnoveterinary practices involve a similar kind of web. Animal health problems are obviously first identified at the household level where initial treatments may be offered. From there, the problem can either be forwarded to a traditional healer or modern veterinary services may be resorted to depending on considerations of some of the factors already highlighted above.

2.5 THEORETICAL FRAMEWORK

2.5.1 Disease Theory and its relevance to this study

Disease theory was advanced by Foster and Anderson (1978) and has been used by Mwendwa (1991). The theory embraces beliefs about the nature of health, the causes of illness and the remedies and other treatment techniques used by healthcare practitioners. It deals with causality, the explanations given by the people to account for loss of health, explanations such as breach of taboo, an upset in the hot-cold balance within the body, or the failure of an organism's immunological defenses against pathogenic agents such as germs and *vira*. The basic assumption of this theory is that each community has its own ways of explaining illness and responds to illness in accordance with these explanations.

Foster and Anderson maintain that a disease theory system is an ideational system, an intellectual construct and a part of the cognitive orientation of a group. They observe that all disease causality systems are in large part rational and logical, in that treatment techniques are functions of, or stem from, a distinctive conceptual organization of ideas about causes. Only people in other societies, who believe that the premises underlying explanation are wholly or partly contrary to fact, therefore, can think of disease causality systems, as irrational (*Ibid.*).

This theory was designed to explain what happens in human health care. However it has also been found to be quite applicable in animal healthcare as well. As noted above, there seems to be a close link between animal and human healthcare. Explanations, classifications as well as causes and effects of disease in both animals and humans seem to follow a similar pattern, i.e. perceptions and practices regarding the two tend to be similar. The subject matter of explaining illness, its causes and how to go about curing it is found in the disease theory of any particular community. The disease theory dictates where and from whom to seek treatment and this is true for both animals and humans. Thus, if illness is defined as having been caused by the intrusion of an object into a patient's body by the acts of a sorcerer, extraction of the object is essential to return the patient to health. In the same way if illness is explained to be stemming from too much blood in the body of an animal, then pastoralists such as the Samburu will recommend venipuncture for the animal (see Heffernan *et.al.* 1996). In Western medicine, if a laboratory analysis indicates a pathogenic infection then the physician prescribes an appropriate antibiotic.

The development of various ethnoveterinary practices is a response by farmers to solve animal health and other husbandry related problems. Farmers are interested in the wellbeing and productivity of their stock. When they identify a problem that threatens that wellbeing, they have to take action by making choice between one or two possible alternatives.

This theory postulates that a people's belief about the nature of health and their perceived causes of illness dictate approaches that will be used for restoration of health. Such community perceptions also direct people to what actions can be taken to prevent diseases. This theory is quite relevant to and will be used to guide this study.

2.5.2 Relevance of the findings to the theory

The findings so far support the applicability in animal healthcare of the disease theory put forward by Foster and Anderson (1978) as guiding framework for this study. The study has established that the way a health problem is perceived has direct influence on the kind of remedy resorted to. This is true even in situations involving the supernatural causes of illness. Thus misfortune resulting from disobedience to ancestors or the dead can simply be rectified by respecting their commands or by undergoing a cleansing ceremony. In cases of witchcraft counter magic is required to neutralize the effects of the "bad" medicine planted in the home. Religious personalities with the power to see the "bad" things planted in the home may also be consulted to remove them or even to pray and destroy their destructive powers. In cases of evil eye (*dhoho*) certain herbal concoctions may be resorted to just as in the case of udder and teat problem that is believed to be caused by evil eye.

However the study has also established that several other factors come into play when choosing treatment options for animals. These may include the following:

- Belief in efficacy. Farmers do argue that ancestors who used traditional veterinary approaches passed them down to latter generations that have continued to rely on them because of their efficacy. At the same time farmers are aware that certain diseases are treated better by modern veterinary approaches.
- Availability of the alternatives. Traditional veterinary approaches tend to be more readily available when compared to modern veterinary alternatives. To reach veterinary personnel one has to go long distances.
- Costs involved in treatment. Most farmers complain that government. Veterinary personnel are too expensive to call for treatments. The same is true with private veterinary doctors. For these reasons most farmers turn to quacks or to traditional veterinary practices that tend to be relatively cheaper and allow for the possibilities of bargaining. One may even treat animals on credit terms, which are later paid in installments.
- Religion often hinders individuals from conducting some actions considered sinful. The use of certain traditional medicines has been seriously stigmatised in the processes of modernization such

as through Christianity. Devout Christians may consider the use of certain traditional remedies as sinful even if it was the perceived solution to an animal illness.

These factors that determine choice of animal treatment remedies sometimes work in such away that they tend to challenge across the board applicability of Foster and Anderson's disease theory. It is true that people might perceive the problem in such away that directs them to a particular health restoring strategy. However due to some intervening factors they may not be able to get to that particular preferred strategy. The study has noted that farmers may lack knowledge about certain illness conditions in animals and how to treat them (e.g. the *awir* condition). Such a situation may leave the farmer with only one alternative, i.e. to go for the modern veterinary treatments. But sometimes due to either lack of money or the unavailability of those experts within a reasonable distance in the community may ensure that farmers do not consult them. These factors when considered may make the disease theory inadequate in explanation and so may necessitate the use of other theories or models, e.g. the health belief model for better explanation.

2.5.3 Assumptions

1. Perceptions about a given animal health problem determine the course of remedial action.
2. Considerations of factors such as cost, efficacy and availability of alternative remedies guide local ethnoveterinary practices to animal health problems.
3. There is a similarity between domestic animal healthcare and human healthcare in terms of perceptions and practices.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter addresses the research design, study population and sampling technique as well as sample size. Data collection and analysis procedures and units of analysis are also discussed.

3.1 RESEARCH SITE

This study was done in Nyang'oma division, which lies within the newly created Bondo district of Nyanza province, western Kenya. Four other divisions in Bondo district surround Nyang'oma. These are Usigu, Madiany, Rarieda and Maranda divisions. The 1999 census report shows that Bondo district has a population of 238,780 persons with a population density of 242 persons per square kilometre. Nyang'oma division lies along the shores of Lake Victoria, which is the second largest fresh Water Lake in the world. The area in which the fieldwork was conducted comprised nine villages and a small township with a population of about 5000 inhabitants. A sketch map of Nyang'oma division is presented at the end of this chapter on page 24.

3.2 STUDY DESIGN

This study was designed to obtain data on perceptions and practices regarding domestic animal healthcare. Data collection took a period of eight months. It was a cross-sectional study carried out in three phases. The first phase entailed home visits and familiarization with the field. It was during this phase that pre-testing of the interview guide was done and relevant corrections made to this research instrument. After the familiarization and pre-testing followed the administration of the interview guide. These were in-depth/open-ended interviews that yielded qualitative data concerning the various animal health problems identified by farmers, perceptions about these animal illnesses and practices that surround solutions to these problems. The interview guide was also used to explore the relationships that exist between human and animal healthcare in terms of perceptions and practices. Next were the key informant interviews. These were conducted with individuals who possessed rich knowledge concerning animal health. Such healers included herbalists, bone setters, castration specialists, dehorning specialists, retained placenta removal specialists, docking specialists, false teeth (*jimo*) extractors, ear notching/slitting specialists, quack veterinarians, retired veterinary personnel, other private veterinary practitioners and currently practicing government veterinary personnel. The final phase of the study entailed conducting focus group discussions (FGDs) and the collection of narratives regarding animal health problems encountered by farmers and the course of action taken in seeking remedy to these problems. Narratives were also collected on human health problems and the dynamics surrounding human health seeking behavior with a view to establishing how this relates to animal healthcare. Observations were carried out continuously throughout the study period.

Two field assistants were employed in the project. For a period of one month the project only employed one field assistant whose role was to make appointments with informants for interview. In addition, she was also required to make observations and collect narratives concerning animal health perceptions and practices. In both cases a guide and a checklist were respectively available. The researcher trained the field assistant by ensuring that she took notes whenever the researcher was conducting an interview. This was meant to give insight about the researcher's interest. After being in the field for one month, there was enough data to be typed in the computer. This led to the employment of a second field assistant who was to replace the first one who apparently had more knowledge in computer work and thus could be used to transcribe notes. This second field assistant also went through a similar training process as the first one. He was to take over the responsibilities initially assigned to the first field assistant.

3.2.1 Population Universe and unit of Analysis

Livestock production is an activity undertaken by almost every household or homestead within Nyang'oma division. The population/universe therefore comprised all persons within the division who keep livestock. The unit of analysis was an individual livestock farmer, who logically derived from the population/universe. However as stated above, individuals who possess expert indigenous knowledge on animal healthcare were also sampled for key informant interviews.

3.2.2 Sampling Strategy and Sample Size

This study aimed at establishing an ethnographic account of how the local people perceive and deal with domestic animal health problems. To generate data on such perceptions and practices the study employed the purposive sampling technique whereby farmers perceived to possess more knowledge on animal healthcare were sampled for study. The criteria here included for example the possession of large numbers of animals, having been in ownership of animals for along time or simply being a farmer who is known to be articulate in discussions and also ready to provide information. Factors such as accessibility of the respondent's place of residence, age as well as gender considerations received major attention. Additionally individuals known to be custodians of vast knowledge and expertise in ethnoveterinary practices were identified using the purposive sampling technique. Specifically, the snowballing or chain sampling was instrumental in the identification of such individuals. Mugenda and Mugenda (1999) note that the technique is useful when the population that possesses the characteristics under study is not well known and there is need to find subjects. So initial subjects with the desired characteristics (special ethnoveterinary knowledge) were identified using the purposive sampling technique and then the few identified subjects were relied upon to name other individuals that they knew had similar knowledge or experience. This sampling technique helped identify individuals such as herbalists, bonesetters, castration specialists, dehorning specialists, retained placenta removal specialists,

docking specialists, false teeth (*jimo*) extractors, ear notching/slitting specialists, quack veterinarians, privately practicing retired veterinarians as well as other private veterinary practitioners. Government employed veterinarians were also sampled for interview.

3.2.3 METHODS OF DATA COLLECTION

3.2.3.1 Open-ended /in-depth interviews

The first task carried out by the researcher was the pre-testing of the open ended /in-depth interview guide for livestock farmers. Six interviews were conducted and relevant corrections made to the guide. This especially covered areas where the questions appeared ambiguous or repetitive.

Qualitative data on perceptions and practices regarding domestic animal healthcare were then collected using this interview guide. The purposive sampling method was used to identify livestock farmers for interview. A total of 32 farmers were interviewed using this instrument. The researcher himself conducted the interviews. Note taking was the main means of data recording and field assistants also assisted in note taking so that errors of omission or distortion could be minimised. Note taking by field assistants was also used as a means of training them and letting them grasp the research skills. The interviews were conducted in Dholuo and recorded in English. Some phrases or words that could not be translated on the spot were left in Dholuo so as to avoid distortion of the information given.

3.2.3.2 Key Informant Interviews.

Individuals who are "information rich" as far as domestic animal husbandry is concerned were purposively selected for Key Informant Interviews. Traditional healers such as herbalists, bonesetters, castration specialists, dehorning specialists, retained placenta removal specialists, docking specialists, false teeth (*jimo*) extractors, and ear notching/slitting specialists were interviewed so as to give more concrete data on the perceptions and practices regarding domestic animal healthcare. Other key informants included livestock traders, livestock farmers whose animals had been treated using ethnoveterinary medicine, quack vets as well as retired veterinary clinicians. Snowballing technique of sampling was especially useful in reaching such individuals with unique knowledge, skills and experience.

Key informant interviews were also conducted with government veterinary officers. A total of 20 key informant interviews were conducted. Nine of these were recorded through note taking while the other 11 were tape-recorded. These were later transcribed into the computer. Interviews with government veterinary personnel were done in English but with the others they were done in Dholuo and later translated into English with some words being retained in Dholuo so as to live the information intact where it was suspected that translation may distort the message. Tape-recording was important as it helped yield verbatim reports about

the perceptions and practices regarding animal healthcare and how these relate to human healthcare. The researcher himself solely conducted key informant interviews so that probing could be done on the areas that needed clarification.

3.2.3.3 Participant Observation

Participant observations were continuously conducted throughout the research period. The researcher and the field assistants would occasionally join livestock farmers in the fields where they were grazing the animals, watering points and even in their homes to participate in their activities, ask relevant questions and later record information that was deemed important. When in the grazing fields the researcher participated in the identification of illness vectors such as ticks and tsetse flies. Often the researcher would help to remove the ticks from animals either by hands or by pricking them by thorns. At the watering points vectors such as leeches were identified and the researcher often helped in removing them by hands from animals that they clung on. At the homes the researcher participated in various activities such as castration, docking and dehorning. Other places where participant observations were made included slaughtering places, livestock markets as well as fields where ox ploughing was being done. In the slaughtering places the researcher would help by holding the legs as slaughtering was done. In the process the researcher observed post-mortem identification of health problems e.g. in the identification of plythene papers that had been ingested by an animal or in the screening of the great bowel (*oduko*) for possibility of the great bowel illness (*tuo mar oduko*). The method was quite important as it helped yield data on what people value in animals. What qualities do they go for when for example buying animals? The method also yielded various illness prevention strategies as well as treatment behavior. In most of these observations the data collectors were trained to remain as discrete as possible so as to yield data naturally rather than influence the observations. In situations where this could not be realized direct observations were resorted to.

3.2.3.4 Direct Observation

In situations where it was impossible for the researcher to immerse himself into the activities of the farmers, the researcher employed the technique of direct observation. Visits were made to the herding fields, watering points as well as homes and records made about the relevant observations. The researcher observed the bodies of animals for any manipulations, herding practices meant to avoid disease contraction by animals as well as checking places where animals were kept at home for any disease prevention strategies. Observations were made and questions asked about cuts on the ears of animals such as sheep, dogs, cattle, donkeys and goats. Likewise the researcher also observed and asked questions about sticks tied around the legs of a cow and goats with bleeding horns. These yielded data about such practices as

ear-notching, dehorning, docking, bonesetting as well as feeding and disease prevention strategies. In general direct observation provided data about animal health enhancing techniques that farmers employ in their day to day activities.

2.3.5 Focus Group Discussions (FGDs)

FGDs were instrumental in clearing the air over gray areas as well as to generate additional data that could not be obtained from individual interviews as discussions involving several people would provoke and inspire participants. In total four FGDs were conducted with an average of eight participants for each FGD. Two FGDs were conducted with female farmers and another two done with male farmers. Young male farmers were grouped differently from elderly male farmers and the same approach also carried out with the female farmers. The differentiation was meant to find out possibilities for knowledge differences in terms of age and gender. It was also meant to yield homogenous situations so as to reduce possibilities for domination of the discussions by some participants, say the elderly over the young or the males over the females.

During FGD sessions ranking was also done as part of group exercise to line out the various kinds of strategies that farmers resort to while seeking treatment for their animals and finding out the order of preference, i.e. which would they resort to first, second, third, etc.

2.3.6 The narrative method

In this method farmers were asked to recite incidences in their lives when they encountered animal health problems and to explain the course of action they took. This was useful in finding out animal health problems prevalent in the area as well as the main remedies farmers resort to while addressing these problems. The narratives also helped in establishing the main issues that guide or underlie health-seeking behavior for animals. These narratives were collected from farmers identified through purposive sampling. A narrative guide was developed, tested then the field assistants administered it with the farmers.

3 ETHICAL CONCERNS

The study has respected the research participants' rights to privacy, dignity, safety and self-determination. To address these issues informed consent of the participants was sought at the commencement of and throughout the study period. Only willing participants were engaged in the research activities. Anonymity of the participants has been ensured through the use of pseudonyms in the presentation of the research findings. The research tried as much as possible not to interfere with the privacy of the research participants by letting the participants open up their own world for investigation rather than being coerced into co-operation. Data collected were treated with confidentiality. Such information as well as research materials were only handled or shared by the research team. In a few situations of severe need, e.g. serious sickness coupled with lack of

money to seek medical attention, the researcher came out to give little help to the affected participants. Sometimes the researcher also assisted monetarily in the treatment of sick animals in households of poor farmers

3.4 DATA ANALYSIS

As can be realized from the data collection methods, this study generated only qualitative data and therefore relied on qualitative techniques of analysis. Content analysis was the main technique used to analyze data generated through FGDs, key informant interviews, in-depth interviews and even data obtained through observations and narratives.

CHAPTER FOUR

ANIMAL ILLNESSES AND FARMERS' ETHNOVETERINARY PERCEPTIONS.

Livestock farmers in Nyang'oma community have an elaborate knowledge about the various illnesses that afflict their domestic animals. This knowledge spans across the names of illnesses, their symptoms, causes, the reasons when these illnesses are common as well as how to prevent and cure these illnesses.

4.1: Names of animal illnesses, their causes, symptoms, season's prevalence and treatment options.

Livestock illnesses have so far been identified by their local vernacular names. The study focuses more on the semantic perceptions and therefore illness, rather than disease as differentiated by Kleinman (1980) will be the centre of interest.

It is worth noting that getting a one-to-one fit between ethnoveterinary semantic systems and western-scientific ones is very rare. In some cases two or more illnesses can be identified with different names yet the symptoms tend to be similar. In other cases the symptoms used to identify a particular illness could also include symptoms identified with another illness.

Kleinman sees disease as a biomedical concept referring to particular malfunction in the body of an organism. He differentiates this from illness, which he sees as a social conception of a particular sickness. The social conception of illness relies heavily on the physical signs and symptoms rather than on the biomedical understanding which is more based on the functioning of the internal organs of an animal's body. This study being interested more on the perceptions therefore leans more heavily on the illness side rather than focusing on the disease. Even if the lay people use biomedical terms, they will tend to refer to their local meaning rather than the true biomedical understanding of the term.

Table 4.1 shows the various animal illnesses commonly identified by the farmers of Nyang'oma. The table identifies the perceptions people have about these illnesses in terms of how the illnesses present themselves and what causes them. Finally the table gives the various categories of animal health service providers and remedial approaches that are commonly resorted to.

4.1.1 Commonly identified animal illnesses

From Table 4.1 it is also recognized that the perception of the cause of illness as well as how the illness presents itself in animals has direct influence not only on how the illness is named but even on the kind of remedial action to be taken. A few examples will help elaborate this point.

1.1.1.1 *Aremo*

Aremo is an illness condition in cattle usually identified early enough before it can pose serious threat to the victim. A cow that is about to be attacked shows signs of restlessness and abnormal agility. The perception is that there is too much blood in the body system of such an animal. To prevent serious attack, blood letting is recommended to reduce the blood volume in the body. This is commonly done through a practice locally known as *boro* (venipuncture). Using a bow and an arrow that is specially made for this practice the great neck vein is punctured and blood is allowed to flow out. This blood can be trapped and later cooked to provide a delicious meal. Currently the process has undergone some form of modernization whereby even syringes can be used to draw blood from this vein.

In a case of serious attack the illness is characterised by limping, rough and dark hair coat as well as dullness. It is believed that *aremo* can kill a cow that is very fat and looking healthy. The term *aremo* derives from the Luo word *remo*, which directly translate into blood. This is due to the perception that blood is where the problem lies. Thus, the name derives from the perceived problem and the treatment or preventive remedy is also directed at the problem i.e. reduction of the blood.

A preliminary treatment would involve massaging the affected limp region with warm water or cloth dipped in hot water. As one farmer said "*I wange gi pi maliet, imuro pi to ikiro kuom dhiang*" (You massage it with hot water, You warm water then pour on the body of the cow). This is done to heat up or to lighten (*bwogo*) the blood that had began to clot in these regions so that it can resume normal flow thereby relieving the condition temporarily before further treatment is provided.

For proper treatment there are specialists who know various kinds of herbal medicines that are concocted together then administered to the cow victim orally. Such herbs include *dwele* and *onyalo hiro*, which is usually mixed together, crushed, boiled then allowed to cool and administered orally to animal victims. However modern veterinary treatment is also often sought to treat this condition.

The fresh green grass that cows feed on at the beginning of a wet season, it is believed, causes the illness. The illness is known to strike in the morning just when the sunshine starts being hot and especially when cattle are left tethered to their pegs (*loch*) in the shed for along time after the sun has started shining. Some form of traditional vaccination where blood of the already affected animals could be introduced into the body of unaffected animals through inflicted wounds is known by some farmers to be preventive against this illness.

1.1.1.2 *Achany*

Another illness *achany* derives from the Luo word *chanjo* that literally translates into walking stiffly as if the feet are sore. The condition is identified by limping or wobbling in movement resulting from sores and wounds that develop between the hooves of an animal as a result of walking on a hard, dry and hot surface in search of pasture and water during the dry sunny season.

The direct reaction to the condition is to take the cow victim to a wet or muddy place from where the wounds would be cooled and softened so as to heal. Certain medicinal plants are also recommended. *Dgaka* (cactus) leaves can be cut and placed from where the affected cows can step on them and as these break, their sap flows into the wounds thereby “burning” the wounds leading to healing. Solutions of potassium permanganate, *Omo* detergent and table salt can also be made and sprinkled on the hooves. This is believed creates a “burning” effect or disinfection that causes healing. The same solution is also to be drunk by the affected cows to “burn” the affected parts of the mouth, which are usually also affected making saliva to ooze freely from the mouth of the victim. Modern veterinary drugs and injections are also often used to relieve the condition.

1.1.1.3 *Achur*

An illness condition known as *achur* derives from the Luo word *chur*, which literally translates to roaring. It is a condition that is identified with breathing difficulty in animals. Nyang’oma farmers say that post-mortem done to an animal that dies of this condition reveals abnormal colouration of the lungs. The illness attacks mainly goats but is also common with cattle and sheep.

1.1.1.4 *Athung’a*

In some instances another term, *athung’a* is used and describes almost a similar condition as *achur*. *Athung’a* is derived from the word *thung’* which directly translates to breathing difficulty. These conditions are perceived to result from poor sanitation as well as from too much dust during the dry seasons of the year. A direct response to the breathing difficulty is to apply herbal medicine called *andarusi* (*Rhynchosia elegans*). This is pounded into powder and administered through the nose. The idea is to make the animal victims to sneeze out (*jir*) the “bad” things and clear the respiratory tract. The same medicine is also used in treating a similar problem as well as madness in human beings. Herbal medicines administered orally are also common. Additionally, modern veterinary drugs and personnel are also consulted.

1.1.1.5 *Aginga*

Aginga is a term that the Nyang'oma livestock farmers use to refer to a calf illness condition whereby swellings develop in the region just under the ears. The term *ging'* or *ding'* in Dholuo means swelling around the neck close to the ears. It is a condition common also in human beings. Among calves swellings develop in the region below the ears and the farmers believe that too much milk left for the calf to suckle causes this illness as well as the hairs swallowed in during suckling. A preventive strategy therefore is to leave only a little milk for the calf to suckle after milking has been done.

For treatment, it is perceived that the swellings contain bad blood, which should be allowed to flow out to expedite recovery. The practice usually is to chop off/slit or notch the ears to let the "bad" blood flow out. The swollen parts can also be burnt/cauterized using a hot metallic plate or hot stone as a means of heating up the blood that has clotted in the swollen regions so as to resume normal flow and allow for recovery. Modern veterinary treatment techniques are also often sort for this condition.

1.1.1.6 *Aluny*

Aluny is an illness that attacks mainly goats and dogs though it is as well a problem with cattle and sheep. The name derives from the Luo word *luny* which literally means peeling off of the skin or hair falling off. Animals suffering from this condition have hair or fur falling off and the skin peeling off such that on serious cases the flesh is left bare. Even though it is not a real problem with human beings, it is often true that when one's hair is falling off, people do use this term to refer to the condition.

It is believed that this illness is caused by *kute* (germs) that eat into the skin causing irritation which makes the affected animal scratch its body. For treatment, certain herbal concoctions may be made into a solution for washing the affected animals. A new technique whereby lubricating oil or petrol is used to wash these animals is also being practiced. Still others prefer washing the affected animals with liquid paraffin while others use *ambush* (modern sprays) to spray the affected animals. Modern vets are rarely consulted for this problem though the affected animals can be taken for communal dipping whenever these are held.

1.1.1.7 *Awir*

Another illness called *awir* attacks both cattle and goats. This illness is taken to be mysterious as the local people say it can attack and kill healthy animals without any prior notice. Farmers only recognize the illness when they see an animal moving round in circles before finally falling down and dying instantly.

The term *awir* derives from the Luo word *wirruok*, which directly translates into going round in circles. This could be as a result of dizziness. *Wirruok* is not unique to animals as the local people say that human beings also display the condition in case of tiredness, headache or due to less blood in the body. No traditional treatment for this condition was given even though farmers said that as a first aid measure they often try to administer *jandarusi* through the nose to make the animal sneeze if possibly the problem was in the animal's head.

Whenever an outbreak is detected, the people of Nyang'oma report that they make immediate efforts to let the government veterinary personnel aware of it. In fact, it is worth noting here that in case of illness outbreaks for which locals lack prior experience and therefore unable to address their treatments, the local people report that they turn to government vets for diagnosis and treatment. They are aware of the presence of laboratory facilities in government veterinary departments from where specimens drawn from sick animals or dead animals can be taken for testing to reveal the health problem bedeviling animals.

4.1.1.8 *Achiya*

Another illness *achiya* is also common among cattle and goats. The term originates from the Luo word *chiyo*, which translates to sapping, or drawing one's strength or energy. The illness leads to the wasting away of the animal's body. The animal simply grows thin and weak. The local people report that the illness has multiple causes some of them being unknown. In many cases an animal e.g. a cow whose body is wasting away is suspected of having ingested polythene bags (*jwala*). These polythene bags are perceived to be indigestible thereby interfering with the normal process of digestion and so leads to thinning and finally death. The condition is also referred to as *ajwala* from the word *jwala*.

Proper disposition of the polythene bags (keeping the environment clean) is often recommended as a preventive strategy. No treatment is known for the *ajwala* problem. This polythene problem is not uniquely cited by the Nyang'oma farmers but has also been identified by farmers from the Northeastern province of Kenya (Mandera) as a major cause of death to their precious livestock due to choking (Daily Nation/Thursday, June 19 2003).

Among goats it is also believed that the first horns to grow interfere with normal growth and so should be dehorned. If left to grow unchecked the goat will just grow thin. Dehorning makes a goat grow fat and big.

In cattle, the belief is that there are certain false teeth (*jimo*) which can grow besides the normal teeth thereby interfering with normal feeding, as they are painful when a cow is eating. This makes a cow grow

thin and weak. Removal of these *jimo* is taken to be the appropriate treatment. Once removed the local farmers believe the cow will grow fat and large.

These are some of the reasons that farmers in Nyang'oma site as possible causes for thinning. However they also contend that the real cause for thinning (*achiya*) is sometimes elusive. This is tied to the fact that sometimes an animal may grow thin at a time when there is plenty to feed on.

4.1.1.9 Perceptions of poultry illnesses

Livestock farmers in Nyang'oma identify several sickness conditions in poultry. As identified in table 4.1 these include diarrhoea and coughs. Sickness in poultry is also identified by the drooping feathers and posture as well as by the production of abnormal sounds. The colour of stool is also a pointer to whether poultry are sick or not. Very white loose stool is known to be a case of sickness. Poultry illnesses are known to come in form of outbreaks in which large numbers of chicken may die sometimes leaving some households without chicken. These illnesses are known to be very contagious and do spread very fast from the affected to the non-affected poultry. Improper disposition of a dead or slaughtered chicken carcass or its remains after eating is perceived to be the major cause of illness spread. Farmers therefore are aware that these illness outbreaks are more common in the festivity seasons such as August and December when people visit their rural homes from towns and other places of work and a number of chicken are bought and slaughtered. It is known that some of these poultry may be the sickness carriers.

Table 4.1: Animal illnesses, season's prevalence and treatment options.

CASE	ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
FY and	<ul style="list-style-type: none"> • CATTLE 	<ul style="list-style-type: none"> • Limping/ wobbling • Swellings in the tongue and mouth. • Swellings in and around the hooves. • Saliva flows from the mouth. • Hooves stick out as if going to come out. • Animal grows thin • Loss of appetite • Has fetid mouth • Body fatigue 	<ul style="list-style-type: none"> • Heat and dust entering in between the hooves. • Hard rocks which cattle walk on. • Sweating between the hooves. 	<ul style="list-style-type: none"> • Dry season when cattle walk long distances over hot dry surface. 	<ul style="list-style-type: none"> • Farmer • Quack vet • Trained vet 	<ul style="list-style-type: none"> • Hooves are massaged with warm water mixed with salt, permanganate and <i>omo</i> (detergent) powder. • Warm water mixed with salt, permanganate and <i>omo</i> (detergent) powder is given to drink. • Clean the fetid mouth with salt • Cattle taken to walk in water or wet and muddy areas. • Modern medicine used e.g. adamycine injections.. • Vaccination done before outbreak • Cut off the hooves • Apply used lubricating oil around the hooves. • Herbal medicine e.g. cactus, <i>nyangliech</i> and <i>minj radier</i> are put on the floor of the shed or pen for the cows to step on so that their sap flow into the affected hooves.
A	<ul style="list-style-type: none"> • GOATS • CATTLE 	<ul style="list-style-type: none"> • Animals grow thin 	<ul style="list-style-type: none"> • Not very clear to respondents. • False teeth (<i>jimo</i>) in cattle. • Initial horns that are not dehorned in goats. • Ingestion of polythene papers. 	<ul style="list-style-type: none"> • No specific periods. 	<ul style="list-style-type: none"> • Farmer 	<ul style="list-style-type: none"> • No proper medicine for it but can be treated with herbal medicine like <i>otangre</i> and <i>bala</i> • Can be prevented by removing the goats horns which grew at the initial stage

Table 4.1: Animal illnesses, season's prevalence and treatment options.

ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
<ul style="list-style-type: none"> GOATS RARELY SITED AMONG CATTLE AND SHEEP 	<ul style="list-style-type: none"> It makes goat groan/ heave It affects/ turns lungs Cause sudden death in fat goats <p>Its like heart failure in human beings</p>	<ul style="list-style-type: none"> Fatness Poor sanitation. Too much dust during the dry seasons. 	<ul style="list-style-type: none"> No specific periods. 	<ul style="list-style-type: none"> Farmer 	<ul style="list-style-type: none"> No treatment given Can be treated with herbal medicine e.g. <i>minya</i>, <i>tworo machon</i> And <i>jandarusi</i>.
CALVES	<ul style="list-style-type: none"> Swelling below the ears. Do not suckle. Reddish diarrhoea. Fur sticks out in a dull way. Calf lows. 	<ul style="list-style-type: none"> Too much milk suckled by the calf. Fur suckled together with milk. 	<ul style="list-style-type: none"> Any period when a calf is still suckling. 	<ul style="list-style-type: none"> Quack vet Trained vet Farmer 	<ul style="list-style-type: none"> Make cuts on the swollen part or slit the ears for the blood to flow out. Herbal medicine e.g. leaves of <i>nduma</i>. leaves of <i>kaladal</i> are pounded mixed with water and may be boiled or just given to drink. Burning swollen part with hot iron bar (cauterization) Calves should be denied some milk from the mother as a preventative behaviour
CHICKEN AND GOATS	<ul style="list-style-type: none"> Small hard swellings around the mouth of goats or beaks of poultry and their eyes Saliva foams around the mouth or beak. Chicken not able to see properly Goat's fur sticks out in a dull way. Swollen crop. 	<ul style="list-style-type: none"> Fleas Unsanitary pens 	<ul style="list-style-type: none"> No specific season. 	<ul style="list-style-type: none"> Farmer 	<ul style="list-style-type: none"> Use medicine bought from vet shop. For chicken herbal medicine e.g. pepper leaves and twigs of <i>minya</i> are pounded then mixed with <i>dawa</i> (sodium bicarbonate) and given to swallow. Kerosene is applied on swellings. Apply used lubricating oil on the swellings Apply melted cooking fat on the wounds. Rubbing the bark of herbal plant, <i>roko</i> on the goat wounds

Table 4.1: Animal illnesses, season's prevalence and treatment options.

CASE	ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
D water	• CATTLE	<ul style="list-style-type: none"> • Comes like malaria in human beings • Dropping ears. • Loss of appetite • Body trembling • Animal goes round in circles. • Fur sticks out in a dull way • Body appears fatigued. • Limping/walking difficulty. • Breathing difficulty. • Difficulty in defaecation. • Bloody faeces. • Post-mortem indicates dry great bowel. 	<ul style="list-style-type: none"> • Too much blood in the cows body. • Feeding animals on the fresh soft grass emerging during the start of the rainy seasons. • Feeding on wet grass with dew. • Hot sunshine striking cattle while still in the pen where they get tethered at night. • Tsetse fly bites. 	<ul style="list-style-type: none"> • Rainy seasons when cattle feed on fresh green grass. 	<ul style="list-style-type: none"> • Traditional venipuncture specialist • Farmer • Trained vet • Quack vet • Elder brother in-law 	<ul style="list-style-type: none"> • Venipuncture by traditional specialist. • Herbal medicine e.g. <i>dwele, oyeko, ogaka, owino, nyabungu odidi, ombasa</i> • Modern medicine e.g. Permanganate, beronil, adamycine • Permanganate is mixed with salt and water and given orally. • Massaging the body with warm water mixed with salt and the above named herbs. • Can be injected by a trained vet. • Can be injected by a quack vet. • Ear slitting to let blood flow out. • As a preventive option. Cows be released from the shed before morning sunshine's on them.
of round b)	• CATTLE • GOATS	<ul style="list-style-type: none"> • Cow goes round in circles. • Walking difficulty. • Affects brain and eyes of the animals. 	<ul style="list-style-type: none"> • Not clear to farmers • Dizziness 	No specific season.	• Trained vet	<ul style="list-style-type: none"> • Herbal medicine <i>jandarusi</i> is administered through the nose to make affected animals sneeze. • Modern vet Injections
E	• CATTLE	<ul style="list-style-type: none"> • Swellings on the body. 	<ul style="list-style-type: none"> • Cause not known • Just strikes • Possibly carried by the air (see <i>yamo</i>) 	<ul style="list-style-type: none"> • No specific period. 	• Farmer	<ul style="list-style-type: none"> • Boil squeezed, cut the salt and used oil applied onto the wound • Herbal medicine used to cure the wound (tobacco Leaves)
DA n)	• DOGS • CHICKEN • DONKEY	<ul style="list-style-type: none"> • Coughing • Chickens more 	<ul style="list-style-type: none"> • Dusty and unsanitary pens and sleeping places for chicken.. 	<ul style="list-style-type: none"> • Is a frequent disease • Dry periods 	• Farmer	<ul style="list-style-type: none"> • Medicine bought from a vet shop and administered • Use of herbal medicine to treat • No treatment given

Table 4.1: Animal illnesses, season's prevalence and treatment options.

ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
<ul style="list-style-type: none"> CHICKEN GOATS SHEEP CATTLE 	<ul style="list-style-type: none"> White watery faeces in chicken and loose stool in the other animals, which may be bloody or greenish. Poor food intake. Dullness. Breathing difficulty. Animals grow thin. Groaning in chicken. Saliva flows from the beaks. Hard swellings around the beaks and eyes of chicken. 	<ul style="list-style-type: none"> Among goats, sheep, and cattle feeding on leaves of cowpeas causes it. Feeding on new fresh grass at the start of rainy seasons. 	<ul style="list-style-type: none"> For poultry it is common in festivity seasons and especially in the dry periods when the air is dry. Among cattle, sheep and goats it is more common during the rainy season when there is green and fresh pasture. 	<ul style="list-style-type: none"> Farmer Trained vet Quack vet Friend gave farmer drug and advice on how to administer the drug Trained vet who is also a drug dealer advised farmer on what drug to use. Friend told farmer about the use of dry cell powder which farmer later administered himself. 	<ul style="list-style-type: none"> For poultry herbal medicine e.g. pepper, chamama leaves, minya etc are mixed with dawa (sodium bicarbonate) dry cell powder and kerosene are given to drink. Modern tablets e.g. tetracycline capsules, aspirin and panadol may also be given to poultry. For cattle, sheep and goats, vet injections are preferred. Cock slaughtered to avoid the spread of the disease. Just slaughtered Cooking fat applied onto the swellings. No treatment given.
CATTLE	<ul style="list-style-type: none"> Watery eyes Sometimes the pupil turns whitish 	<ul style="list-style-type: none"> Physical injury Snake saliva directed to the eye. 	No specific periods	Farmer	It was treated traditionally with <i>ngoch olayo</i> mixed with salt
GOATS	Goats don't breathe properly	Dust	During the dry season.	Farmer	Use Sodom apple (<i>ochok</i>) for <i>fito</i> (administration through the nose)
CATTLE	<ul style="list-style-type: none"> Cattle do not eat well. Cattle don't drink cold water. Stunted growth. Grows thin. 	The false teeth that may grow with the other teeth.	No specific season	<ul style="list-style-type: none"> Traditional jimo extraction specialist. Trained vet. Quack vet. 	<ul style="list-style-type: none"> A traditional expert removes the false teeth (jimo). Injections given after removal of bad teeth
DOGS	<ul style="list-style-type: none"> Dogs grow thin and does not eat. Saliva oozing from mouth <p>Dog cruel, vomits, turns round and finally dies.</p>	Affected dogs biting other dogs and spreading it.	No specific seasons.	<ul style="list-style-type: none"> Trained vet. Farmer. 	<ul style="list-style-type: none"> Injections given Medicine bought from vet shop and administered No treatment given

Table 4.1: Animal illnesses, season's prevalence and treatment options.

SEASE	ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
<p>POCHE MAG KUDOD/O YUOG/O BOTO (tick/ flea parasites)</p>	<ul style="list-style-type: none"> CATTLE SHEEP GOATS 	<ul style="list-style-type: none"> Scratches itself Goats grow thin Cause swelling to body parts Affect ears, around the eyes, under the tail, udder and under the belly 	<ul style="list-style-type: none"> Poor sanitary conditions of the pen. Grazing animals on pastures infested by ticks flea and lice 	<ul style="list-style-type: none"> No specific periods. 	<ul style="list-style-type: none"> Farmer Trained vet Quack vet 	<ul style="list-style-type: none"> Washed with acaricides e.g. Triatix Washed with paraffin Some modern medicine e.g. dawasol, norostrip were bought from vet shop
<p>NO MAR EWAL (tick parasites)</p>	<ul style="list-style-type: none"> CATTLE 	<ul style="list-style-type: none"> Causes stomach to swell Its fatal 	<ul style="list-style-type: none"> Small toads that attach themselves on maize stalks and cows eat as they feed. 	<ul style="list-style-type: none"> The harvesting period when cattle feed on dry maize stalks. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No treatment
<p>NO MAR EDHO (tick of the bladder)</p>	<ul style="list-style-type: none"> GOATS CATTLE 	<ul style="list-style-type: none"> Post-mortem reveals swollen gall bladder. cow walks as if suffering from <i>awir</i> 	<ul style="list-style-type: none"> Not known 	<ul style="list-style-type: none"> In the rainy season. 	<ul style="list-style-type: none"> Farmer 	<ul style="list-style-type: none"> Modern vet Injections
<p>NO MAR AUGO (tsetse fly parasites)</p>	<ul style="list-style-type: none"> CATTLE 	<ul style="list-style-type: none"> Small hard faeces Difficulty in defaecation as faeces is dry. Saliva flows from the mouth. Poor food intake. Dry great bowels. Watery nose Coughing Dullness Fur sticks out along the backbone in the morning and evening hours. 	<ul style="list-style-type: none"> Tsetse fly bites. 	<ul style="list-style-type: none"> Mainly in the rainy season when it is bushy and there is a lot of tsetse fly. Also common in regions with a lot of bushes. 	<ul style="list-style-type: none"> Trained vet Quack vet Farmer 	<ul style="list-style-type: none"> Modern vet Injections Dipping the animals. Small red tablets bought from the shop then given through injections Herbal medicine e.g. roots of <i>rabong'o</i>, leaves of <i>dwele</i> are boiled and given orally No treatment

Table 4.1: Animal illnesses, season's prevalence and treatment options.

DISEASE	ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
TUO MAR ODUKO (Illness of the great bowel)	• CATTLE	<ul style="list-style-type: none"> • Post-mortem reveals dry great bowels (<i>oduko</i>). • Dulness • Fur sticks out in a dull way. • No proper food intake. • Problems in defaecation. • Animal prefers sleeping under the shade. • Saliva flows from the mouth. • Watery eyes. • Walking difficulty. 	• Not known	• In the dry season.	<ul style="list-style-type: none"> • Farmer • Friend gave farmer herbal medicine which he administered • Quack vet • Trained vet 	<ul style="list-style-type: none"> • Water mixed with <i>omo</i> (detergent) is given to drink to clear the illness from the bowel. • Herbal medicine used • Modern vet injections.
TUO MAR BLAWO (Illness of the saliva)	• CATTLE	<ul style="list-style-type: none"> • Post-mortem reveals destroyed lungs. • Saliva foams at the mouth • Limping in cattle • Cattle pass out small bristle faeces. • No feed intake 	• Not known.	• December	<ul style="list-style-type: none"> • Trained vet • Farmer 	<ul style="list-style-type: none"> • Injection given • Bought medicine from a vet shop and administered • Certain modern medicine syrup given to the cattle • Mouth oozing saliva was cleaned up with salt
TUO MAR YAMO (Illness of the winds)	<ul style="list-style-type: none"> • GOATS • CATTLE • SHEEP 	<ul style="list-style-type: none"> • Goats suffered from this disease after eating placentas • Swollen stomach • Swellings on the body • Swollen throat 	<ul style="list-style-type: none"> • Not clear. • Believed to spread with the wind. 	• No specific periods	<ul style="list-style-type: none"> • Trained vet • Quack vet • Farmer 	<ul style="list-style-type: none"> • Injections given • Treated with herbal medicine e.g. <i>rachier</i>, <i>ochol</i>, <i>nyangtech</i> and leaves of <i>kaladan</i>
NG'OK (Vomit)	<ul style="list-style-type: none"> • CATS • DOGS 	<ul style="list-style-type: none"> • Dulness of the body and vomiting. 	• Cause not known.	• No specific period	<ul style="list-style-type: none"> • Farmer 	<ul style="list-style-type: none"> • Injection • No treatment given

Table 4.1: Animal illnesses, season's prevalence and treatment options.

ILLNESS	ANIMAL ATTACKED	DESCRIPTION OF CONDITION	PERCEIVED CAUSES	SEASON'S PREVALENCE	THERAPY PROVIDERS	TREATMENT OPTIONS
LUINY Itchy peeling skin	<ul style="list-style-type: none"> • DOGS • GOATS 	<ul style="list-style-type: none"> • Fur falls off • Postmortem reveals swellings on the intestinal linings. • Wounds on the skin. • Scratching of the body. 	<ul style="list-style-type: none"> • Poor sanitary conditions in the pen 	<ul style="list-style-type: none"> • No specific seasons. 	<ul style="list-style-type: none"> • Farmer • Trained vet 	<ul style="list-style-type: none"> • Modern vet injections • Dipping • Washing with medicine bought from shops. • Washed with lubricating oil. • Herbal medicine such as <i>minj radier</i> is pounded and mixed with water then given goats to drink and also washed with.
BUKUNO Itchy under the skin	<ul style="list-style-type: none"> • CATTLE 	<ul style="list-style-type: none"> • Test has wounds and produces blood when being milked. 	<ul style="list-style-type: none"> • Caused by evil eye (<i>dhoho</i>) 	<ul style="list-style-type: none"> • Mainly when a cow is being milked. 	<ul style="list-style-type: none"> • Herbalist 	<ul style="list-style-type: none"> • Traditional herbalists know of herbs that are pounded, mixed with fats and smeared on the teats.
BUKONI (Borne)	<ul style="list-style-type: none"> • CALF • DOGS • SHEEP 	<ul style="list-style-type: none"> • Swollen stomach. • Lose of appetite. • Growing thin. 	<ul style="list-style-type: none"> • Cause not known. 	<ul style="list-style-type: none"> • No specific period. 	<ul style="list-style-type: none"> • Farmer given medicine by herbalist • Quack vet 	<ul style="list-style-type: none"> • Use of herbal medicine to treat the disease • Bought modern medicine from vet shop to treat

From table 4.1 several other information may be deduced. A few explanations and descriptions will suffice.

4.1.2 Identification of animal illnesses

The people of Nyang'oma identify sickness in an animal by looking at the following signs:

- Rough hair coat/Erection of hair or fur.
- Inability to eat well.
- Difficulty in movement/limping
- Restlessness/agility
- Too loose or too hard stool.
- Colour and size of stool.
- Blood in stool.
- Production of abnormal sounds e.g. coughs or groaning
- Dullness
- Wounds or swellings.
- Saliva flowing from the mouth.
- Breathing difficulty.

- Drooping posture/feathers in birds.
- Running nose.
- Watery eyes.
- Thin or slender body.
- Observable parasites in the body, e.g. ticks, lice, flea etc.

Sometimes it is difficult to diagnose an illness when an animal is still alive, and only post-mortem examination can show what the problem was. Local farmers have their own indigenous ways of conducting a post-mortem examination. They are especially keen on examining internal organs such as liver, heart, lungs, stomachs, intestines and even blood. This examination can even prompt the throwing away of parts or the whole of the carcass depending on the seriousness of infection.

1.3 Perceptions about causes of animal illnesses

The cause of illness is another important area of concern for the local people and even here their perceptions tend to be quite elaborate. The farmers tend to perceive illnesses as either resulting from natural or supernatural forces. Natural causes of illness are perceived as follows:

- Originating from ectoparasites e.g. lice (*nyuogo*), ticks (*okuodo*), fleas (*omboto*) as well as other worms (*njokni*) and germs (*kute*) and leeches (*ochwe*).
- Poor feeding.
- "Bad" blood in the body/too much blood in the body.
- Snake bites.
- Physical injuries.
- Contagion.
- Ingestion of indigestible materials, e.g. polythene bags.
- Poor sanitation.
- Abnormal growth such as false teeth (*jimo*).
- Dust.

On the other hand supernatural illnesses result from:

- Witchcraft (*Ndagla*) e.g. somebody planting some magic in the home, in the cowshed (*kul*) or in the goat, calf and sheep pen (*abila*) such that domestic animal health simply deteriorates.
- Misfortune can strike animals because of misconduct of the owners of livestock against the ancestors or the departed. It is a popular belief that in case a dying person asked that a particular person produce an animal or that a dying person pinpointed a particular animal to be slaughtered in

the funeral when that person dies, it would be improper to go against such a wish. Disobeying such demands would lead to misfortune whereby all animals belonging to the offender could die.

- Disrespect to the elderly people could also lead to curses (*Kuong'*) from them. Their bad words are believed can cause harm that can as well affect the health of livestock belonging to the offending party.
- Another source of harm to animals can result from evil eyes. It is important to note that Nyang'oma farmers make a distinction between two types of effects of the evil eye (*oir/juog wang'*). There is the *sihoho*, which applies more to human beings. In this condition the evil eyed person is known to injure the victims by looking at the food they are eating. This food once swallowed goes bad in the stomach thereby causing severe stomachache to the victims. Treatment for this condition is discussed in chapter six that deals with how ethnoveterinary perceptions and practices relate to human health. The other effect of the evil eye is where the evil is directed on the external body parts. In this case wounds or swellings may develop on certain parts of the body and these are often so painful. The condition is common in both human beings as well as on animals and is locally referred to as *dhoho*. The illness of the udder and teats that frequently occurs just after birth is considered a case of *dhoho*. This perception could be as a result of the swollen nature of such affected udder and teats, which gives the impression that such a cow has a lot of milk. This makes farmers think that envious individuals may want to cause harm to the animal to prevent the owner from reaping the perceived high milk productivity of the cow. Local modern veterinary practitioners however insist that this condition, which they refer to as mastitis, is a bacterial disease and therefore has nothing to do with evil eye. More on supernatural sources of illness is highlighted in the next chapter in the section that deals with magico-religious issues.

1.1.4 Local animal illness therapy providers

Finally table 4.1 gives the range of therapy providers that are often at hand whenever an animal illness has been recognized. These include the farmer himself or herself and relatives. Specialists are also often sort and these often include traditional practitioners, trained vets as well as quack vets. Friends also often give a helping hand or pieces of advice. These are explained better in the next chapter that deals with ethnoveterinary practices.

1.2 The status and sociocultural role of domestic animals.

Farmers in the community of Nyang'oma keep various kinds of domestic animals. Chief among these are cattle, donkeys, sheep, goats, poultry, cats and dogs. These animals serve different though in several cases complementary roles. Because they serve different social, economic and cultural roles, the animals are also

ranked according to their value. This ranking plays a very important part in the ethnoveterinary practices of the Nyang'oma farmers with some animals being accorded greater care than others. Table 4.2 outlines some of these roles and values placed on specific domestic animals.

4.2.1 Grade animals

In economic sense more value is attached to grade animals (*locally referred to as chiayo mar gradi*) than animals traditionally indigenous to the community of Nyang'oma. The difference in value has to do with the cost incurred in the procurement of such animals as well as the expected benefits. Grade animals tend to be more expensive when being bought. On the other hand they fetch more money for the farmer when sold or when their products such as milk, meat or eggs are sold. These animals mature faster and so within a small period of their purchase, they will start bringing good income to the farmer especially if given better treatment. In addition these, grade animals tend to be more vulnerable to tropical diseases and harsh environmental conditions such as those of Nyang'oma. For these reasons farmers tend to be more sensitive and more responsive to the needs of such animals. These animals are thus likely to receive preferential treatment in terms of feeding, housing as well as disease control measures over the indigenous animals.

In one farmers' home an interesting observation was made. In this home grade and indigenous goats, sheep, cattle and poultry are kept. It was observed that the grade animals are given special feeds and for treatment, veterinary personnel from Bondo town are periodically called to attend to them. According to a son of the farmer, the indigenous animals only receive such services second hand. They only gain from the fact that feeds may remain and leftover given to them. In treatment, a sick indigenous animal will benefit from the periodical visits by vets that are mainly targeting the grade animals. The drugs that are left over from the treatment of grade animals may be administered to these animals e.g. in terms of vaccination or sprays. This preferential treatment is mainly due to the high value attached to the grade animals and also due to the farmers' awareness of the vulnerability of grade animals to the harsh environmental conditions of Nyang'oma. The indigenous breeds are considered as being of lower value and also well adapted to the prevailing environmental conditions.

The difference in the value and status of the animals does not stop with the distinction between grade and indigenous domestic animals. Among these indigenous animals, different socio-cultural and economic roles are served by different animals, which place them at different status levels in the eyes of the farmers.

2.2 Cattle, sheep, goats and poultry

Indigenous cattle, sheep, goats and poultry occupy the second highest status in the minds of Nyang'oma community farmers. These animals are commonly slaughtered to provide food for visitors. Poultry may be slaughtered for a few visitors and as the number increases decision can be reached whether a goat, sheep or cow is more appropriate for the occasion. These animals are also kept for ritual purposes. Cattle and goats are used as bride wealth. Chicken are precious animals and eaten to accomplish these ritual occasions. Whenever a taboo is broken chicken have to be slaughtered and eaten in a cleansing ceremony. Sheep are also used on similar occasions. Black sheep is especially important in treating some people who are being haunted. In a practice called *dilo*, the black sheep is slaughtered and its carcass used in certain magical ways that are believed to scare away the ghosts haunting the person in question. These animals are usually slaughtered at intervals so as to provide food to the mourners. The study established that when they fall sick or die the carcass is rarely disposed of. Instead they are carefully slaughtered to provide meat. It is only in very rare circumstances where the illness or death is viewed with a lot of suspicion that such animals may be thrown away.

Apart from the provision of meat as food and their ritualistic functions, these animals also serve several other functions. These include provision of milk, butter and blood from the cattle. Cattle, sheep and goats provide hides and skins which may be sold to provide money for other domestic uses or may be used as clothing, bedding or serve as containers. These animals' dung and droppings are important source of manure for the farmers' gardens. Poultry provide eggs that may be eaten at home or sold for money. The animals may be sold to provide money to solve other domestic problems such as payment of school fees, provision of clothing, food and shelter and to attend to many other problems. In addition to these, cattle are also used in ploughing. Most farmers in the community depend on ox-drawn ploughs to till their gardens. In fact cattle are still so highly valued. Ocholla-Ayayo (1976:34) captures this high value placed on cattle when he says that:

The Luo were dependent on cattle for most of their socio-economic and cultural necessities, many of which cattle still fulfil, but cattle were and still are, being possessed for prestige. In defense of the cattle their own lives were less important. They would gladly risk their lives to defend their herds or as in the past, to pillage (peyo) those of their neighbours.

Suda C. A. (1986: 126-167) also captures this high value placed on cattle among small-scale farmers in Siaya and Kakamega districts. She says that cattle are considered a higher status animal than sheep and goats. Cattle are the most preferred and highly valued animal. Suda continues to say that these preferences are also reflected in the farmers' management practices. Given the social and economic role of cattle in the community social structure, a major livestock management priority in the two districts is to improve cattle production.

For all these many functions therefore it is not surprising that cattle, sheep and goats are given special attention and in case of sickness will get more immediate attention. To use one of the farmers' phrases "you have to sacrifice your time and money to tend to your livestock (cattle, sheep, goats and poultry) because they are your wealth". Many farmers therefore put more resources in the care of the more socio-culturally and economically valued livestock (cattle, sheep, goats and poultry) and less on animals with low value such as monkeys, cats and dogs. From table 4.1 it is recognizable that farmers are more aware of illnesses afflicting cattle, sheep, goats and poultry and even know of several strategies of responding to such illnesses. On the other hand there is apparently low levels of awareness when it comes to health problems afflicting cats, dogs and donkeys.

4.3 Donkeys

On their part, donkeys are used for several economic activities. During the research period it was claimed that some members of the Nyang'oma community eat donkey meat. However that is not the main reason why they are kept. Most farmers do not eat donkey meat and so when they die the carcass is just thrown away or buried. The major purpose for keeping donkeys include ploughing as well as ferrying water and carrying other things for long distances. They are the local beasts of burden. Other donkey keepers believe that donkeys also play security roles in the homes where they are kept. It is believed that donkeys often frighten away intruders such as thieves, wizards and wild animals including hyenas and leopards. For these purposes procurement of donkeys is not easy. Unlike cats and dogs that are procured free of charge, donkeys are bought. However donkeys are often not given medical treatment. Farmers claim that donkeys rarely get sick and whenever one gets sick, it is usually as a result of an outbreak that kills large numbers of donkeys without treatment. No treatment is usually offered. But this again has to do with the rather low status donkeys are accorded when they are compared with cattle, sheep, goats and poultry.

4.4 Dogs

As has been noted above dogs are found on the lower side of the status ladder. Many farmers keep these animals just for security purposes. Dogs are kept to be guards that scare away intruders such as thieves or wild animals such as hyenas, leopards and scavenging birds including hawks and eagles that may be dangerous to human beings as well as to the other domestic animals. Dogs are also kept by several residents of Nyang'oma to assist in hunting, a popular pastime activity also meant to yield wild meat as a supplement to the daily diet of the Nyang'oma residents. In addition to these, dogs are kept to scare away crop pests such as monkeys and squirrels from the gardens. Some farmers also keep them as pets. However, the claim that dogs are kept as pets is sharply contradicted by the kind of care most residents give to their dogs. A pet is a likable animal regarded with much affection. Total care is rendered to such animals. They should not be neglected and only

ned to at times of need. While dogs serve the several purposes named above most farmers do not give special care to them. Dogs are fed only on what remains from the owner's meals and during periods of famine the left over may be hard to come by meaning dogs have to scavenge for their own food. Only a few dog keepers give them special food.

It is very rare to find a dog keeper who provides medical treatment to sick dogs. They are usually left to recover by themselves. In fact when dogs contract serious illnesses such as rabies (*siwawo*) where the dog becomes mad and runs around biting anything that comes its way, most dog keepers instead of offering treatment chase such a dog out of the home or just ensure that the dog is killed. Such dogs are often killed in very cruel ways such as being cut with *panga* or pelted with stones until they die. Sometimes they are simply dropped down a deep pit and left to starve to death. These unkind treatments are mainly due to less economic, social and cultural value attached to the dogs. Sometimes the farmers argue that the dogs know of a particular kind of grass which when they are sick then they will eat and recover. So they don't have to offer treatment. The study also observed that dogs sometimes eat some grass when they are coughing or when they are having stomach problems. Once they have eaten the grass they appear relieved. However this should not be a good reason to fail offering treatment to these animals because the true medicinal value of such grass has not been established. It could be that the dogs resort to such actions out of desperation. Such reasoning only arises because of the low value attached to dogs. In fact even in terms of procurement, dogs are often got free of charge. Owners acquire them by simply going to a home where a dog has given birth and selecting a puppy in a process called *Mako guok* (identifying, selecting and carrying the dog home). Very few people sell or buy dogs.

5 Cats

Occupying more or less equivalent status position with the dog is the cat. This is also procured in a similar way as a dog, through the *meko* (selection and taking home) process. Cats are not bought but procured free of charge. At home they are kept to keep off snakes, rats as well as cockroaches. Other people also tether cats in their gardens to scare away squirrels from destroying crops though this is a rare practice. Cats are also kept because they are likable things (pets). However cats are rarely given medical treatment. Most farmers report that this is because cats rarely suffer from illnesses. Some farmers insist that cats have no economic value and do not deserve any treatment that sucks up money. Just like dogs, cats are also fed on food remains from their keepers' meals. No special food is given to them. When a cat or a dog gets sick at the same time as either a pig, sheep or cow, then the latter will receive first and more immediate attention than either a cat or a dog.

The value attached to an animal is more pronounced when one pays a visit to the livestock market. While pigs, goats, sheep and poultry are always in the market during market days, it is only in rare occasions that

Donkeys are found being traded in the markets. Cats and dogs are never found being sold in the markets. Treatment of animals is therefore determined also by the value attached to these animals. This finding challenges the theoretical framework of this study that puts much stress on the way illness is perceived as being the determinant of the treatment option to be sought. Thus it is possible to find a farmer who knows what illness is bedeviling an animal such as a dog and even the right treatment to be given but fails to treat the dog because of the less value that is accorded to a dog. The *siwawo* problem cited above is a case in point.

Table 4.2 below gives a summary of the socio-economic and cultural roles that are attached to various domestic animals.

Table 4.2: Socio-economic and cultural role of domestic animals

DIVISION OF DOMESTIC ANIMALS	DOMESTIC ANIMALS						
	CATTLE	GOATS	SHEEP	CHICKEN	DONKEY	DOGS	CATS
PROVISION OF FOOD ITEMS	Provide food inform milk, meat and blood. Also Provide butter from the milk. Cows' urine are used in preserving/ preparing butter milk.	Provide food inform of milk and meat.	Provide food inform of meat	Provide food inform of meat and eggs.	Provide food inform of meat and milk to some members of the community.	Used for hunting to provide game meat	
PROVISION OF MONEY	Sold to provide money.	Sold to provide money for other family expenses.	Sold to provide money to meet other family expenses.	Plus eggs are sold to provide money for buying other things.	Often sold to provide money for other domestic expenses.		
CLEANING OF THE COMPOUND	They clear the compound by grazing on the grass		They clear the compound by grazing on the grass		They clear the compound by grazing on the grass		
ALERTING FUNCTIONS				Cocks alert people on time i.e. they crow at particular times of the day.	Donkeys alert people on time i.e. they bray at particular times of the day.		

Table 4.2: Socio-economic and cultural role of domestic animals

ROLE OF DOMESTIC ANIMALS	DOMESTIC ANIMALS						
	CATTLE	GOATS	SHEEP	CHICKEN	DONKEY	DOGS	CATS
PROVISION OF BEDDING AND OTHER MATERIALS	Provide hides for making several items like shoes, bedding and containers. Provide cow dung for smearing huts	Skin used as bedding, clothing and as containers	Skin is used in making bedding, clothing and containers Provision of wool used in making woolen materials.		Their skin is used for making belts and bags		
USED AS RAUGHT ANIMALS AND FOR OTHER AGRICULTURAL PURPOSES	Used for ploughing Provide cow dung for manure.	Their droppings are used as manure.	Their droppings are used as manure.		Are used for ploughing Are used as beasts of burden transporting heavy loads. Dung Provide manure to farmers		
PROVISION OF SECURITY				Provide security. It is believed that chicken can alert people about strangers and dangerous animals. That they make certain sounds when they feel in danger (<i>kur</i>).	Provide security. They identify and ward off bad things entering the homestead at night	Provide security in the home both at night and during the day Guard livestock Guard garden against being destroyed by monkeys, squirrel etc	Provide security. Used to keep off cockroaches, rats, snakes, spider from entering the house
WEDDING OBLIGATIONS	Are used for paying dowry or bride wealth.	Used for paying dowry or bride wealth.					

Table 4.2: Socio-economic and cultural role of domestic animals

ROLE OF DOMESTIC ANIMALS	DOMESTIC ANIMAL						
	CATTLE	GOATS	SHEEP	CHICKEN	DONKEY	DOGS	CATS
USED IN OTHER RITUALISTIC FUNCTIONS		Used in ritual ceremonies such as being slaughtered in rain rituals, funerals and other related rites	Used in ritual ceremonies such as being slaughtered in rain rituals, funerals and other related rites. A black sheep is used to magically ward off evil spirits believed to be haunting someone (<i>dilo</i>).	Used for ritual purposes e.g. slaughtered in situations where one committed taboo as well as other ritual cleansing ceremonies.			

CHAPTER FIVE

ETHNOVETERINARY PRACTICES BY NYANG'OMA FARMERS.

This section addresses the preventive and curative practices employed by livestock farmers in Nyang'oma Division. It also explores the dynamics surrounding health-seeking behaviour for animals.

5.1 PREVENTIVE STRATEGIES FOR ANIMAL DISEASES

The need to maximise on the productivity of domestic animals has ensured that farmers not only render services to cure animal illnesses but also engage in preventive action. However, farmers do engage in some dangerous practices in their endeavour to maximise on the health of their animals. A dangerous practice that the locals are aware of is that some farmers do take their chicken or other animals for sale to the market once they have realized that the animals have contracted some illness and so may die. To avoid huge losses that might result from death, they take the animals for sale and so in the process aid in the spread of the illness.

A more dangerous and related practice that can even affect human health is a case where an animal might die at home then slaughtered and smuggled to be sold in a licensed butchery at a local market centre. The normal procedure according to a veterinary clinician at Bondo should be that, when an animal is slaughtered even at one official slaughtering places such as homes, then public health inspectors should be called in to ascertain whether the meat is fit for human consumption or not. If the meat contains traces of dangerous diseases, some of which may be contagious, then this should be disposed of hygienically. But because farmers want to recover money that would get lost when the meat is recommended for disposition, public health inspectors are never informed and smuggling into official butcheries may be encouraged.

On the other hand in cases of livestock illness outbreaks the government usually declares quarantine on the movement of animals especially from one location to another. This is meant to reduce incidences of illness spread. However, government imposed quarantines are often broken due to these kinds of considerations. Farmers and livestock traders do agree that the law enforcement officers are enlisted into these illegal practices through bribery so that they keep silent as those laws are bypassed.

However, this should not be misconstrued to mean a lack of knowledge in animal illness prevention. Findings of this study indicate that livestock farmers have vast knowledge of animal illness prevention. Just as highlighted above, environmental cleanliness is one way that farmers recognize as a strategy to avoid such illnesses as *ajuala* (the polythene bag problem).

s with poultry, farmers are aware of prophylactic medicines, which they prepare at home and self-administer to their chicken.

Acupuncture is done at the first signs of *aremo* to prevent the illness from developing into a full-blown condition. Some farmers also reported the existence of knowledge about immunisation e.g. in the traditional vaccination against *aremo*. In this practice, when report about the outbreak of *aremo* was received, individuals would make trips to where the outbreak had been detected so as to get blood of the already afflicted cows. This is carried home in containers and is introduced into the bodies of the non-affected cows by creating cuts and rubbing this blood of the already affected cows on these cuts. Farmers did not have any specific strategies for ensuring that the collected blood did not clot before being introduced. They however mentioned that they would collect enough quantities of blood that would not have clotted fully before use. Because it was a preventive therapy for *aremo*, an illness only associated with cattle, it was therefore only done to cattle.

Other illness prevention strategies include cleaning the houses where these animals are kept so as to reduce various germs that may attack animals and cause illness. Most pens (*abila*) are swept and a fire lit to kill germs such as ticks, flea and lice. Other livestock farmers even spread hot ash in these pens as a way of killing the germs.

Farmers are also aware that ticks cause diseases in animals and so several strategies are put in place to control ticks as well as other disease causing organisms. Manual plucking of ticks from the skin of animals is one strategy. Another way is to prick the ticks attached to an animal's body by the use of thorns. Farmers who believe that manual picking of ticks causes more pain to the animal and also destroys the skin, which should be in a good condition to fetch more money when being sold, do prefer this strategy.

Other farmers do benefit from the symbiotic relationship that exists between certain birds such as *adharia* (tick-bird) and *okok* (white egret) and domestic animals. When the domestic animals are grazing the birds are left to peck on the body of the animals for the ticks as their food while the birds benefit by feeding on the grasshoppers released by the animals as they walk in grass.

Still other farmers take animals for community dipping while others buy pharmaceutical drugs and self-spray their animals. Kerosene, used lubricating oil as well as petrol have all been reportedly used to control ticks. These are smeared around the body of an animal where ticks are attached.

feeding strategies are also often designed in such a pattern that farmers avoid places that they know are infested by ticks and tsetse flies. For tsetse flies, bushy places around the lakes or seasonal streams perceived to be their habitats are avoided during grazing. Slashing around home compounds is also another strategy to chase away tsetse fly.

1.1. Animal feeding practices

An important strategy for preventing livestock diseases involves various kinds of feeding practices. Livestock farmers in Nyang'oma have various ways of feeding their animals and they believe that good farmers employ the best strategies to ensure that animals are well fed and kept healthy. They despise certain practices that are perceived to be poor in terms of quality of feeding. For browsers farmers are quite aware of grasses of good quality. As one elderly farmer, Mzee Nyamora put it:

"Dhiang' dwaro lum ma oloth ma boyo ema ochamo maromo dhoge. Lumb ohoro (tall brown hood grass) kod lumb odunyno (guinea grass) yieng'o dhiang' maber kendo kelo chak mang'eny. Dhiang mayudo lum bilani chwe kendo dende ler ahinya" (a cow needs grass that has sprung up tall which when it feeds on fills the mouth. Tall brown hood grass (*lumb ohoro*) and guinea grass (*lumb odunyno*) makes a cow well satisfied and brings a lot of milk. A cow feeding on such grass becomes fat and its body is quite clean).

Farmers have a wide range of knowledge on what kind of feeds are good for the good health of cows and even to ensure better production from them. In addition, many farmers possess some vague knowledge about the necessity of feeding animals on minerals. While many farmers have now turned to buying animal feed from veterinary shops, some farmers still appreciate and continue with the practice of taking animals to lick loamy soil salt licks (*pundo*). Some of these farmers insist that this type of salty soil is good as it makes a cow regain lost appetite. To quote Mzee Nyamora':

"omiyo dhiang' bedo gi ledho ma miyo ochiemo malong'o ma obed machwe" (it makes a cow have appetite that makes it feed well to make it fat).

Other farmers also maintain that cows feeding on this kind of salt are discouraged from feeding on other inedible materials such as polythene papers or clothes. Their reasoning is that cows feeding on such objects often suffer from deficiencies in salts and so turn to such objects with the hope that these may contain the required salts. In other words the farmers believe that by feeding animals on *pundo* they do as well prevent malnutrition. Farmers in Nyang'oma also believe that the salt in *pundo* is also important in worming the animals. Their perception is that worms cannot survive in salty environment as the salt irritates the bodies of the worms and finally kills them thereby leaving the animal healthy and clean.

Due to extensive clearing and cultivation of land over the recent decades, pieces of land formerly left for *pundo* purposes have been turned into crop gardens and so only a few of these places, which may as well

be far placed from some farmers still serve this purpose. Many farmers have therefore been forced to turn to other practices such as the purchase of salts from the vet shops. Others still rely on traditional salt licks (*bala*) which they buy from traders who get them from mining areas such as South Nyanza. *Bala* is also said to be good in increasing milk production. According to another elderly farmer, Mzee Ogusu Ombato

"Bala nego kute kaka chwe. Ka oyang' dhiang' machamo bala to ok iyud chwe e ich" (*bala* kills germs such as leaches. When a cow that feeds on *bala* is slaughtered you do not find leaches in the stomach).

Watering of animals is considered a very important element of animal feeding. Cattle, sheep, goats, donkeys as well as poultry require water for survival. According to most informants cattle, sheep and donkeys require watering on a daily basis. On the other hand, goats may take longer intervals of watering, even a month without many problems but still they have to be taken for watering. Mzee Nyamora reasons that:

diel chamo it yien moting'o pi mang'eny ema omiyo riyo ok hinga ahinya. Rombo, dhiang' kod punda to chamo lum ma samoro otuo kata otimo lowo koro oduko gi tuo piyo ema omiyo nyaka gimodhi mang'eny (a goat feeds on succulent plant leaves and that's why it doesn't get thirsty fast. Sheep, cow and donkey however, feed on grass which is sometimes dry or has soil which makes the great bowel (*oduko*) dry fast and that's why they have to drink a lot of water).

Nyang'oma farmers are aware of poor animal feeding practices that may lead to disease and even death to animals. Cattle, sheep and goats should not be allowed to feed on too much grain such as millet and maize. Mzee Ogusu Ombato says that when these animals feed on too much of the grains their stomach gets swollen and if not treated fast they just die. On the same note sheep should not be allowed to feed on leaves of cowpeas vegetables (*bo*). Every respondent interviewed consented that *bo* when eaten by sheep even if in small quantities makes them diarrhoea and often leads to death. Green grass that sprouts at the end of the dry season is also categorised under poor feeds. The argument is that such green grass causes the *aremo* illness in animals. Farmers said that feeding animals on wet green grass is not a recommended practice as it leads to illness. They said that cattle should not be released for grazing quite early in the morning when the grass is still too wet. Force B. 1999.: 212 supports this when he says that:

Do not suddenly graze animals on wet pasture. Wait till later in the day when pastures become drier. Avoid suddenly giving a lot of wet, green food and then a lot of water to drink.

On the same note cattle should not be released for grazing too late when the sun is already hot. Keeping cattle tied in their poles (*loch*) in the shed (*kul*) when the sun is already hot is believed to be speeding up *aremo* attack.

Others argue that such grass and green maize plants often harbour some small toads which when swallowed by cattle when grazing on such plants often cause swelling of the stomach and this in many cases leads to the death of the victims.

Because of the increasing scarcity of land for grazing, farmers are increasingly resorting to the tethering technique of feeding animals. However the majority of them still rely on herding where animals are left to graze freely. Tethering is done mostly by farmers who keep a few livestock. Farmers concede that tethered animals often grow healthier than the ones that are herded especially if the owner keeps changing them from one tethering place to another during the day. This changing of animals from one tethering place to another is not just done haphazardly but follows a rotational pattern. The grazing land is mentally demarcated such that one day animals are tethered in one section of the land which is then given a resting period to allow for the grass to grow again. According to Mzee Nyamora this is a form of paddocking of grazing land. He says:

"Maeni chalo kaka keto paddock. Kawuono itweyo dhiang' kamoro to iloke. Kiny to idogo itweye mopogore gi kama nye itweye nyoro cha kendo iweyo kanyo kuom ndalo mondo lum odog olodhie eka chieng' moro idog itweyoe dhiang'" (This is like dividing land into paddocks. Today you tether a cow in one place where you have to be changing the tethering place. Tomorrow you go tether it at a different place from where you tethered it yesterday as you let the original tethering place to rest for some days to let the grass grow again is when later you will tether the animals in the same place again).

Mzee Nyamora compares this practice with changing herding places for animals left to graze freely. He says that:

"kama ikwaye kawuono ok kiny idogie. Nyaka kiny idwar kamoro nono malum olothie ka iweyo kama nye ikwaye nyoro cha bende lum odog olodhie" (You don't go back to the same place where you grazed animals yesterday. You must tomorrow look for another place with good grass and let grass grow in the previous place).

Other farmers are also convinced that this kind of rotation with the animals helps prevent ticks that drop in the grass as animals are grazing from attacking these animals afresh. The belief is that the period left without grazing in one area is enough to make the ticks die, as they cannot stay long outside the host animals.

Cats and dogs are reared differently. Most people who keep these animals maintain that they just feed them on left over food. But even this depends on the amount of food available. During times of food scarcity these animals may go without food for a long time. Some farmers insist that this is especially good for the cats, which will then be forced to look for the rats, snakes, cockroaches and other animals that are

wanted in the house. As will be explained in the next section, these animals are kept not as pets but rather for their role in maintaining security in the home.

Poultry on the other hand are given much better treatment than cats and dogs. Farmers say that they feed their poultry mainly on grains such as maize and sorghum. Sometimes pieces of food left over such as *mal* are also given. Mzee Ogusu Ombato maintains that poultry must be given enough food lest they go far away from home in search of food and get attacked by predators there. He said that letting poultry to wander about in search of their own food may make them contract diseases from affected poultry in other homes which they later spread to other poultry within the homes where they are kept. To prevent poultry from straying far from home the Nyang'oma farmers maintain that they should be given enough food. Mzee Ogusu Ombato says:

"Gweno ma imiyo chiemo maber ok dhi mabor gi ot" (Chicken that is given adequate does not go far away from the house).

Therefore to prevent poultry from contracting diseases and to protect them from predators one of the strategies employed by the farmers is to give them enough food. On the other hand farmers are aware of the differences among poultry in terms of food needs. Chicks cannot feed on big grains like maize and so are often fed on maize or millet flour. The flour can also be mixed with water as farmers say that chicks like it this way more. Some farmers still engage in a past practice that is rapidly dying out, the practice of trapping ants (*biye*). To trap *biye* Mzee Ogusu Ombato says that a hole is dug on the ground and sticks put inside this hole then some grass is used to cover the sticks before pouring soil to cover the grass. Once the trap is left overnight and checked in the morning if it is set in the evening or it can be set in the morning then checked in the evening. The ants (*biye*) through their routes in the ground will find their way to the trap to feed on the sticks. Several ants will collect here, which will then be harvested and given to poultry. Most farmers contend that poultry feeding on *biye* grow fast enough as they become fat and healthy. They say that *biye* is especially good for the chicks which cannot feed on hard big grains. However for the big poultry they are only taken as supplements. This is because *biye* is taken as a light meal. As Ogusu Ombato says

"Gwen madongo dwaro chiemo malong'o. Biye miyo mana chunyi ng'ich to ok yieng'gi" (Adult chicken need a lot of food. The ants are light food that does not satisfy them).

From these perceptions and practices it is evident that the Nyang'oma farmers have a wide range of knowledge concerning feeding practices that are good for the alleviation of health problems in animals as well as to increase productivity of these animals. Farmers are also aware of feeds and feeding practices that may lead to malnutrition. Their perceptions about these feeding problems as described above do determine the reaction of action that the farmers take in solving them. Most approaches are geared towards prevention of

nesses that might arise from poor feeding. However, in case an illness has been identified then appropriate treatments are often proffered. Some of these may be done through the use of herbal medicine but modern veterinary approaches are also often sought.

2. TREATMENT PRACTICES

Nyang'oma livestock farmers are aware of several animal illness treatment procedures and illness seeking behaviour is often directed by this knowledge.

Poultry illnesses are treated mainly at home. Treatment procedures tend to be common knowledge and so no special experts are consulted. Herbal concoctions tend to dominate the treatments even though pharmaceutical drugs are also often bought and administered by the farmers themselves. These herbal concoctions include plants such as *ogaka* (cactus), *pilupilu* (pepper), *tworo* (sisal) and *minya* (*Cissus arangularis* or *Vitaceae*).

To this mixture, other people also add other substances, e.g. *chang'aa* (traditionally distilled alcohol), dry cell powder and even kerosene. Modern drugs used in human medicine such as aspirin tablets; tetracycline capsules, piriton as well as panadol and chloroquine are also often commonly added to these herbal concoctions. The local farmers believe this mixing of several medicines makes the mixture more potent (Mulemi and Nagendo 2001). These solutions are used both as prophylactic and curative remedies. The use of human drugs in the treatment of poultry arises from the perception that these animals also suffer from health problems common among human beings such as malaria and headache and which these drugs treat.

Several other treatments and manipulations for livestock have also been identified and reason for their practices given. These treatments and manipulations as practiced by Nyang'oma residents include the following:

- Venipuncture, dehorning, Ear notching/slitting, burning swollen parts/cauterization and tooth extraction.
- Other practices that have so far not been highlighted include; Castration, Bonesetting, and feather removal in poultry, docking as well as retained placenta removal.

Some of these have specialists that engage in specific activities though an individual can have knowledge to practice more than one treatment or manipulations. These treatments or manipulations may not be directly aimed towards addressing disease cases. They may simply be done because of the anticipated good results,

castration may be done to make a fierce bull docile, to prevent undesirable bulls from mating or with the perception that this will lead to increased body carcass.

Several healers have been identified in animal healthcare provision. These healers include:

- Herbalists
- Bonesetters
- Castration specialists
- Dehorning specialists
- Retained placenta removal specialists
- Docking specialists
- False teeth (*jimo*) extractors
- Ear notching/slitting specialists
- Religious personalities
- Quack vets
- Trained non government employed private vets
- Retired government vets
- Government employed vets

In addition to these practices livestock farmers themselves treat most of the animal diseases. A conversation between three farmers one evening at Nyang'oma market centre may illuminate this point.

It is 6.00pm in Nyang'oma. I am walking into a local bar when I get attracted to a conversation by three community members who by then are standing next to the entrance of this bar. One of these three men Mr. Owilli Siriba calls my name out and starts the following conversation.

Siriba: *Ogeng'o!*

Ogeng'o: *Yes.*

Owilli: *My friend I have some good meat at my home. If you are interested I can sell you half a kilogram at only kshs 50.*

Then one of the three community members Mr. Joram interjected by saying: Surely that is very good meat. The bull just died of aremo. It was a very fat and healthy bull. Its meat is clean.

Owilli: *Yes the disease attacked the bull when I was away. I had gone for a journey in Kisumu and only young children were left at home. When I came back the children reported that the bull first appeared dull then after some time it started trembling after which it fell down and just died like that.*

Joram: *Oh that should have found an elderly person at home. The bull simply needed proper massage. You just warm water and using a cloth you massage the fatigued parts thoroughly. You can add leaves of dwelle to this water and continue with the massage. At least after this massage you will obviously see that the bull can stand up and walk normally. You know aremo is just due to the blood that clots around the joints. So if you massage with hot water this clotting blood will flow normally. Dwelle leaves are especially good when put in that boiled water. If you still suspect any problems then*

you can call *jasandan* (injector) to give more treatment. You can also contact Maria Nyaseda who knows of several types of *yadh nyaluo* (herbal medicine) that can treat such animal illnesses.

Owilli: In fact after thorough massage if god wills the cow will just become fine.

Joram: Yes from there you just pray and leave everything to god.

The third community member Mr. Hosea had this to say "In fact Odingo (the Private vet and vet drug seller at a nearby market centre) really knows how to administer injections in such cases. He also has good drugs that he can sell to you and you just administer personally to sick animals. He also charges cheaply for the drugs and services rendered. But it is also very necessary that you do the massage to such a cow".

Joram: But aremo is not a real problem nowadays even Opiyo Molla (quack vet) or Osumu Otunga (retired vet clinician) treats it quite well.

Owilli: Aa that bull of mine has died a very big bull. I don't know how I shall get its replacement.

Joram: These things happen. Just sell the meat and what ever little you get from the sale of the meat even if it is only enough to buy a goat, just have that goat as a replacement.

Owilli: I am going to sell it at kshs 100 a kilo and anybody who has kshs 50 will get half a kilo (the usual butchery charges are kshs 70 for half a kilo and kshs 140 for a kilo). But I won't give anybody meat on credit terms. I know that when a cow dies at home many people think it is for free. They just come to ask for meat on credit then later when ask for your money they don't want to pay it. I really don't have time to walk around asking people to pay me what they know very well that they owe me.

Hosea: But what will you do? People are used to such practices here. When you refuse to accept credit terms they see you as a bad person.

Joram: Buying things on credit is there to stay. You cannot stop it.

Owilli: But then I will only sell on credit terms to that I trust to pay and not everybody else.

This conversation stopped when a vehicle transporting passengers from Bondo pulled up in front of the bar and people started to alight from it.

From the above conversation, it can be deduced that Arthur Kleinman's three overlapping and interconnected sectors of human healthcare tend to be applicable in animal healthcare as well. Thus, in the professional sector will be found the government and the private trained vets with license to operate. In the popular sector of health care there will be found the home treatments especially as the initial point of disease detection and place where first treatment is likely to be administered. In the folk sector will be found the various traditional healers listed above. As the conversation reveals farmers do not stick to one particular healer or to one particular treatment technique but may move in between all these sectors so long as cure for animal health problem has been realized. Thus from the above conversation it is realizable that farmers can individually administer massage as a first aid to animal illnesses, they as well know of certain herbal medicine which can be used in massage. Additionally the farmers also prefer to consult vets (both quacks and trained) to attend to animal illnesses. The herbalist is also often contacted as someone with expertise in folk knowledge about treatment. The farmers themselves also know of various drugs that can be bought over the counter and administer on their own to their animals.

In some other instances it was reported that when an animal is sick, treatment does not usually start immediately but the farmers wait to assess whether the animal can recover without any treatment. As one farmer Mr. Oyundi Asito put it...

"Nyaka ipim chiayo mondi. Samoro bende aen mana tuo makalo akala. Koro mana ka ineno ka tuono osidi kor ka ineno kaka ithiedhe" (You have to give yourself some time to look at an animal. May be it was a temporary illness. So it is only when you realize that the illness is in fact becoming worse that you look for ways of treating it).

This means that the farmers are quite aware of the self-defense mechanisms of the animal body system, which they give some time to fight the illness. This waiting period can also be occasioned by lack of resources necessary for the treatment of the animal. As Mrs. Agnes Dulo said

"Samoro bende chiayo tuo nyalo goyo to ionge pesa ma inyalo dwaro go jathieth. Koro ibiro rito mana nyaka iyud pesa eka ine kaka inyalo thiedhe" (Sometimes your animal may be attacked by illness at a time when you don't have money for paying the treatment practitioner. So you will have to wait until you get money is when you look for treatment).

However many informants insisted that if the situation continues to deteriorate then some first aid might be offered. These are usually home-based remedies that the farmer administers as possible treatment options. They range from simple massage, to herbal medications.

In addition to these farmers may also possess certain special knowledge that they may render in case the illness situation does not subside. These may include special knowledge on herbs and their preparation that may be put in use to help the animal.

In some other cases the farmers may have knowledge of certain pharmaceutical drugs that may be bought from nearby drug shops and administered to the animals. It is worth noting here that several farmers have learnt and do administer injections to their own animals and also that they also have vast knowledge of the administration of other non-injectible drugs as well. The section on skills and knowledge transfer explains how such knowledge is gained by farmers in the community of Nyang'oma.

As indicated by the above conversation when farmers do not find remedy to an animal illness by themselves they often turn to other nearby practitioners. These are individuals that can be referred to as Community Based Animal Health Workers (CBAHW). This group consists of two categories of practitioners. In one category is found the unlicensed private practitioners such as quack vets. This group together with farmer-administered remedies constitutes what Kleinman would refer to as the popular sector in healthcare delivery.

The second category of CBAHW includes individuals with special folk knowledge of animal health. These include herbalists, bonesetters, castration specialists, dehorning specialists, retained placenta removal specialists, docking specialists, false teeth (jimo) extractors, ear notching/slitting specialists and religious personalities. These specialists in folk knowledge neatly fit into Kleinman's folk sector of healthcare delivery. More about this group of practitioners is tackled in this chapter in the section that deals with other common veterinary practices.

Licensed private veterinary practitioners are rarely found in Nyang'oma community hence few farmers if any contact them. However unemployed graduates of animal and veterinary sciences as well as retired veterinary clinicians are found and farmers frequently go to them. In rather special cases farmers do consult government veterinary officials. This is especially true in situations of disease outbreaks for which farmers have no previous knowledge. According to a retired driver with the veterinary department and who is also a farmer in Nyang'oma community the argument here is usually that the government veterinary departments have more special facilities and equipment and so are better placed to take samples for testing then advice farmers on which drugs they can use as a cure to the problem. A part from this kind of reasoning the group of farmers that rely more on government veterinary assistance are those that own grade animals. This has to do with the awareness of the vulnerability of such animals to harsh environmental conditions such as the Nyang'oma type. As mama (mother) Leister Onjero puts it;

"Jamb giredigi dwaro thieth malong'o. Ok gichal gi mathurwaka. Gin ka ok omigi thieth malong'o to ok ginyal timo maber thurwaka" (these grade animals need special treatment. They are not like our indigenous ones. If they are not given more attention they can not perform here).

This last group of practitioners fits into Kleinman's professional category of veterinary healthcare providers.

5.3 USE OF HERBAL MEDICINE IN ETHNOVETERINARY PRACTICE.

5.3.1 Reasons for the use of herbal medicine in animal health care

Herbal medicine has been found by livestock farmers in Nyang'oma community to be effective in the removal of retained placenta. Most farmers interviewed believed that herbal medicine seems to address this problem better than the modern veterinary practices.

Herbal medicine has been used for the treatment of both animal and human health problems from time immemorial. Many people tend to be much more conversant with and have faith in them. Pharmaceutical medicine is considered foreign, a new development that requires special training on foreign concepts and practices before they can effectively be put into use.

Most livestock farmers believe that most of the animal health problems originate from the stomach from where the illnesses spread to the various parts of the body where they manifest themselves. To cure such illnesses, the target therefore should be the stomach. Herbal medicine is believed to be better because if allowed it works in such away that it triggers diarrhoea (purgative). This diarrhoea is recommended because the perception is that it is the 'bad things' that made the animal sick that are being removed. Thus, these herbal medicines are perceived as having a purifying effect on the body. Usually farmers recommend it even after veterinary injections, some dose of herbal medicine is necessary to clean the body of any individual maladies. Once such herbal treatment is offered an animal can stay quite long before getting sick and will grow strong and healthy.

Another practice that was found common in the use of herbal medicine is the tendency to use a mixture of several herbal plants in the treatment of illness in animals. The argument advanced by many farmers and herbal medicine dispensers is that such compound use makes the herbal concoction more potent. A few respondents however had the opinion that such compound mixtures are resorted to because the practitioners are not quite sure which herb treats a given condition and so by administering several herbs at once the chances of one of the herbs curing the condition is enhanced.

Another advantage of herbal medicine is also found to be convenient because of its ready availability. Most farmers and herbal medicine dispensers contend that the medicinal plants are available just around their homes. Even though a few of the plants are found far from their homes and others may be scarce especially during the dry seasons, farmers' say that most plants are within their reach. Additionally, these plants are got freely. One simply goes to pick them and prepares for administration. The herbal dispensers also charge them fairly cheap.

On the other hand farmers hold the view that pharmaceutical drugs are expensive and not readily available. Due to lack of resources and scarcity of pharmaceutical drugs farmers then turn to what is available and affordable (herbal medicine).

Certain animal illnesses are considered to be addressed much better by herbal medicine. This is especially true of illnesses referred to as *yamo* (winds). Such illnesses manifest themselves in form of several swellings and lumps in the body of an animal.

The perceived cause of illness will also give the direction as to what direction treatment will take. Herbal medicine is considered most appropriate in dealing with udder and teat problems (mastitis). This is because the illness is believed to result from the work of "evil eye" (*dhoho*). In fact most of illnesses that are perceived

originate from supernatural causes are known to be better addressed by traditional procedures e.g. herbal medicine.

Table 5.1 shows some of the medicinal plants commonly used by the community members in Nyang'oma to treat animal illnesses by members of the Nyang'oma community.

Table 5.1 Commonly used medicinal plants and the types of animal diseases they treat

MEDICINAL PLANTS		ANIMAL TREATED	DISEASE TREATED	PREPARATION OF MEDICINE
HOLUO NAME	BOTANICAL NAME			
PILUPILU	❖ <i>Capsicum frutescens</i> (<i>Solanaceae</i>)	❖ chicken	<ul style="list-style-type: none"> ❖ Whitish diarrhoea. ❖ Sleepiness ❖ Poor food intake ❖ Gloominess (jung'/juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing. ❖ Wings bulging out. ❖ Cough. 	❖ The fruits and twigs of pepper are crushed, mixed with water and put somewhere for the chicken to drink. May also be mixed with other medicinal plants such as minya, minj radier, chamama, tworo (sisal) and ogaka (cactus). All these are crushed together then mixed with water for chicken to drink. Still these can be mixed with other staff such as kerosene, dawa (sodium bicarbonate) and dry cell powder. Aspirin, chloroquine and pansdol tablets as well as tetracycline tablets are also often mixed to this solution. These are used for both curative and prophylactic purposes.
CHAMAMA		❖ chicken	<ul style="list-style-type: none"> ❖ Whitish diarrhoea. ❖ Sleepiness ❖ Poor food intake ❖ Gloominess (jung'/juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing. ❖ Wings bulging out. ❖ Cough. 	❖ As in 1.
DWELE	❖ <i>Melia azedarach</i> (<i>Meliaceae</i>)	❖ cattle	<ul style="list-style-type: none"> ❖ Dei majuol, ❖ Poor feeding, ❖ Aremo, ❖ Illness of the great bowel (Oduko) ❖ Illness caused by tsetse fly. 	❖ Leaves of dwele may be mixed with other medicinal plants such as the roots and bark of ober, roots of owino, bark of kuogo, leaves of onyalo biro, leaves and roots of oyieko, leaves and roots of roko, roots and leaves of ogaka Lang'o, leaves of nyabungu odidi, roots barks and leaves of roko, leaves of rachier, leaves of arubaine, roots of olemo, roots of ochol, leaves of kaladan or roots and leaves of nyangliech. These may be crushed together, mixed with water then boiled. Omo detergent and permanganate may also be added then given to affected animals orally.

Table 5.1 Commonly used medicinal plants and the types of animal diseases they treat

MEDICINAL PLANTS		ANIMAL TREATED	DISEASE TREATED	PREPARATION OF MEDICINE
LOCAL NAME	BOTANICAL NAME			
IKINYA	❖ <i>Cissus quadrangularis</i> (Vitaceae)	❖ chicken	<ul style="list-style-type: none"> ❖ Whitish diarrhoea ❖ Sleepiness ❖ Poor food intake ❖ Gloominess (jung'juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing. ❖ Wings bulging out. ❖ Cough. 	❖ As in 1.
IKWINO	❖ <i>Senna didymobotrya</i> (Leguminosae subfam. Ceasalpinoideae)	❖ cattle	❖ Illness of the great bowel (Oduko).	❖ As in 3.
IKBER	❖ <i>Albizia coriaria</i> (Leguminosae subfam. Mimosoideae)	❖ cattle	❖ Illness of the great bowel (Oduko).	❖ As in 3.
IKLOGO	❖ <i>Lannea schweinfurthii</i> var. <i>stuhlmannii</i> (Anacardiaceae)		❖ Illness of the great bowel (Oduko)	❖ As in 3.
IKAKA	❖ <i>aloe</i> app. (Aloaceae)	❖ Cattle	<ul style="list-style-type: none"> ❖ Achany (FMD) ❖ Aramo 	<ul style="list-style-type: none"> ❖ For achany, the leaves are simply placed where animals can step on the, get crushed and the sap flows into the affected hooves to heal them ❖ For aramo the practice is as in 3.
		❖ chicken	<ul style="list-style-type: none"> ❖ Whitish diarrhoea ❖ Sleepiness ❖ poor food intake ❖ Gloominess (jung'juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing. ❖ Wings bulging out. ❖ Cough ❖ Saliva oozing from the beaks 	❖ As in one

Table 5.1 Commonly used medicinal plants and the types of animal diseases they treat

MEDICINAL PLANTS		ANIMAL	DISEASE TREATED	PREPARATION OF MEDICINE
DHOLUO NAME	BOTANICAL NAME	TREATED		
9. NDUMA		<ul style="list-style-type: none"> ❖ Calves ❖ Cattle 	<ul style="list-style-type: none"> ❖ Aginga ❖ Illness of the great bowel (Oduko) 	<ul style="list-style-type: none"> ❖ As in 3.
10. KALADAN		<ul style="list-style-type: none"> ❖ calves ❖ goats 	<ul style="list-style-type: none"> ❖ Aginga, tuo mar yamo. 	<ul style="list-style-type: none"> ❖ Mixed together with other medicinal plants like rachier, nyangliech, ochol then boiled to be administered to the goats (the leaves being used in this case)
11. OCHOK	<ul style="list-style-type: none"> ❖ <i>Solanum incanum</i> (Solanaceae) 	<ul style="list-style-type: none"> ❖ goats 	<ul style="list-style-type: none"> ❖ Homa (breathing difficulty) 	<ul style="list-style-type: none"> ❖ The juice of a ripe Sodom apple is squeezed into the nostril of the affected goats to make them sneeze.
12. ROKO	<ul style="list-style-type: none"> ❖ <i>Zanthoxylum chalybeum</i> (Rutaceae) 	<ul style="list-style-type: none"> ❖ cattle 	<ul style="list-style-type: none"> ❖ Illness of the great bowel (Oduko) 	<ul style="list-style-type: none"> ❖ As in 3.
13. OLEMO		<ul style="list-style-type: none"> ❖ cattle 	<ul style="list-style-type: none"> ❖ Illness of the great bowel (Oduko) 	<ul style="list-style-type: none"> ❖ As in 3.
14. OCHOL	<ul style="list-style-type: none"> ❖ <i>Lepisanthes senegalensis</i> (Sapindaceae) 	<ul style="list-style-type: none"> ❖ cattle 	<ul style="list-style-type: none"> ❖ Illness of the great bowel (Oduko) 	<ul style="list-style-type: none"> ❖ As in 3.
5. OCHUOGA	<ul style="list-style-type: none"> ❖ <i>Carissa edulis</i> (Apocynaceae) 	<ul style="list-style-type: none"> ❖ goats 	<ul style="list-style-type: none"> ❖ Diarrhoea. ❖ Yamo. 	<ul style="list-style-type: none"> ❖ Pounded together with roots of ombasa then mixed with soil from a dormant anthill, soaked in water then given to goats to drink.
6. OMBASA		<ul style="list-style-type: none"> ❖ Cattle 	<ul style="list-style-type: none"> ❖ Aremo. 	<ul style="list-style-type: none"> ❖ As in 3.
	<ul style="list-style-type: none"> ❖ <i>Tylosema fassog lensis</i> (Leguminosae subfam. caesalpioidae) 	<ul style="list-style-type: none"> ❖ goats 	<ul style="list-style-type: none"> ❖ Diarrhoea. 	<ul style="list-style-type: none"> ❖ Roots are combined with those of ochuoga, crushed then mixed with soil from an inactive anthill then soaked and given to goats orally.
7. NYANG LIECH	<ul style="list-style-type: none"> ❖ <i>Sateganotaenia arahacea</i> (Umbeliferae) 	<ul style="list-style-type: none"> ❖ goats ❖ Cattle 	<ul style="list-style-type: none"> ❖ Yamo ❖ Yamo ❖ Achany 	<ul style="list-style-type: none"> ❖ As in 3. ❖ As in 3.
8. RACHIER	<ul style="list-style-type: none"> ❖ <i>Plumbago zeylanica</i> (Plumbaginaceae) 	<ul style="list-style-type: none"> ❖ Cattle ❖ goats 	<ul style="list-style-type: none"> ❖ Tuo mar yamo ❖ Tuo mar yamo 	<ul style="list-style-type: none"> ❖ As in 3. ❖ Mixed with other medicinal plants like nyangliech, it kaladan, ochol and then boiled and given to the goats.

Table 5.1 Commonly used medicinal plants and the types of animal diseases they treat

MEDICINAL PLANTS		ANIMAL TREATED	DISEASE TREATED	PREPARATION OF MEDICINE
BOLUO NAME	BOTANICAL NAME			
B. MINJ RADIER		❖ goats	<ul style="list-style-type: none"> ❖ Aluny (peeling off of the skin) ❖ Difficulty in breathing ❖ Cough 	❖ It's crushed, soaked and then given to the goats to drink.
		❖ chicken	<ul style="list-style-type: none"> ❖ Whitish diarrhoea ❖ Sleepiness ❖ poor food intake ❖ Gloominess (jung'/juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing ❖ Wings bulging out. ❖ Cough. 	❖ As in 1.
B. RABONG'O	❖ <i>Rhoicissus revoilii</i>	❖ cattle	<ul style="list-style-type: none"> ❖ Cattle bitten by tsetse fly and have their hair sticking out in a dull way. ❖ Tuo mar yamo. 	❖ Leaves of rabong'o are crushed then mixed with water and boiled until it turns reddish in colour then given to the affected animal to drink
B. OLUSIA	❖ <i>Vernonia amygdalina</i> (Asteraceae/Compositae)	❖ cattle	<ul style="list-style-type: none"> ❖ Cattle bitten by tsetse fly and had fur sticking out in a dull way (has gloomy appearance). ❖ Aremo ❖ Removal of retained placenta 	<ul style="list-style-type: none"> ❖ For the tsetse fly problem and aremo the preparation is as in 3. ❖ For the removal of retained placenta, leaves are crushed then soaked with water and salt and given the affected animal to drink.
B. ARUBAINE		❖ calves	<ul style="list-style-type: none"> ❖ Diarrhoea ❖ Illness of the great bowel (Oduko) 	❖ As in 3.
B. OPEYA		<ul style="list-style-type: none"> ❖ Calves ❖ Cattle 	❖ Diarrhoea	❖ Grounded the mixed with water and given to the affected animals to drink
B. OYIEKO/ BAO	❖ <i>Eucalyptus ssp. myrtaceae</i>	❖ Cattle	<ul style="list-style-type: none"> ❖ Aremo. ❖ Worms ❖ Illness of the great bowel (Oduko). 	❖ As in 3.
B. NYABUNGU DIDI	❖ <i>Microglossa pyrifolia</i> (Asteraceae/Compositae)	❖ Cattle	❖ Aremo	❖ As in 3.
B. OGAKA LANG'O	❖	❖ Cattle	❖ Aremo	❖ As in 3.
B. ONYALO BIRO	❖ <i>Sychnanthus pinnata</i> (Asteraceae)	❖ Cattle	❖ Aremo	❖ Mixed with dwele then boiled and given animals to drink.

Table 5.1 Commonly used medicinal plants and the types of animal diseases they treat

MEDICINAL PLANTS		ANIMAL TREATED	DISEASE TREATED	PREPARATION OF MEDICINE
DHOLUO NAME	BOTANICAL NAME			
21. OTANGRE	❖ <i>Lagenaria sphaerica</i> (Cucurbitaceae)	❖ goats	❖ Achiya	❖ Leaves are mixed with bala (soda ash), ground then mixed with water and given animals to drink.
22. JANDARUSI	❖ <i>Rhynchosia elegans</i> (Leguminosae subfam. Papilionoidae)	❖ goats ❖ cattle	❖ Awir	❖ Roots are pounded, soaked with water then introduced through the nose (fito)
23. TWORO	❖ <i>Agave sisalana</i> (Agavaceae)	❖ goats	❖ Achur in goats	❖ Leaves are mixed together with those of minya then crushed and given after being boiled.
		❖ chicken	❖ Whitish diarrhoea. ❖ Sleepiness ❖ Poor food intake ❖ Gloominess (jung'juol). ❖ Swelling around the eyes. ❖ Difficulty in breathing. ❖ Wings bulging out. ❖ Cough.	❖ As in 1.
24. OBALA NDAGWA	❖ <i>Ricinus communis</i> (Euphorbiaceae)	❖ cattle	❖ Aremo	➤ Leaves of obala ndagwa are pounded then soaked in hot water. Once it has cooled down the solution is given to the affected animals to drink.

3.2 Disadvantages of using herbal medicine

Some farmers believe that herbal medicine instead of curing animal diseases may cause more harm as it interferes with the proper functioning of the stomach. They believe that those who treat using herbal medicine will finally turn to pharmaceutical drugs for effective treatment. After failures of herbal medicine, they have to consult vets for injections and other treatments.

According to one quack, herbal medicine is more developed in human healthcare than in animal healthcare. Some farmers through trial and error often try to treat their animals with whatever herbs they have found effective in treating human beings. The ethno-physiological perception is that animal bodies function in similar ways as those of human beings and so the same herbs used in treating human beings can as well treat animals.

Herbal medicine is usually used as a purgative (administered with the aim of instigating diarrhoea). The belief is that through diarrhoea the bodies of animals and human beings get purified of any disease. However this

diarrhoea may make the affected animal weak and this can be harmful especially if the herb does not treat the disease in question. The animal may become exhausted and may die as a result of this diarrhoea.

In many cases pharmaceutical drugs are more effective and work much faster than herbal medicine. Herbal medicine takes a lot of time to realize the full recovery of an animal and so people may be impatient with it. Other farmers also recognize that herbal medicine tends to be a case of trial and error. Several herbs are mixed together (compound medication) with the hope that at least one of the herbs will be a cure for the illness. This means that several herbs have to be searched for before administration.

Medicinal plants are also not easy to find during the dry season of the year. This impacts negatively on herbal medicine treatment. Some farmers often plant medicinal plants in their homes as a way of avoiding this problem of scarcity. In many homes in Nyang'oma community several medicinal plants such as *arubaine*, *oyieko*, *roko*, *oluochiel*, *nduma*, *rachier* and pepper are found planted.

The increased use of modern pharmaceutical medicine has been noted among farmers. This they attributed to newly emerging diseases that were not known before. Most farmers agree that diseases that were there before such as *aremo* and *yamo* (pl. *yambe*) were effectively treated by herbal medicine. However they find herbal medicine ineffective when it comes to newly emerging diseases such as *awir*. For this reason they resort to modern pharmaceutical drugs.

Some farmers sometimes blame the ineffectiveness of herbal medicine on colonialism and post-independence governments. They say that with the advent of colonialism, much emphasis was placed on modern methods of treatment such that traditional techniques such as the use of herbal medicine was either discouraged or relegated to a place where they were considered backward and primitive. While the government encouraged vaccination using modern pharmaceutical drugs, the field of herbal medicine was largely ignored and was not promoted. Farmers insist that it was through this that the effectiveness of herbal medicine was lost as knowledge and skills in the field was not tapped and nurtured. Farmers insist that this emphasis on modern medicine affected not only herbal medicine but also local indigenous animals that were neglected at the expense of exotic livestock that were more highly valued.

Other common veterinary practices

Venipuncture (blood letting)

Venipuncture is the practice of impaling the great neck vein of a cow to let the blood flow out. This extraction of blood is done mainly to serve two purposes. First blood is food and so serves as supplementary diet during

the dry seasons. This practice, which is locally called *boro*, consists of tying a rope tightly around a cow's neck so that this great vein (*ligeyo*) stands out and can be impaled. The impaling is done on the head side of the vein. Traditionally the tool used was a bow and a special type of arrow (*atung'*) in which the blade or the sharp part had an obstructing cloth tied at its base so that only this small blade would pierce into the vein. A key informant who is also a traditional venipuncture specialist Mr. Owango Auma said that:

ideyo dhiang' mokuongo, kose deye to ikawo atung' to iywayo aye ibayo. Koro ipimo atung' no e ligeyo mar dhiang'. E ligeyo ka, nitech otweye mokuot, koro remo ok ringi, ochung'. Kanyo ema ipimo, kigoyo dichiel mituche to remo luwi mana chupa (you tie a rope around the cows neck tightly first. Once that is done you take the arrow (*atung'*) which you pull and through. You direct that *atung'* to the *ligeyo* of the cow. You direct it at the *ligeyo* because it has been tied and it stands out with blood trapped at this spot. That is where you direct it. When you strike it once and it gets impaled blood will flow out a full bottle).

Nowadays some venipuncture specialists use a sharp knife to stab the vein while others do it using syringe. In the traditional practice, blood spurts out and is collected in a calabash or *sufuria*. Once an appropriate amount of about two litres of blood has been collected, the rope is loosened and the blood ceases to flow. Some dung or ash may be smeared on the part that was impaled with the perception that this prevented germ infection. The blood is cooled and eaten with *ugali* as food.

Boro serves another important purpose. It is considered as a treatment or prevention against the *aremo* illness. It is believed that this illness results from too much blood in the cows' body, some of which may be bad. This bad blood is allowed to flow out through this process of venipuncture. Once done a cow that was sick of the disease becomes lively and healthier. The cow with the illness is realized by its too much agility, which may later result into serious illness. It was believed that this disease could lead to sudden death hence *boro* was done to reduce the animal's body blood level. The traditional venipuncture specialist Mr. Owango Auma supported this practice by saying:

kochopo kar boro nene en tuo mar aremo. Mane nego dhok, nitech aremo kogoyo dhiang', to dhiang' tho, ne jogi konye ni aremo ogoyo to ibore rembe chwer, bas mano e ka omiye thuolo eku okwo, mano emane omiyo iboro dhok (when it comes to venipuncture it was because of the *aremo* illness. This used to kill cattle because when *aremo* attacks a cow, the cow dies. These people used to help this by doing venipuncture to the affected cow so that the blood flows out. That is when it gets to survive. That is why venipuncture was done to cows.

In fact farmers in Nyang'oma contend that venipuncture done for the purpose of getting blood for food is very rare. Even the practitioners are very few. Some farmers argue that the practice is found to be outdated, backward or primitive. Instead of relying on the traditional style of blood letting hypodermic syringes are used in which only a small amount of blood is let out.

Traditional *boro* has also declined because according to some farmers, modern veterinary treatment tends to address *aremo* illness more effectively. In addition, there is a strong belief that animals have undergone some form of evolution. That the present cow (just the same zebu type) is not as strong as before and so the act of *boro* where too much blood is let down may cause the death of the animal.

Others still hold that modernization with its accompanying features like education have interfered with the traditional ways of doing things. Children spend a lot of their time in school and so do not get enough time to learn some of these practices. Modernization also devalues some of these practices with the resultant effect that these practices are perceived as out dated, backward or primitive. Instead of proffering venipuncture, vaccination against *aremo* is nowadays done.

It was also believed that the cow suffered from headache and that the bloodletting could relieve this condition. The practice was also done in the past to human beings who had headache. Scarification was done to allow the bad blood that causes headache to flow out and cause relief. *Boro* was done to reduce body temperature of the affected animal, which was known to be high.

5.4.2 Ear Notching

Ear notching or slitting is the practice of chopping off some part of an animal's ear or simply slitting the ear with the aim of letting out blood. This bloodletting was done as a treatment of *aginga* disease, which was known to be common with calves. A calf suffering from this condition was identified by the swollen part just under the ears. The perception was that the swelling resulted from the bad blood that was clotting in these regions. So the ear was slit or notched to allow this blood to flow out thereby leading to recovery.

In an FGD one participant captured this when she said that:

Aginga be ing'adone ga it dhiang'. Koro kong'adi to remo maricho ma medo kuodo kacha cha dok (Aginga is also cut the ears of a cow for. So when it is cut then the bad blood that increases the swelling in those parts is reduced).

Just as they say that venipuncture is done to treat headache, farmers also say that ear notching treats headache and malaria in cattle. Vet injections are nowadays preferred as treatment to these conditions.

In many other cases ear slitting (notching) was done as away of putting identification marks on a cow. This practice is also common with donkeys, as donkeys tend to resemble one another so much. Ear slitting was also done for aesthetic purposes. Livestock farmers who own fat and big bulls sometime slit the ears of these beasts with the belief that such practice makes the bull appear beautiful and warrior-like (*jalang'o*).

They are fond of showing off such bulls especially in funeral occasions. In such occasions, the bull is made to enter into the house where the dead body lies then its let out of the house and ritualistically made to run around the home with men dressed in funeral attire in hot pursuit. During this period praise names especially of the community heroes which the bull was named after are called out and the bull lows. It is on such occasions that one would know that the people of Nyang'oma attach a lot of value to their animals just as the Nuer (covered by Evans-Pritchard 1940).

5.4.3 *Cauterization and massage.*

Cauterization or *swoyo/ndhwayo* in Dholuo refers to the practice of causing a burn on the body of an animal either by using direct fire or a hot object. This is a very common element of ethnoveterinary practices of the Nyang'oma farmers. In the case of *aginga* disease, once the ear of an animal has been slitted, the swollen part is often cauterized using hot objects such as metallic plates, potsherds, stones, pangas or even hot sisal and cactus leaves. Usually the perception is that the swollen parts contain bad blood that is a bout to clot or has started clotting. So by the practice of cauterization the blood in these regions is made to heat up or the blood that had started to clot is made to melt and resume the normal flow. Additionally the burning is also perceived to be a way of killing the illness-causing problem so that they are deactivated leading to recovery.

Another practice closely related to cauterization is massage. The practice involves the soaking of cloth in hot water then rubbing it on the affected part of the animal. It is usually common with *aremo* illness. It is believed that *aremo* results from too much blood that starts to clot making the skin of the animal dark and affects the upper limbs. An affected animal will be seen limping or simply having difficulty in movement. Just as in cauterization, the perception is that the blood that was starting to clot around the affected parts is heated up and resumes normal flow thereby leading to recovery.

Massage is also done to animal feet especially those swollen as a result of *achany*. A simple practice related to this is to simply pour hot water directly to the affected parts with the perception that the same resultant effects will be achieved. Warm water is also often poured on a cow that has just given birth and lies down most of the time. The belief is that this inactivity results from the fatigue from labour pains and birth. Warm water heats up the body normalizing blood flow and thereby activating the animal.

5.4.4 *The extraction of false teeth (jimo).*

Among farmers in Nyang'oma there is a strong belief that some false teeth can sprout in the jaws of a cow. These teeth are known to be thin, long and pointed. The belief is that they just grow on top of the gum. Their

roots don't go down (*gindhomore andhoma*). So when an animal feeds their roots knock against the jaw and a cow feels pain. A cow with this problem doesn't feed well. The treatment then is to remove these teeth. It is said that a cow can have as many as eight to ten of these teeth. Such a cow has poor health as it does not graze or feed satisfactorily as others. The cow will just grow thin and dull (*oran*). Mzee Oteyo Jusa captures this in the following words:

Jimono ka dhiang' ni kode en dhiang' tuo, inyalo nwang'o ka dhiang' osiko randere sate, orandere ma dhiang' osiko puot, apuota (That jimo if a cow has it that cow is sick, you will find that a cow is always thin, the cow is always slender).

As the cow grazes the teeth shakes at the roots and the cow feels pain. They are loosely attached to the jaw. These teeth are traditionally removed using pointed objects such as the hind side of a file. It is so believed that a cow with such teeth will suffer diarrhoea. Once removed a cow grows big, fat and healthy. It's also believed that a heifer with these teeth may not be able to conceive and give birth. Once removed such a heifer can now conceive and give birth. Mzee Owango Auma who is also a specialist in *jimo* removal captures this by saying that:

Dhiang' man gi jimo, iye ok pong'. Ka en dhiang' maroya, iye ok pong', nikech wach jimo.....nyaku muk jimono mi lak ti manyien eka iye biro pong' (A cow with jimo does not get pregnant. If it is a heifer it will not conceive because of jimo....until those jimo are removed and new teeth sprouts is when it will conceive).

Once removed a little salt is placed on the wound left behind so as to disinfect these wounds.

5.4.5 Docking

The practice of cutting a lambs tail serves several purposes. Usually the female lamb has a bigger portion of the tail chopped off while that of the male lamp is only cut a small bit. For the female sheep the bigger part of the tail is cut so that the tail remains short and allows for mating. The practice is also believed to be aesthetical with the cut sheep appearing more beautiful than the uncut sheep. Others say that docking helps in the even distribution of fats in the sheep body. The uncut sheep is said to have along thin pointed tail that makes it look ugly unlike the cut one, which is evenly fat and big. Left uncut it's also believed that rams may not be able to mate. In an FGD one female participant had this to say in support of the practice:

Ging'ado iw rombo mondo iwe obed maduong' kuom madichwuo kendo mondo obed machwe, to mamon ing'ado ga iwgi mondo kathuon luwe to miye tich mayot. Rombo mong'ad iwe bende neno maber molooyo maak ong'ad iwe (They cut the tail of a sheep so that the tail can become big incase of a male sheep and to make it fat. For the female sheep it is cut so that when a ram is mating with it then it has easy work. A sheep whose tail is cut also has a good appearance than the one whose tail is not cut).

Docking is mainly done traditionally at home. The sheep's tail is cut using a panga or a knife. Once cut the cut part is cauterized or burnt (*ndhwayo*) using a hot object, e.g. panga or potsherds. Some salt may also be applied to the cut part to act as disinfectant. Even though often carried out by adult males, young boys who

like the practice because the part of the tail that is cut off can be roasted and eaten as a delicacy also dominate this practice. Because it is usually a small piece of meat adults often leave it to the children who in turn come to enjoy the practice of cutting sheep's tail. The practice is not regarded as a serious medical problem and therefore modern veterinary techniques of docking are commonly not in use.

5.4.6 Dehorning

Dehorning is mainly done to goats traditionally by teeth though currently an implement such as pliers may also be used. It is recommended that the first horn that sprouts from a goat's head be plucked out. The belief is usually that these first horns are weak and can easily break and become injurious to the goats. The belief is also that these horns may make a goat to grow thin and slender. They lead to stunted growth (*raloudo*) when they are not removed. It is believed that these horns could be the cause of the thinning illness (*achiya*) in goats. Once they are removed a goat will become fat, grow big and become appealing to the eyes. They become strong and healthy and fetch more money when sold: Mzee Owango Auma, a dehorning specialist says this in the following words:

Diel ok bed maduong. Tung'no miyo obedo randere. To komuk tungeno ae tung' wuok manyien to dende koro chako yarore, koro obedo maduong', ka en nyuok to koro en nyuok kabisa mopong' maduong', nyaburi be nyaburi maduong', bas mano ne miyo diek kelo ohala. Gino ne chiyo dend chiayo kendo ok gitegno (A goat does not become big as the horn makes it slender. However when the horn is removed and new ones sprout the goat will grow bigger. Be it a he goat or a she goat it will become fat and huge. In this way the goats became profitable).

Specialists in dehorning will get hold of the horns by their teeth or pliers and pull them out. Community members in Nyang'oma do not know of any other modern veterinary techniques of removing the horns. Dehorning also guard against injury to other animals which may be guarded by the undehorned ones. The second horn that grows after dehorning the first ones are considered more stronger and so can not easily fall off as the first ones especially in goat fight.

Dehorning may also be done using a hot plate such as potsherds or panga. This is common with calves where the hot object is placed at the place where the horns are expected to sprout from. This is believed prevents the horn from growing thereby making the cow fat and docile. Dehorning can also be done simply by cutting off the tips of the cow or sheep mainly to get rid of the sharp parts that can cause injury to people who handle the animals as well as to the other animals.

5.4.7 Debeaking

Debeaking is a practice done to chickens. There are two ways of carrying out the practice. The first type has become unpopular and is rarely carried out by members of the Nyang'oma community. In this practice

very young chicks, which are not more than two weeks old, have an outer part of their beaks forcibly plucked out. There was a belief that this part of the beak made the beak weak and so removal was recommended to let the stronger internal beak remain light. This allowed for effective feeding and therefore faster growth among chicks that became fat, strong and healthy. The belief was that if not removed the chicks would grow thin just as unhorned goats. However this belief seems to be declining and what is currently practiced is that of burning off the pointed beak tips of hens that are found to be pecking eggs or their chicks. Hens often engage in some form of cannibalism where they peck and eat their own eggs. At the same time some hens or cocks may peck young chicks sometimes even causing their deaths. Some cocks in the process of mating often peck too much on the heads of their female mates thereby causing injury to these hens.

To avoid these kinds of pecking the practice has been to burn the beaks of the hens so that they become blunt and therefore prevent the damage that may result from them. In an FGD one participant argued this case in the following words:

Iwang'o ga dho gweno komodho tong'. Nyathi gweno be nitie gik moko migole dhoge. Nyathi Gweno monyuol matin nitie gik michodo, jomoko wacho ni miyo ong'e chiemo piyo (Burning of a hens beak is done when it is swallowing eggs. A chick also has certain things that get removed from the beak. A chick that has just been hatched has things that get plucked out. Some people say that this practice makes the chick know how to eat faster).

5.4.8 Feather plucking from hens

Feather plucking is also a traditional veterinary practice done to chickens. The belief is that hens often have some abnormal feather called wino growing under their bellies including the cloaca region. The belief is that a hen with several of those *yier* (feather) on the body may not be in a position to lay eggs or may even fail to hatch them if at all it laid. These feathers can therefore be removed one by one or the whole feather around the belly may be plucked off so as to leave that region bare of feather. The belief is that once this is done these hens will be able to lay and hatch their eggs. In an FGD one participant supported the practice by saying

Gigi kose gol to gweno toko, inyalo pudho yiergo kata inyalo lunyo gweno. bund iyeno ilunyo tee bas ochako toko (once these things are removed a hen lays eggs, you can pluck off those feathers or just totally remove the feathers. You remove feathers all around the belly then it will start laying eggs).

Some farmers also believe that such feathers may make the chicken grow thin, so once removed they will grow fat and healthy.

suffering from these *wino* (feather) illnesses are usually recognized by the fact that it can cackle (*keko*) fail to lay eggs. Among the Nyang'oma poultry farmers cackling by a hen is known to be a sign of being unable to lay eggs. So when it start doing that, a nest for laying eggs (*goro*) is usually prepared and the hen may be made to lie in this place using chickens coup or any container that ensures it lies in the place. If after several attempts this cackling hen still fails to lay eggs, then the *wino* problem will be suspected and the hen will go a head to pluck off the feather. Even though *wino* identification may require someone with prior knowledge, the plucking can be done by anyone else so long as the person has been made to know these practices. However small-scale farmers who keep the non-grade poultry are the ones who engage in this practice. In fact a veterinary clinician with the community was skeptical about the effectiveness of this practice. While he has accepted that the efficacy of the practice has not been validated to know whether they work or not, he was categorical that commercial poultry farming involving grade poultry has been quite successful without the use of such practice. This situation clearly points out the differences that might exist in local and emic perceptions as far as veterinary practices are concerned.

9 Castration

Castration is the practice of depriving an animal of its gonadal function either by removal or dysfunctioning of essential reproductive organs in male and females (Prasad 1998 pp. 116). The removal of testicles is not very common among the Nyang'oma farmers even though it is often done to dogs and cats as well as in rare circumstances to cocks and male donkeys. The practice is commonly known as *royo* (verb) or *rocho* (noun). The scrotum is slit open and the testicles removed. The other type of castration, which involves dysfunctioning of the essential reproductive organs in the male animals, is commonly known as *puodo* (verb) or *puoto* (noun). As the name implies, *puodo* often involves beating or smashing either the sperm ducts or testicles using such implements as harmer, log (*radin* or *rapur*) or *tuor*. Two sticks are placed on either side of the sperm ducts then hit using these tools. While some farmers interviewed said the traditional practitioner would beat the testicles, the practitioners interviewed were mostly categorical that they hit the sperm ducts. An interview with one traditional castration specialist, Oteyo Jusa is used here to help explain this point:

Puoto ni to en mana mako dhiang 'kise dwode to chon ne wagocho agocha kata gi kaka koro leyu ni apukole no oko, rapucheno koro apuko oko to koro gino abedo gi yien ariyo, manyalo bedo ni kata koro gin kama, to ayudo kata yath moro to koro aketo ma gi renjre, koro aketo mand dhiang 'no koro aketo e diere ka, kor ariwo yadhni kama ,koro ago yadhni, koro ago yadhni to dhi ng'ado ler moro ni egine kanyo maa e puotne kadhi kaduong 'ne, emigoyo ,kise yudo kise goye motoyore, to kendo idok konchiel gin koni gi koni. Gin leche ariyo (With castration it was just a matter of bringing down a cow by tying legs together to make it tumble then as in the past we used to hit like using this axe of mine I would remove the part with the blade then I look for two sticks and put them like this (demonstrating how the sticks are placed on either side of the testicles). I then look for a log where I would place the testicles held together at the middle with the sticks like this (demonstration of how the sticks holding the testicles are placed on the log). I then hit at this stick (on one side) and then this goes to cut the duct lying between the testicles and the penis.

That's the one you hit. Once you've hit and it has been cut then you turn the other side. They are found on both sides. They are two ducts).

Most of them insisted that anybody hitting the testicles causes grave harm to the animal that may even lead to death of the animal. However these traditionalists also consented that sometimes when aiming at the sperm duct one may accidentally hit the testicles thereby causing serious harm to the animal. This has made most farmers now prefer the modern castration techniques, which employs the burdizo. This is considered safer with some farmers saying that it leaves a bull stronger and healthy such that after just a few hours the castrated bull can be used in ploughing. Even some traditional castration specialists have incorporated this tool into their practice in a process that would be referred to as technoblending. These practitioners are knowledgeable about both styles though in the village there may be only one person who owns the burdizo from whom they often borrow. When they are unable to get the burdizo they turn to their traditional techniques. Some farmers however believe the traditional technique is better than the burdizo technique as it makes a bull grow more fat and healthy faster.

Castration serves several purposes for the farmer. It's believed that a castrated animal grows much faster and becomes so big with a lot of body carcass. A non-castrated bull is believed to be light in weight as the body carcass is light. Even those who engage in slaughtering business prefers to slaughter bulls as this is believed to provide more kilos of meat than a non castrated bull of equal size. Castrated bull then fetches more money than uncastrated ones when sold. Mzee Oteyo Jusa captures this when he says that:

Puotoni, ok dhiang' kane thuon kane odwa bedo mang'ongo, to koro , ka ok ipuode, koro obiro bedo gi del moro marach, ok okel gimoro, to kopuode, to obedo bwoch maka koro idhi kode e chiro to ji konene to ringo aringa, omew kendo koro ong'ongo ma. Puoto miyo obet maduong ,to kendo obedo machwe, makata da dhoga go bed ka achiel kuom dhowa go, achiel nitie mase puodo, dineno kopogore gi mathuondi, ee, dineno kopogore, ineno ka dende koro laini moriere kama (This castration when a bull was growing big and you don't castrate it then it will have a bad body. It wont give you better returns but when castrated then it grows into an oxen that when you take to the market people will just be scrambling for it. It is fat and so big. Castration makes it become so big and fat. In fact if my cattle were, you would have seen one of them that I had already castrated is quite different from the non-castrated bulls. You would have seen that its body is clean and it's physically fine).

The reason for this faster growth, fatness or increase in body carcass for the castrated animal has been associated with the fact that once castrated the animal doesn't engage in mating and also becomes docile. A castrated animal e.g. a bull is known to be restless. Instead of grazing, it will be moving a round in search of females to mate with at the same time engage in fights with other uncastrated bulls. So it eats a little which makes it have light body weight. Even dogs, cats, sheep and donkeys stop roaming a round, become docile and fat.

docility of the castrated bull is also of importance to farmers as such animals can be handled by anybody without fear of being harmed. In this case the animal e.g. a bull or even donkey can easily be used for ploughing, other draught functions or even in carrying luggage. Once prevented from roaming around through castration, it's also known that the incidences of contracting contagious diseases will also be reduced. Thus the practice was considered health enhancing not only for the castrated animal but even for other animals of a similar kind kept in the home.

Once castrated the areas that were hit in the traditional *puoto* techniques or the slit part in the *rocho* techniques are rubbed with some herbal medicine and ash, which are believed leads to faster healing. Some religious practices also exist. A bull after castration may be caned with a branch of *powo* [*Grewia nichocarpa* (*Tiliaceae*)] plant with the belief that this will aid in a non-painful healing process. When the bark of this plant is peeled off the sap is slippery (*poth poth*). The belief is that once caned with this plant, the hit part will also become slippery to injury thus heals faster. Oteyo Jusa brought out this put this way:

Kise goyo to idhi e bung'u kamano to idhi itong'o powo, kise tong'o powo to idhi ijowo buru, koro idhi gi powono to ichwadego, ikoni ni boch mana kapowo, buru to iolo kuome kiwachoneni ibed mana matar kaburuni, bas mano itieko atieka. Mano e maboeye, kata kane en dhiang' malelo, buru ni to idwaro ni omew, obed machwe (Once castration has been done, then *powo* is got from the bush and used in caning the animal with a belief that this leads to faster healing. Some ash is also scooped and sprinkled on the cow with the belief that the hit part will heal white clean as the ash. This makes a bull heal and to become docile, big and fat).

Castration for the domestic animals also has some religious significance for the people of Nyang'oma. Most farmers believe that a male animal that should be left to mate in the home (*dala*) should belong to the male head of the home (*jaduong' dala*). Sons of this old man (*mzee*) are ideally discouraged from keeping male animals capable of mating with the female ones especially those belonging to their parents. This according to the elderly farmer could lead to misfortune that could either struck the animals or members of the family of the young man keeping such animals. It was seen as a form of taboo breaking that could lead to misfortune coming in form of *chira* (the wasting away disease) or the animal can just be getting sick and dying.

Another important function for the castration was to avoid inbreeding, something that also has religious significance to the Nyang'oma farmers. Inbreeding is scientifically proven to be a source of unfitnes to future offspring. However, members of Nyang'oma community consider it something that is tabooed. In fact they do say that the male animal mating with its mother may *rocho* (make unfit) the mother so that it either doesn't give birth or gives birth to premature young ones/miscarries (*bwogo*). Thus inbreeding is avoided through castration. Most of these beliefs tend to be extrapolated from the belief concerning human health where *chira*,

ness that leads to the wasting away of the body is considered real. Incest for example, is a taboo that is to *chira* among the people of Nyang'oma. They also consider it with similar disdain among animals. Apart from avoidance of inbreeding, castration is done as a way of selecting the desired males for mating. While the non-desired ones are castrated the desired ones are left to propagate its desired qualities. Castration should be done during the rainy seasons and especially in the morning or evenings because during these periods the temperatures are low than during the hot periods when it is hot and the animal may get stressed from the operation. The age at which an animal may be castrated is not very much of an agreeable issue among the Nyang'oma farmers. While some farmers insist that a bull should be castrated at a round one to two years, others prefer that they should be castrated when they are big and mature. That should be at a round age of five and above when they are of ploughing age.

3.10 Breeding practices

Castration is one of the practices employed by the people of Nyang'oma to control breeding of animals reared at home. As already mentioned, castration was also done as a way of selecting the right male for mating. This practice is more developed among bulls than other animals. Certain important considerations are made before choosing one of the bulls among several that might be in the home is left to be the one for mating. Such considerations include the bull's body structure. Preference is given to a bull that is huge i.e. high in height and long in length with a uniform growth with the whole body. Some farmers prefer bulls with long and moderately big testes with the belief that this could be a sign of prowess in mating. The chosen bull had to be healthy. Some farmers also stated that they could also turn to the genealogy of the bull to inquire about the productivity of the bull's ancestors, e.g. were they producing more milk or giving birth to young ones that grew healthier and longer. Even the colouration of the bull was looked at where bulls with white and brown stripes on the body (called *apala*) were preferred by many farmers. These considerations in one way or the other also apply for other animals such as goats, poultry and sheep.

Other breeding practices still exist. When a farmer has no male animal for mating, then there are several other traditional ways of getting the male. One, the farmer can simply take the animal to graze with the herd of other farmers with the desired male animals from where female animals will be served. Female animals can as well be taken to the home with the male animal. Secondly male animals may be borrowed from other farmers. These are brought in the home where the farmer has no male animals so that they can service the female animals for some short period of time then taken back to the owner. Thirdly a practice called *riembo chiayo* where an animal may be entrusted to a friend, relative or neighbour to take care of for some period may also be used as a way of solving mating problems. However, *riembo* could also be done for other reasons. Such reasons could include a secret way of amassing wealth without the knowledge of relatives and neighbours who might

jealous. It can also be done simply because the owner is lazy and is not ready to take responsibility of caring care of the animals. People who work in towns may also buy animals and keep with friends and neighbours back at their rural homes. When one suspect that some misfortune that leads either to illness or death of his animals is originating from his home then *riembo* can also be done as away of escaping such misfortune. In all cases the person who is giving out (*riembo*) his animals to be taken care of by others must intend leave one of his animals or offspring of these animals with the caretaker when he is taking away his animals. This is done as away of appreciation for the good services rendered. Other farmers say that *riembo* could also be done just with the sole purpose of giving someone an animal, in this way. That is the person was able to earn the animal. Thus could also be used to offset debts. A calf that continues to suckle the mother after the mother has got pregnant may also be sent to someone to forget a bout suckling, as this suckling is considered not good for the health of the mother.

Table 5.2 below gives a summary of some of these other veterinary practices and the animals attended to by these methods.

Table 5.2: A summary other common veterinary practices and the animals attended to by these methods.

Veterinary practice	Animals attended to
Venipuncture	Cattle
Ear notching	Cattle, dogs and donkeys
Cauterization	Cattle
Masage	Cattle, Goats
Extraction of false teeth (<i>jimo</i>)	Cattle
Docking	Sheep
Debeaking	Poultry
Feather Plucking	Poultry
Castration	Cattle, Sheep, goats and donkeys
Entrusting an animal to somebody (<i>Riembo chiayo</i>)	Cattle, Sheep, goats, poultry and donkeys

Some common magico-religious issues in ethnoveterinary practice

Several magico-religious issues interplay in veterinary perceptions and practices of Nyang'oma community members. In this section some of these issues are dealt with.

was established during fieldwork that when there is an outbreak of livestock illness farmers often turn to supernatural explanations. In a situation where one home is very much affected, i.e. many animals are dying the farmer may decide to move his cattle away from the shed (*kul*) where they are usually tethered. The animals may be relocated to a new place outside the home from where they will get tethered. The belief is that whatever misfortune is striking the animals is in the original tethering place at home and therefore once moved out of the home they will be out of reach of this misfortune and so will be safe from its effects.

The elderly retired veterinary clinician consented that this practice was quite common in the past but has now declined. According to him this belief may not be true but the practice may have medical implications. The belief according to him is that due to the epidemic, which may result from contagious illnesses, animals may die and get slaughtered in the home. The carcass of the slaughtered animals may not be properly disposed of. The remains may be found scattered in the home and these may be contaminated. These will be the source of infection for other animals. Several other places in the home may also be contaminated and may aid in the spread of the illness. Relocating the animals somewhere outside the home may act as a barrier from contamination and thus may explain the improved health of the relocated animals. *Aremo* outbreak was commonly escaped through such relocation. The movement of the animals according to the retired vet placed them at a safer distance from the infectious winds coming from the already affected animals. However, the informant insisted that such animals could only survive if at the time of relocation they had not been infected.

In some cases such epidemics are associated with witchcraft. The belief is that some jealous neighbour or relative planted some magical paraphernalia in the home with the sole aim of causing misfortune to animals thereby cutting down the victim farmer's economic progress. It is therefore believed that it is this planted magic that causes disease and death to animals. In such a situation the remedy is to seek counter magic to neutralize the effects of the one planted in the home. Religious personalities with the power to see these planted magical paraphernalia may also be consulted to remove them so as to restore good health to the animals. A lady participant in an FGD captured this scenario in the following way:

Ng'ato nyalo dhie kul to odhi ochwowo yath e kul kose a go kajuoga, koro in jambi gi githo athoya magima nego gi be onge makata kel ja veterinary ok nyal konyogi, kata yath mar nyaluo ni ok nyal konyogi, koro gin be ginyalo tho athoya kamano nyaka chieng' moro ibende iyud ajuoga moro mong'eyo yath kata jalomo manyalo golo yadhni (Somebody can go to the cow shed then he plants some magical medicine there so that your animals will just be dying without you knowing what is killing them such that even if you bring a veterinarian they don't get saved. Even herbal medicine doesn't save them. Now they may just die like that until one day you also get a magician who knows how to treat such problems or you get a religious person who can remove the medicine planted in the shed).

Among farmers in Nyang'oma there is a belief that certain utterances have magical power. The belief is that when one utters bad words about one's livestock especially during quarrels misfortune may strike the animals. Such animals may get sick or even die in large numbers.

Farmers in Nyang'oma also worry about individuals who wonder so much about the good health of livestock belonging to other farmers. Individuals who are fond of speaking so much about the good health of other farmers' livestock are often treated with suspicion. When misfortune befalls the animals those individuals who uttered the bad words or gave too much praise are often the first suspects. One farmer summed it up when she said that "ng'ama wouro ni dhiang' no tok mana jajuok" (That person who is wondering so much about the good health of your animals is likely to be a witch).

Misfortune may also strike animals as a result of offence against the departed. A commonly cited case is that when an elder identifies a particular animal to be slaughtered in his funeral when he dies, it would be improper for the remaining relatives to disobey such demands. Disobeying such demands could lead to misfortune where the pinpointed animal and even the rest of the herd may die. To remedy the situation, slaughtering the right animal and letting people feast in the funeral should be done as a way of appeasing the departed. When a close relative such as a parent dies, and you refuse to offer an animal for slaughtering in the funeral when you own animals then misfortune may as well strike them. In an FGD one lady participant captured this situation in the following words:

Kang'ama duong' moro notho to jamni nitie to ok oyang' kata mana e liende koro jam, ni mane nitiere gi koro githo athoya koro iwacho ni ng'ama duong' mane otho cha ema koro ketho jamnigi nikech ne ok otimne kaka ne odwaro. Kata aduong'ne nyako ni koro an katho to ok oyeng' to nyako ni kotho to iyeng'o ne mano bende nyalo goyo jamni (If an elderly person dies and animals are there but are not slaughtered at his funeral then when these animals start dying, it can be said that it is this departed elderly person who is causing misfortune to the animals because tradition was not followed as is required).

There is also a belief in a link between human and livestock health. Animals are known to act as safeguards to human health. The belief is that misfortune that is supposed to befall human beings may get deflected to his animals. According to a farmer who is also a quack vet and a livestock merchant Mr. Miyao, someone's healthy and big bulls may just die without getting sick. The explanation is that it is human health that was to be affected. Such death may have been directed at human beings but the departed relatives or ancestors of the farmer decided to spare him and instead deflected the misfortune to his animals. According to Mr. Miyao, this is one of the major driving forces towards livestock rearing. It is believed that without livestock death to human beings cannot be prevented for there will be no place for the departed to deflect such misfortune to.

er religious beliefs and restrictions also play important roles in ethnoveterinary perceptions and practices. is believed that a woman whose husband has died and has not gone through the traditional processes of wife entance (*ter*) is ritually unclean (*en gi chola*). Such a woman should not come into close contact with animals lest she causes poor health or death to such animals. In an FGD one participant illustrated this point when she said that:

Ka jamni dendgi dhero adhera to aluny moro be dwani omakgi to githo athoya kata ithiedhogi to ok ginyal bedo mangima, inyalo wachni mama moro onyono kul gi chola ema nego dhok kata okwanyo owuoyo gi chola (when animals just grow thin and their skins are peeling off and they just die such that even when you treat them they don't get well, it can be said that a woman with *chola* (a woman who has not been ritually cleansed after the death of the husband) stepped on the animal shed or that she went to pick cowdung from the shed and that this is what is making the cows die).

the cause of poor health to animals is traced to the actions of such persons then some cleansing medicine (*nyasi*) is necessary. This herbal medicine is sprinkled around the cowshed and on the bodies of the animals with the belief that this will restore good health.

When a cow dies leaving behind a young calf, a strip of its skin will be tied around the calf with the belief that this is protective against misfortune. Others say that this strip of skin gives out some scent that assures the calf of the mother's presence. This scent it is believed reassures the calf of the presence of the mother's protection and so makes it stay healthy.

When a calf dies a structure resembling a calf would in some cases be constructed then wrapped with the skin of the dead calf. This structure would then always be placed next to the cow whenever milking is to be done. It is believed that the skin reassured the cow of the presence of its calf and so would relax and allow for the normal milk letdown. A farmer who is also a retired driver with the veterinary department reported that '*the cow is fooled and will lick the structure as if that is the real calf and in the process give out more milk*'.

The illness commonly associated with evil eye (*dhoho*) in animals is the teat problem referred to by vets as mastitis. The perception is that jealous individuals with these supernatural powers often bewitch the teats and so that the cow cannot be milked nor suckled by its calf. Another participant captured this in an FGD by saying it this way:

Tuo moro nitie kae masa moro ki nyiedho dhiang' to inyalo yud kata ka thund dhiang' ong'odre golo kata remo, mane en juok mang'ato oirogo thund dhiang' mar wang'. Samoro en dhiang' monyuol to en gi chak mang'eny, thunde orengre koro onyalo ire, mano iwacho ni odhohi (There is an illness in which cuts develop on a cows teats such that when you are milking the teats bleed. It was believed that evil eyed persons who bewitched the teats and udder caused this problem. This condition is referred to as *odhohi*).

the calf and the cow may die because of this problem. Farmers usually consult herbalists who know of a special herb that is applied on the teats and udder for treatment of this problem. It should be noted here that particular herbal medicine don't just work as any other herb that addresses natural animal illnesses but to counteract the supernatural effects of the evil eye.

These beliefs compare very well with similar beliefs regarding human illnesses. Among human beings the belief in witchcraft as a cause of illness and death is well known among members of Nyang'oma community. For treatment purposes individuals with similar magical or religious powers are often consulted. The belief in magical words is also known to affect human health. Curses from elderly people are known to be common causes of ill health. Evil eye (*sihoho*) is another problem comparable with *dhoho* in animals. In this case a serious case of stomachache is believed to result from the evil eyed persons who look at the food being eaten by another person such that this food goes bad in the stomach. Treatment is usually done through the application of herbal medicine or through some surgical operation (*saro*) and the food that has gone bad in the stomach is removed. Among human infants there is a practice in Nyang'oma whereby a piece of cloth containing some magical paraphernalia is tied around the child's waist with the belief that this confers protection against misfortune.

Coming by these relationships in beliefs and treatment approaches, credence is therefore given to the theoretical framework of this study by showing that the perception of illness determines the remedial action to be taken more or less in a similar way as it does in human health.

Skills and knowledge transfer

Among members of Nyang'oma community several means of passing information are in use. Ethnoveterinary perceptions and practices are in constant state of being transferred from one section of the community to another or from one generation to the next. Skills and knowledge transfer ensure that certain knowledge is not concentrated in certain sections or among certain members of the community. It also ensures that such knowledge is not lost over time due to the demise of the beholders. In this section these means of skills and knowledge transfer are explored.

Trained veterinary practitioners and clinicians do give advice to interested people in the community pick up trainees. These trainees may be interested in the knowledge so that they can use the same to treat their own livestock but in the process some end up treating other peoples livestock as well either for payment or on relationship and other relatedness terms.

Government trained veterinary officers do give advice on animal sicknesses, treatment and other maintenance issues. However, their coverage level is quite low. Farmers argue that they don't regularly move around to extension services. They are to be consulted at their divisional or district vet offices. These are in many cases located at far distances from farmers. To consult the vet officers, farmers have to traverse these far distances. To let vets come to attend to animal health problems at their homes farmers have to transport to farmers homes also have to be paid for by the farmers themselves. The farmers as well pay services rendered. Consequently these costs become prohibitive thereby scaring away farmers. Vets charge consultation fee, transport fee, as well as their services. Farmers argue that this lack of monitoring and extension can easily lead to disease spread. A government livestock production officer at Bondo Mr. Mulemi informed that two departments exist in the newly created Ministry of Livestock Development. These are the Department of Veterinary Services and Department of Livestock Production. They both offer advice on different aspects of animal health. According to Mr. Mulemi the problem so far identified by these departments' employees is the shortage of employment by the government in these departments. Coupled with this there has been a reduction in the number of employees due to natural attrition and retrenchment, which has led to lack of enough staff to offer thorough extension services.

Knowledge about livestock health and management is also learnt at school. Knowledge acquired at school is not put into practice by some beholders not only to treat and manage own livestock but also to render help to others either freely or for money.

Knowledge about livestock health and management can also be got through experience. Individuals who are in constant touch with practitioners can gain knowledge simply through observation and participation. Assistants to livestock production experts such as drivers may gain knowledge that they later use to attend to livestock.

Exchange of ideas also takes place among the practitioners themselves. Quack vets often exchange ideas on diagnosis and their treatments. One quack vet reported that a fellow *jua kali* (quack) vet taught him how to mix and administer drugs.

There is a strong feeling among livestock keepers that the knowledge that they possess about animal health and management have come out of cumulative experience. After keeping livestock for a long time, they have accumulated knowledge that has become tacit.

Knowledge about animal health care is usually also disseminated through government initiated programmes such as Farming in Tsetse fly Control Areas (FITCA) which often hold field days where vaccinations are done

and farmers are taught various animal health issues. Community dipping and vaccination sessions also act as a platform for information dissemination.

A major source of animal health information at the community level is the chiefs' or DO's *barazas* (meetings). Here disease outbreaks are often announced while farmers may be informed of vaccination and dipping days. Even other disease prevention strategies such as quarantine may also be declared in these meetings. However it is noted that in these gatherings information about treatment is not taught but only disease prevention measures are declared. Mostly the focus is on modern approaches while the traditional ones are ignored.

Farmers are mainly consulted on how to administer drugs. Drug sellers also do give advice to farmers especially on which drug treats which animal disease and give appropriate instruction on how to administer them. Individual farmers who know how to read the labels on drug bottles or wrappers often read the instruction and use the same to treat their own animals or advice the quack vet or any other person administering the drug to the animal.

The majority of farmers interviewed reported that they mostly consult quack vets (*jobilek* or *jua kali* practitioners) because they are more readily available within the community and they are also charging less for their services. Community kinship and relatedness issues play apart in these interactions. Information can be given freely. Treatment may also be done freely or on negotiated terms. No fixed pricing. The main danger of such sources of information is that they may not be correct given that the quacks are not experts. Community members note that sometimes the treatment by quack vets may be dangerous to animal health. This is why information from trained vets or animal health clinicians is often considered appropriate.

Administration and knowledge about herbal medicine mainly is passed within the family from parent to child, from generation to generation. As mzee Soi Otuko put it

Magi duto babana emane onyisa. Babana ne ong'eyo yadh nyaluo mang'eny. An ok ati gi sandan ahinya, motama ema achwowo (It is my father who taught me about herbal medicine as he knew several kinds of them. It is these herbs that I use for the treatment of animals and not so much of veterinary injections unless those treatments have failed).

This also shows the trust that people have on herbal medicine and brings us back to the reasons for the continued reliance on them. Usually certain restrictions are taken into consideration when passing down such knowledge. An honest trusted child, that is respectful, accepts to run errands for the adults or parents

likely to be trusted with such knowledge. Elsewhere knowledge about treatment using herbal medicine can be passed simply on friendship basis. However, some knowledge may be considered so special and may not just be given to everybody. Such knowledge may be a preserve of a family and may be given out when some payment is made. Payment may be made either in cash or in kind. A participant in an FGD had this to say about such knowledge transfer:

Yani kang'ato dwa weni yath mondo koro ing'e yadheno, ok samoro obiro dwaro ni imiye gimoro Koro gimo dwarono kimiye to onyisigo (That is to say that when somebody wants to give you knowledge about a particular herbal medicine that he knows, he may want you to give him some payment. Once you have given him what he wants he will show you the medicine).

Mzee Soi Otuiko captures the value of knowledge about herbal medicine as a profitable asset that must be guarded at all costs lest it became common knowledge that cannot be sold when he says that:

Ah ah mano yadha ma achimogo ok anyis ng'ato ang'ata. Ka ung'eyo to koro abiro chiemo nadi? (No, no that is the herbal medicine that I eat from. I don't just tell everybody. If you all know then what shall I eat from?).

Herbal treatments are common knowledge that they can be passed to anybody who requests.

Nevertheless some constraints have been noted in the transfer of traditional knowledge from older generations to present generations. Many farmers have noted schooling and the town influence as factors that act as barriers to proper transfer of traditional knowledge of animal health care. Those who have gone to schools or who lived in towns view traditional treatment and management techniques as primitive or backward. Religion can also play similar barrier roles. People who have embraced Christianity often refute the authenticity of magico-religious beliefs and related animal treatment procedures. Devout Christians often report that they do not believe on magico-religious beliefs and practices.

Knowledge about treatments especially on the use of herbal medicine may also come from God himself (divine revelation). It may also come from the ancestors or the living dead (the recently departed who are still present in the minds of those who knew them) that showed people, which plants to use in treating particular animal ailments. These revelations were received in form of dreams. Mzee Oteyo Jusa captured such kind of revelations in the following words:

bas ang' kanindo dana mane osetho maok aneno mane onywolo wuonwa ochiewa gotieno, mo nyisa yadhno, yath makoro atiyogo nyaka sanini (Now when I was asleep my grand mother who had died without me seeing her, the one that gave birth to my father, woke me up at night and showed me that medicine (herbal), the medicine that I continue using even up to now).

Farmers also say that they do receive information about animal health and management through mass media, newspapers, radios, and other publications.

1.7 Knowledge differences

During focus group discussions a major finding was that farmers who are members of the older generation are more knowledgeable about the indigenous practices of animal healthcare than the younger farmers. The older generation farmers were found to be more aware of various herbal plants and even knew more about the traditional manipulation techniques such as venipuncture, false teeth (*jimo*) removal, feather (*wino*) plucking, ear notching etc. This suggests that these indigenous animal treatment techniques are being threatened with loss and therefore something needs to be done to ensure that the practices that are proven to be effective are not lost.

The findings also revealed that for Nyang'oma farmers who have resided in the rural areas for along time the knowledge gap between members of different generations is not so wide. However the knowledge gap seems very wide when a comparison is made between elderly rural dwellers and younger members of the community who have spent a major part of their lives residing in towns. These farmers seemingly because of spending most of their time away from regular contact with the community are not very much conversant with the indigenous ways of animal healthcare. Such finding also suggest that with modernisation the traditional techniques of animal treatment are being threatened with extinction. This also calls for the documentation of these practices, their validation and storage for the future generations that might find them quite important.

Among the rural dwellers, however, even though there is some noticeable knowledge gap between the elderly and younger generation farmers, it is not as marked as when they are compared with the younger generation farmers who have spent much of their time in towns. This suggests that knowledge sharing among rural farmers is very high. These people in an effort to address animal health problems still rely heavily on the traditional animal healthcare techniques. Such dependence on these techniques shows the high value attached to them and therefore calls for the recognition of such indigenous perceptions and practices so that they can be validated for the general improvement of animal health.

CHAPTER SIX

THE RELATIONSHIP BETWEEN ANIMAL AND HUMAN HEALTHCARE

There seems to be a close relationship between animal and human healthcare. From the above descriptions we see that certain illnesses of animals have equivalents in human health. Certain concepts are shared. *Athung'a*, which is a condition associated with difficulty in breathing, is a concept that is used to refer to a similar condition in human beings. In fact the same herbal remedy (*jandarusi*) is used to address the problem in both cases. The word *muorruok* (sudden death without prior notice) is applicable in both human and animal health. *Yamo*, which literally translates into wind is a condition associated with a multiplicity of illness symptoms. In human beings and animals suffer from *yamo*.

In animal health several magical and religious beliefs have already been identified and these have a direct bearing on treatment procedures resorted to. Such conditions are not unique with animals but have a lot to share with human healthcare. *Chira* (the wasting away of the body illness associated with the breaking of hooves) is a problem that is not only known among the Nyang'oma farmers but is common knowledge among the general Luo population. Several other related magical and religious beliefs still abound in human healthcare. Research in and education about such issues should be undertaken not only in human situations as most studies have tended to do but should as well be intensified on animal healthcare as well as these have serious implications on animal health.

In terms of treatment certain conditions in human beings are addressed in a similar way as in animals. Bloodletting for example is a practice done to animals with the perception that the problem lies in the blood (physiology). Similar perceptions are there regarding human healthcare and that in the past people used to cut the region around the forehead when they were suffering from headache. This, it was said allowed the "bad" blood perceived to be the cause of headache to flow out and allow for recovery. Hussein A. I. 1986 has documented this practice among the Boran of North Eastern Kenya.

In other cases the ethnoetiology of the people has identified feeding on certain foodstuffs as a cause of health problems in both animal and humans. Among human beings it is known that feeding on fresh green maize or chewing their stalk causes malaria (*midhuso*). On the other hand *aremo* illness among animals is believed to arise when animals feed on fresh green grass that sprout just at the beginning of the rainy season. In both cases research that would provide correct information about such beliefs is necessary to avoid any form of misconception that can lead to harm to both human beings and animals. Knowledge about such perceptions is also important for intervention purposes as without addressing such perceptions critically such interventions may only end up failing to achieve their objectives.

farmers have identified the use of herbal medicine as a purgative in both human and animal healthcare. In both cases the reasoning is that through diarrhoea the bodies of both human and animal patients get purified making these bodies illness free. These drugs are recommended even before illness has been detected. They as well be administered even after injections or other treatments to clean the patients' body of any residual poisons.

The study also found out the compound use of herbal plants (a mixture of several herbs) in the treatment of illnesses in both humans and animals. In both cases the reasoning was either that such a mixture makes the concoction more potent or that through trial and error one of the herbs may treat the illness condition.

Animal illnesses are perceived in the same way as human illnesses. In this regard the medicines used in human healthcare may also be used to address animal health problems. This is true especially with herbal medicine.

Treatment of poultry as described above has also shown those drugs such as aspirin, panadol, chloroquine and tetracycline that are used in human health can also be used in animal health. The perception is that just like human beings poultry also suffer from malaria and stomach problems that these drugs address.

In these practices, we realize that factors that determine choice of healthcare provision in animals are the same as those directing choice in human healthcare. These include availability, cost considerations, belief in efficacy as well as ideas about illness causation. What is believed to be the cause of illness influences remedy sort in both human and animal health. When causation is believed to lie on the supernatural plane then remedy will be sought from the supernatural sources. The same is with natural causes that will also call for remedy from natural sources.

Among human beings just as in cases of animal health, remedy to illness is sought from several sources. In human cases over the counter drugs can be bought and administered. In case of animals the owners of the animals may do this while among human beings the patient him/herself or relatives will do it. Self-medication is a common practice among human patients. On the other hand farmers often administer treatment to their animals. The assistance of relatives or neighbours is not unique only with human healthcare but these veterinary managers (Jansen 1978) are often at hand even in cases of animal illnesses. Additionally private practitioners, be they quacks or trained personnel are consulted in both cases though they are different in their approach. Traditional practitioners such as herbalists or folk boil surgeons are often consulted in both cases.

ped differently these different healthcare providers may be made to conform to Kleinman's three sectors
 healthcare

Findings also show that in both animal and human health, practitioners commonly consulted are those
 have been recognized by the community members over some long period of time as offering effective
 treatments either to animals or humans. Such practitioners are trusted by those who consult them because of
 honesty in practice. Such honesty is derived from among other things the perceived good administration
 in which case they are not known not to be swindlers of drugs bought by farmers nor do they either
 overdose nor underdose their charges. These practitioners are also trusted because of the good way they talk to
 as well as due to the affordable fee they charge for their services.

People do say that the animals they keep are like their children. Whenever they fall sick they have to
 treatment. Inability to give treatment to sick animals may come as a result of lack of resources, which
 also apply in case of human health problem. As already been discussed, the value placed on the sick
 animal determines the time and resources that will be put on their treatment. On the same note, more
 is placed on human health than on animal health. This therefore means that in situations of sickness,
 human health in many cases receives more immediate and better attention as compared to animal health

Similarities between perceptions and practices about livestock and human healthcare are presented in
 6.1 below.

6.1 Similarities in practices and perceptions regarding animal and human healthcare

TYPES OF AND PERCEPTIONS ABOUT COMMON ANIMAL AND HUMAN ILLNESSES		TREATMENT PRACTICES	PRACITITIONERS
ANIMALS	HUMAN BEINGS		
<p>Bad blood in an animal's body causes illness e.g. <i>aremo</i> and <i>aginga</i> in cattle.</p> <p>These two are considered the malaria or headache in cattle.</p>	<ul style="list-style-type: none"> Traditional perception was that illnesses such as malaria and headache were caused by bad blood in the body of the sick person. 	<ul style="list-style-type: none"> Bloodletting through venipuncture (<i>boro</i>) in case of <i>aremo</i> or ear slitting in case of <i>aginga</i> is the treatment for cattle. Bloodletting through <i>Saro</i>, an act of making small cuts on the skin of the forehead was meant to remove the bad blood among human patients. Nose bleeding is perceived to be natural human body response (<i>del oborre</i>) to such illnesses. 	<ul style="list-style-type: none"> Specialists in venipuncture and ear slitting are still found for animals e.g. cattle (both venipuncture and ear slitting) while dogs and donkeys undergo ear slitting only. <i>Saro</i> is rare among the people of Nyang'oma nowadays. This could be due to the availability of modern drugs and treatment approaches that effectively deal with malaria and headache.

Table 6.1 Similarities in practices and perceptions regarding animal and human healthcare

TYPES OF AND PERCEPTIONS ABOUT COMMON ANIMAL AND HUMAN ILLNESSES		TREATMENT PRACTICES	PRACTITIONERS
ANIMALS	HUMAN BEINGS		
<p>Head congestion and blocked nose results into fever (distress) condition in cattle.</p> <p><i>Acher</i> (grooming) common in goats, cattle and sheep is also perceived to manifest itself as breathing difficulty. The same conditions are also referred to as <i>athung'a</i> (blocked nose).</p>	<ul style="list-style-type: none"> • Head congestion, which can even result into madness, is a commonly perceived human health problem. • <i>Athung'a</i>, which manifests itself in the form of blocked nose or breathing difficulty, is another. 	<ul style="list-style-type: none"> • In both cases herbal medicine (<i>jandarusi</i>) is administered through the nose (<i>fito</i>) to make the affected sneeze out (<i>fir</i>) to clear the head and nose. 	<ul style="list-style-type: none"> • Same herbal medicine dispensers treat both human and animal health problems.
<p>Several animal illnesses commonly referred to as <i>yamo</i> (winds) are believed to originate from or reside in the stomach from where they spread to other parts of the animal's body.</p>	<ul style="list-style-type: none"> • <i>Yamo</i> is also common among human beings where it manifests itself in the form of several illnesses attacking an individual or inform of several swellings in the body. 	<ul style="list-style-type: none"> • In both cases herbal medicines such as <i>rachier</i>, <i>nyabungu odindi</i> and <i>akech</i> are pounded together, mixed with water and boiled then given to the human and animal patients to drink. This makes them diarrhoea (purgative) so as to remove all the germs (bad things) from the body to restore good health. These plants are believed to be body purifiers and so can be taken either as prophylactic or even after undergoing modern treatments. 	<ul style="list-style-type: none"> • Same practitioners often administer these herbal medicines to both animals and human beings.
<p>Animals often experience pain as a result of fatigue or physical injury.</p> <p>In case of <i>aremo</i> in cattle, the upper parts of the forelimbs around the humps are usually known to have muscle aches. Blood is often perceived to want to clot around these parts.</p>	<ul style="list-style-type: none"> • Pain is often realized on muscles and joints as a result of fatigue and injury. Blood is often perceived to want to clot around these parts. 	<ul style="list-style-type: none"> • Massage is done on aching muscles, joints and limbs using either plain warm water or warm water mixed with salt and herbal medicine. The aching muscles get straightened and blood that would clot around these places start to flow normally. 	<ul style="list-style-type: none"> • Specialist massagers only exist for human beings. However farmers can do simple massage both for human beings and for animals.

Table 6.1 Similarities in practices and perceptions regarding animal and human healthcare

TYPES OF AND PERCEPTIONS ABOUT COMMON ANIMAL AND HUMAN ILLNESSES		TREATMENT PRACTICES	PRACTITIONERS
ANIMALS	HUMAN BEINGS		
Broken limbs	<ul style="list-style-type: none"> Broken limbs 	<ul style="list-style-type: none"> Bonesetting is done for both animals and human beings by placing <i>Osembo</i> (sticks tied together) around the broken limbs in order to fix the broken bones. Usually herbal medicines are applied before the <i>osembo</i> is tied. 	The same herbal medicines and practitioners are consulted for both animal and human beings. Modern orthopaedic specialists also attend to broken bones in human beings.
Loss of false teeth are teeth that grow besides the permanent teeth in cattle. They are perceived to be weak and painful when a cow is grazing thus they interfere with feeding. They make a cow grow thin and cause diarrhoea and breathing difficulty. They can cause death of an animal.	<ul style="list-style-type: none"> Among infants certain teeth are usually considered false. Affected infants are known to suffer from breathing difficulties and diarrhoea. They usually cry a lot and death may result. Adults also suffer from toothache. 	<ul style="list-style-type: none"> False teeth (<i>jimo</i>) in cattle are extracted using pointed objects such as chisels or the pointed side of a file. Salt or ash would be applied after the operation to disinfect the areas where teeth were removed. Women experts do use pointed objects such as knife extract teeth among infants. However the growth of false teeth among infants can be prevented by application of herbal medicine. <i>Tiga tiga</i> which is rubbed against the jaw early enough before the teeth starts to grow. 	Teeth extractors are often different for animals and human beings. Adults nowadays consult modern dentists though in the past there were traditional extractors who would do it in a similar way as with infants and animals. Usually salt or ash would be applied after the operation as disinfectants.
Retained placenta.	<ul style="list-style-type: none"> Retained placenta. 	<ul style="list-style-type: none"> For both animals and human beings removal of retained placenta is done through the administration of herbal medicines such as <i>odagua</i>, <i>olusia</i> and <i>nyangliech</i>, which are crushed, mixed with water then given the affected to drink. For <i>Bala</i> (salt lick) is also added to these at times to speed up the removal 	Same herbal medicine dispensers often address retained placenta problems in both animals and human beings.
The illness commonly associated with evil eye (<i>Dhoho</i>) in animals is the test and udder problem referred to by vets as mastitis. The perception is that jealous individuals with these supernatural powers often bewitch the test and udder so that the cow cannot be milked nor suckled by its calf. Both the calf and the cow may die because of this problem.	<ul style="list-style-type: none"> Evil eye (<i>dhoho</i>) is a common cause of human illnesses. Individuals with serious wounds that do not heal often claim to have been bewitched (<i>odhohi</i>). 	<ul style="list-style-type: none"> Treatment for illness resulting from evil eye (<i>dhoho</i>) is done using similar herbs for both animals and human beings 	<ul style="list-style-type: none"> Same herbal medicine dispensers attend to both human and animal <i>dhoho</i> cases using same medicine.

6.1 Similarities in practices and perceptions regarding animal and human healthcare

TYPES OF AND PERCEPTIONS ABOUT COMMON ANIMAL AND HUMAN ILLNESSES		TREATMENT PRACTICES	PRACTITIONERS
ANIMALS	HUMAN BEINGS		
<p>Boils commonly attack animals such as cattle, goats and sheep. These boils are considered as <i>yamo</i> (wounds) as what causes them is not known.</p>	<ul style="list-style-type: none"> Human beings also suffer from boils. The boils are also associated with <i>yamo</i> that are in the body and manifest themselves as boils. 	<ul style="list-style-type: none"> For both human beings and animals surgical operation on boils is performed where the swollen part is slit and the inside contents comprising pus, clotted blood and some white phlegm-like materials are squeezed out. Among human beings some herbal medicine is applied at the affected part then wrapped with the spiders nest material (<i>mbui</i>) to let the boil come to a head before the surgical operation is performed. 	<ul style="list-style-type: none"> Individuals with special knowledge of boils can attend to both human and animal problems.

CHAPTER SEVEN

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS.

Discussions

Livestock plays a key role in the lives of the Nyang'oma farmers. As has been highlighted in Table 4.2 which deals with socio-economic and cultural values of domestic animals livestock serve several diverse and distinct functions in the lives of the Nyang'oma farmers. Livestock are a chief source of livelihood as they provide food in the form of meat, milk and blood as well as dressings and bedding in the form of hides and skins. Animals also provide a cheap source of labour and are paid as bride wealth. They are a source of income received either from the sale of meat or animals themselves. Domestic animals are as well kept to provide security at home. On many occasions they are also used in certain ritualistic functions. Their dung or droplets are often used as fertilizer in the gardens while the animals themselves may be used in agriculture to draw the oxen plough. They are also used as well be used as beasts of burden in carrying heavy luggage to far distances. These animals have been used for wealth and prestige purposes. Depending on the number of animals one keeps, one is accorded appropriate status in the society. In the modern market economy, livestock is also used to pay school fees or even as a "bank account" or as a means of capital accumulation, which can be mobilised when needed. Ensuring that animals are kept healthy is, therefore, a major preoccupation of the livestock farmers.

From the study has found out that livestock farmers in Nyang'oma have vast knowledge of the various kinds of illnesses afflicting their animals as well as how to treat or prevent these diseases. The farmers identify illness in an animal by looking at various signs which include rough hair coat/erection of hair or fur, inability to eat well, difficulty in movement/limping, restlessness/agility, too loose or too hard stool, colour and size of stool and blood in stool. Other signs include production of abnormal sounds e.g. coughs or sneezing, dullness, wounds or swellings, saliva flowing from the mouth, breathing difficulty and drooping of feathers in birds. Still other signs to be considered are running nose, watery eyes, thin or slender body and observable parasites in the body, e.g. ticks, lice, flea etc. Such kinds of illness diagnosis methods are not unique with Nyang'oma people only but have been documented in other areas as well. Wirtu et.al (1999) observed such diagnostic methods as being used by the farmers of central Ethiopia in order to isolate what kind of illnesses are afflicting their livestock.

Indeed from such signs farmers are capable of isolating and naming the various types of animal illnesses prevalent in their areas. As is shown in table 4.1, the Nyang'oma farmers have vast knowledge of several illnesses afflicting their animals, signs and symptoms of such illnesses as well as how these illnesses are to be treated. They depend on the most prominent clinical signs to give names to various illnesses. As is explained in chapter four, an illness such as *aremo* derives its name from the perception that the problem is in the blood

chur is so named because of the groaning (*chur*) associated with the illness. Even *achiya* is so named because of the thinning (*chirruok*) of the body of the animal victim. Most of the illnesses are named in this manner. Such naming system has also been identified by Heffernan et.al. (1996) among the Samburu herders. These authors note that the Samburu herders for example call Nairobi sheep disease as *manya* (red intestines) because of the bloody diarrhoea that is its principal clinical sign. Additionally the Nyang'oma farmers also rely on postmortem examinations to name and classify animal illnesses. The illness of the great bowel (*tu mar oduko*) is so named because of the dryness identified in the bowel of a victim cow when it is already slaughtered. Among the Samburu Heffernan et.al. also noted reliance on postmortem examination to diagnose illnesses such as rinderpest.

Nyang'oma farmers rely more heavily on the available local knowledge while addressing animal health. They still depend more on traditional herbalists, bonesetters, castrators, dockers, dehorning specialists, placenta removers and many other such traditional experts. Reliance on traditional expertise has to do with several factors. Local knowledge is readily available. You don't have to walk long distances to seek for assistance. There is also faith in practices that have served the farmer for a very long time. Fielding D. (2002) also captures this when he says that reliance on EVM is because livestock keepers are already familiar with it, it is what they use now. He says that it is freely available or at a cost in proportion to the value of the animal. It is also easily administered, usually topically or orally.

From earlier generations to the present the Luo have dealt with their animal health problems using this traditional knowledge. Traditional animal health remedies also tend to be affordable to farmers many of whom have poor economic bases. Kambewa B. M. D. et al. (1999) found out in northern region of Malawi that despite the existing veterinary structures, farmers in the rural areas use traditional medicine to treat livestock. At the same time Demel (1995 cited in Kambewa B.M.D. et al. 1999) also observed that in the same region of northern Malawi calves had scars at lymph node points that were burnt the traditional way as treatments against ECF while others had their ear tips chopped off for the same reason. In the same publication Hamed (2002) in a study carried out in Rural Medak, India also noted such kind of reliance on ethnoveterinary perceptions and practices. Because of high reliance on these perceptions and practices Hamed sought to maintain their validity. He in fact went ahead and interviewed informants about the efficacy of six different types of herbal medicine for the treatment of animal illness condition referred to as *verachanal*. He also noted that documenting and validating of ethnoveterinary practices is a first step towards preserving and promoting them in villages of Medak district. This study made similar attempts by documenting animal illnesses and their treatments (Tables 4.1 and 5.1). It would be important to validate these perceptions and practices for the benefit of the Nyang'oma farmers who heavily rely on them. This is especially so because so

As a peoples' perceptions concerning animal illnesses still remain the same, they will continue relying on remedial actions that have served them for along time.

Traditional animal health techniques are also culturally compatible with the beliefs and practices of the Luo of Nyang'oma. In chapter four it is recognised that it is the way an animal illness is perceived that will influence mode of treatment sought. Thus if *aremo* is a blood related problem then some blood has to be drained out through venipuncture to relieve the condition. If the teat problem is known to result from the actions of the evil eye (*dhoho*) then someone with the power to ward off such supernatural effects will be resorted to. The witch plays an important role as far as these perceptions and illness treatment is concerned. The farmers differentiate between natural and supernatural causes of illness in animals. Natural illnesses are perceived to result from ectoparasites e.g. lice (*nyuogo*), ticks (*okuodo*), fleas (*omboto*) as well as other worms (*njokni*) and leeches (*chwe*). Insects such as tsetse flies also are known to be transmitters of illnesses (*tuogo*). Among the Samburu Heffernan et al.(1996) have also documented that these pastoralists recognize that an animal illness called *Itikana* (trypanosomiasis) is transmitted by tsetse fly. Other natural causes of illness as identified by the Nyang'oma farmers are poor feeding, "bad" blood in the body/too much blood in the body, snake bites, physical injuries, contagion and ingestion of indigestible materials, e.g. polythene bags. Other causes include poor sanitation, abnormal growths such as false teeth (*jimo*) as well as dust inhalation. On the other hand supernatural sources of ill health to animals are known by the Nyang'oma farmers as being the following; actions of the evil eye (*dhoho*), witchcraft (*ndagla*), misconduct to the departed, curses or words too much praise of ones animals. Evil eye and witchcraft are different in the sense that with evil eye illness results when an evil eyed person looks at the food one is eating or when wounds develop in parts of the body where the evil eyes were directed. On the other hand, witchcraft has to involve some magical concoctions, which are manipulated in given ways and placed in certain strategic places for them to be effective.

Depending on this kind of classification using cause as the criterion farmers will seek remedy from either natural or supernatural sources. This is also recognised by Wanyama and Keter (2002) among the Samburu and the Kamba. The two noted that EVK practice could be subdivided into two main areas. That there are medico-religious specialists who rely on divination as a basis of diagnosis and therapy while herbalists whose part are associated with treating the organic physiological aspect of disease regardless of the underlying cause. In short there are those who believe in psychic powers and herbalists who believe in natural causes.

these findings it can be said that Foster and Anderson's disease theory is applicable in animal healthcare just as it does in human healthcare. That it is how illness is perceived or classified that directs action to be resorted to. Table 6.1 illustrates this point by outlining points where perceptions and practices in human and animal health tend to converge.

However, from the findings we also note that certain situations such as those of costs, availability of animal resources or experts as well as the value attached to an animal also come into play. A combination of these factors make the theory a bit inadequate in explanation and so calls for the search of more inclusive theories or models such as the health belief model. Such a theory will be more aware of the other factors that seemingly are not explained by the disease theory.

Some of the practices in animal healthcare have a lot of parallels drawn from human healthcare. First in some areas the same practitioner attend to both animals and human health problems as has been noted by Githae at Karati Rural Service Centre. Schwabe (1996) also noted among the ancient Egyptians that the goddess of the lion goddess *Sekhmet* who could cause and prevent plagues, practised both veterinary and human medicine. In fact WHO and WHO/FAO Expert committees have repeatedly recommended that human and veterinary health services be integrated as fully as possible, especially for hard to reach populations and their livestock (Schwabe 1989). Mathias et al. (1999) observe that where such pastoral co-operation has been implemented, it has resulted in cost savings, improved services overall, and broader outreach to both people and animals. In Nyang'oma this study noted that traditional healers for example tackled both human and animal orthopaedic problems. Herbal medicine dispensers use the same purgatives, herbs for treating snakebites as well as same herbs in retained placenta removal for animal and human health.

Some factors that have ensured continued use of traditional knowledge in animal health have also done the same in human health. The costs, availability as well as belief in efficacy of ethnomedicine in many areas have acted in such away that they have ensured continued reliance on traditional techniques of healthcare. Fielding D. (2002) in his publication *Ethnoveterinary medicine in the tropics – Key issues the way forward*, captures this when he says that if the cost of a treatment is a significant proportion of the value of the animal that is being treated then the animal may be left untreated or a low cost EVM may be used. As is illustrated in Table 4.2 different animals serve different purposes and thus are valued differently. This difference in valuation leads to difference in the quality and speed with which medical action will be given for different animal illnesses. Nyamongo (1998) has noted that these factors

do with costs, availability and efficacy of the treatment options are also important determinants of human health seeking behaviour.

An effort to seek cure for illness afflicting their animals livestock farmers may move from one remedial action to another or from one healer to another so long as the illness is still persistent. This will go on until the cure is got or until the animal dies. Janzen John (1978) in a study carried out in lower Zaire noted this kind of behaviour among human beings. Janzen maintains that medical systems are used in combination to arrive at a solution for the suffering. Among the Nyang'oma farmers it was established that herbal medicine is often used either before or after the administration of modern veterinary treatments because of the belief in its purifying quality. On the other hand when modern treatment is not yielding the desired results individuals could resort to traditional treatment techniques. It is also true that certain illnesses (such as *nyama*) were considered special and that such conditions could only respond to herbal treatments. It is only when herbal treatments failed that the farmers will seek other treatment options. As is noted in chapter five in the section dealing with magico-religious issues, when the natural treatments have not yielded positive results then it is often true that the illness condition will be explained in the supernatural plane. This will mean then that remedy will be sought in that same plane. Thus shifts from one plane of illness explanation to another as well as from one remedial action to another is not unique to human healthcare (as has been captured by Nyamwaya 1982 among the Pokot) but is also true in animal health seeking behaviour.

However it is also true that when farmers lose hope on the restoration of good health to their animals, then the animals can be slaughtered and the meat eaten or sold to recover some money that would be lost in the event of death. While this is not very true of human beings it seemingly sounds similar to euthanasia i.e. a situation where death may be proffered to human beings to avoid further suffering to the patient or to save the life of an infant or pregnant mother in case of birth complications?

The findings further support the existence of Kleinman's three sectors of healthcare (Kleinman 1980) in animal health seeking behaviour. The folk sector consists of the group of traditional practitioners such as herbalists, bonesetters, castration specialists, de-horning specialists, retained placenta removal specialists, locking specialists, false teeth (*jimo*) extractors, and ear notching/slitting specialists. As Kleinman puts it, this sector refers to that domain where certain individuals specialise in forms of healing which are either sacred or secular or a mixture of the two. Treatment for the teat problem (*odhohi*) can thus be categorised under the sacred domains of treatment. The same is with calling individuals with special knowledge to perform counter magic in the home where it is suspected that the illness afflicting animals has come as a

of magic planted in the home. Several other treatments such as those done by herbalists, bonesetters, traction specialists, de-horning specialists, retained placenta removal specialists, docking specialists, teeth (*jumo*) extractors, and ear notching/slitting specialists would then fit into the secular domains of folk sector.

popular sector would encompass such healers as unlicensed private practitioners such as quack vets other home remedies including the purchase and administration of drugs bought from veterinary shops as well as other first aid measures conducted at home. This would be so because as Kleinman suggests, this is the lay, non-professional, non-specialist domain of the society especially the household level where disease is first detected and first treatment offered. Thus most of the remedial actions taken at the household level will fall into this sector.

last group will encompass professionals or professional organisations in their own right. Licensed veterinary practitioners such as unemployed graduates of animal and veterinary sciences and retired veterinary clinicians together with government veterinary personnel would fit into Kleinman's professional domain of healthcare delivery. According to Kleinman this is the domain where we find the organised, formally sanctioned healing professions, such as modern western scientific medicine also known as allopathic or biomedicine.

Coming back to perceptions, this study established the existence of wide differences between emic and etic perceptions. While vets do explain problems from a more biological angle relying on the germ theory, the concept is not quite developed among the local farmers. The farmers for example explain *aremo* illness as resulting from too much blood in the body. On their part, the vets explain this disease as a bacterial infection transmitted by tsetse flies. This difference in perceptions has a direct impact on remedial action as the farmers proffer venipuncture that the vets on their part reject. The same is true of the teat problem seen by the farmers as resulting from the actions of evil eyes (*dhoho*) but seen by vets as a bacterial problem.

However, emic and etic perceptions also interact in such a way that they influence individuals in a unique manner. As is pointed out by Professor Bestor T. C. (2003) Emic derives from the perspective of the insider, the "native's" point of view; the subjective interpretation of beliefs, values, practices, behaviours as they make sense to participants in a cultural system. On the other hand Etic derives from the perspective of the detached, external, observer, "objective" measurement or description that does not depend upon an insider's understanding of the phenomenon. It is true that most of the trained veterinary personnel that

... in the Nyang'oma community also happen to be members of the same community. They have lived in this community and therefore share a lot with members of this community in terms of ethnoveterinary perceptions and practices. Even though trained on scientific ways that may be considered *etic*, they often find themselves in a dilemma of whether to support or reject the *emic* perceptions and practices. One veterinary clinician for example was in a dilemma whether feather plucking in poultry has any medical value. When asked whether that practice is effective he had this to say:

As with most of our traditions, I wouldn't say its bad or good but just as I was saying there are things we cannot measure, we have not taken time to understand them properly to know whether they work or not but they are traditions we are also not so much hard up to pull farmers away from.

These kinds of dilemma contribute as factors ensuring the persistence of traditional techniques of animal husbandry which in turn maybe used complementarily with the modern techniques.

Because of high demands for healthcare both for animals and humans, in situations of poverty and relatively less availability of qualified dispensers, there has been a marked proliferation of quacks both in human and animal health. Mugunieri *et al.* (2003) have also noted that as a result of the withdrawal of government veterinary services as a World Bank instigated economic reform following the economic recession of the late 1970s, large sections of marginalised Africa where professional private veterinary practitioners cannot reach because of poor infrastructure, have witnessed a proliferation of untrained community based animal healthcare workers (CBAHWs) as a stopgap measure. While this has been helpful to the communities whose livestock would have been decimated by untreatable animal illnesses, it is as well dangerous in both cases and may be more dangerous to human health. As this study reveals, most of the quacks that have learnt to inject animals in many cases also end up injecting human beings. According to one veterinary personnel *"what quacks need is only courage to administer injections. Once this has been gained from animals, then they can as well go about injecting even human beings"*.

With the already explained existence of commonality of perceptions as regards animal and human health problems, serious danger is posited by these quacks who can easily misuse or mishandle drugs from both sides of the divide.

What makes it worse is the fact that these CBAHWs operate illegally as the existing legal and policy frameworks on veterinary service delivery in Kenya prohibit veterinary practice by unqualified individuals (Mugunieri *et al.* 2003). Because of lack of such legal and policy framework recognition these practitioners do as well not receive any professional training to increase their knowledge of practice.

Conclusion

Ang'oma farmers know of several illnesses that their livestock often suffer from. They are also aware of various treatment and preventive approaches to these illnesses. Their ethnodagnosis involve the identification of various bodily signs that indicate the kind of sickness afflicting an animal.

Knowledge about animal illnesses and how to treat them flows through various channels in this community. This knowledge is considered so crucial and an asset to the family concerned as they gain monetarily or otherwise from it. Such knowledge is considered secret and therefore passed down only through the lineage to specific individuals with qualities to protect and preserve that kind of knowledge for the benefit of that family lineage. Such knowledge can only be given to outsiders through special arrangements such as through payment in cash or in kind. Some other knowledge may be considered not to be very special and therefore can easily be transferred to any individual in need. Still other sources of information can include formal sources such as meetings (*barazas*) organized by government officials as well as other non-governmental organizations such as FITCA. Individual practitioners can as well pass knowledge to fellow practitioners and even to farmers while farmers themselves also do share treatment knowledge among themselves.

Farmers depend on the most common clinical signs to give names to various diseases. Additionally the Ang'oma farmers also rely on postmortem examinations to name and classify animal illnesses. These farmers rely more heavily on the available local knowledge while addressing animal health. They still depend on traditional herbalists, bonesetters, castrators, dockers, dehorning specialists, retained placenta movers and many other such traditional experts.

Reliance on traditional expertise has to do with several factors. Local knowledge is readily available and generally is affordable or obtained free of charge. There is also faith in practices that have served the farmer for a very long time. Livestock keepers are familiar with them and in many cases are also easily administered.

This study also established that the anthropological theory advanced by Foster and Anderson in 1978 to explain response to human diseases is also applicable in animal health. However the theory is limiting in the sense that it does not explain the role of other factors such as costs, efficacy, availability of remedial resources and experts as well as the value attached to an animal. Given that these other factors also influence treatment behaviour the theory is rendered a bit inadequate by leaving them out. It is therefore necessary to search for other more inclusive theories or models to give better explanation.

study also found out that there are several instances when the same practitioners treat both animal and human health problems. Health-seeking behaviour in both cases is also influenced by similar factors. These include costs of therapy, their availability and belief in the efficacy of ethnomedicine. In both cases it is also understood that in an effort to seek cure for illnesses individuals may move from one remedial option to another or from one healer to another so long as there is still no improvement in health.

The findings further support the existence of Kleinman's three sectors of healthcare (Kleinman 1980) in animal health seeking behaviour. Thus the folk sector will be consisting mainly of traditional animal health practitioners and the popular sector will encompass home remedies by the farmers themselves as well as treatments by such healers as unlicensed private practitioners such as quack vets. Licensed private primary practitioners such as unemployed graduates of animal and veterinary sciences and retired primary clinicians together with government veterinary personnel would fit into Kleinman's professional sector of healthcare delivery.

Because of high demands for healthcare both for animals and humans, in situations of poverty and relatively low availability of qualified dispensers as prevails in Nyang'oma, there has been a marked proliferation of quacks both in human and animal health. While this has been relatively helpful it is as well noted to be dangerous in both cases and may be more dangerous to human health as this study revealed that most of the quacks that have learnt to inject animals also end up injecting human beings. Serious danger is posed by these quacks who can easily misuse or mishandle drugs from both sides of the divide. From the policy point of view it is also noted that these CBAHWs operate illegally. This is because the existing legal and policy frameworks on veterinary service delivery in Kenya prohibit veterinary practice by unqualified individuals (Muganyizi *et.al.* 2003). Because of lack of such legal and policy framework recognition these practitioners do not undergo any professional training to increase their knowledge of practice. They therefore remain not only inadequate in discharging their duties but are as well dangerous to the health of animal and human beings.

Recommendations

1.1 Recommendations for further research

A lot of anthropological attention has been directed at human ethnomedicine with encouraging results. However, little of such attention has been directed at animal healthcare. This study has shown that a lot of perceptions and practices in animal healthcare have a lot of parallels with those of human healthcare. Domestic livestock provide humans with essential needs for survival. Their good health has a direct bearing on our own health. It would be important to address their health using all available resources including anthropological techniques of investigation. The study findings reveal that anthropological

approaches to human health such as the disease theory that has been the guiding framework of this study are as well applicable to animal healthcare. Even models such as Kleinman's three sectors of healthcare delivery have been found quite applicable to animal healthcare. This study therefore strongly recommends the incorporation of the anthropological approaches in investigating animal health problems. Anthropology recognises the importance of emic perceptions in addressing human problems. A lot of anthropological attention has been directed at human ethnomedicine with encouraging results. However, little of such attention has been directed at animal healthcare. This study has shown that a lot of perceptions and practices in animal healthcare have a lot of parallels with those of human healthcare. Domestic livestock provide humans with essential needs for survival. Their good health has a direct bearing for our own health. It would be important to address their health using all available resources including anthropological techniques of investigation. The study findings reveal that anthropological approaches to human health such as the disease theory that has been the guiding framework of this study are as well applicable to animal healthcare. Even models such as Kleinman's three sectors of healthcare delivery have been found quite applicable to animal healthcare. This study therefore strongly recommends the incorporation of the anthropological approaches in investigating animal health problems. Anthropology recognises the importance of emic perceptions in addressing human problems. Focusing on emic perceptions in addressing animal health is very important for the improvement of domestic animal health and productivity.

Documentation of ethnoveterinary medicine and practices is important to safeguard against loss not only of medicinal plants but even of practices that through validation may be found beneficial and may in future be blended together with modern veterinary practices through a process known as techno-blending. Such documentation may also be important in environmental conservation as well as conservation of traditional knowledge for future generations.

It is as well important to document the various medicinal plants used in animal healthcare with a view to presenting such herbs for laboratory analysis to find out their true medicinal as well as nutrient contents and even to find out possibilities of them being toxic. It is true that some of these drugs may not only be of high medicinal value but may as well be toxic to animals depending on the amount and type of the plants used. Laboratory analysis to ascertain these possibilities as well as to validate the usage of such plants is quite necessary.

2.2 Recommendations for veterinary practitioners

Veterinary practitioners should be made aware of emic veterinary perceptions and practices so as to isolate the negative from the positive ones. To improve on animal health, this study recommends a closer collaboration between anthropologists and veterinary doctors and extension workers when investigating animal health problems. This is because compatibility between conventional and lay peoples' concepts and perceptions seem to be very necessary in making extension activities more effective. The veterinarians should be equipped with knowledge that would make them handle situations on the ground in a manner that is acceptable to the local farmer. Consequently, knowledge of lay people's perceptions is very necessary in such cases.

2.3 Recommendations for policy makers

The local level human community health workers (CHW), locally referred to as (*nyamrerwa*) have been recognised by the government and often taken for training to improve their knowledge and skills. On the other hand the local animal healthcare dispensers have not been provided with similar opportunities for training and so improvement in knowledge and skills is limited. Mugunieri *et al.* (2003) have also noted that the current licensing requirements for private veterinary practice in Kenya exclude non-professionals from engaging in private practice irrespective of the socio-economic and physical characteristics of the locality where the practice is carried out. Because there is high reliance on these local animal health practitioners it is important that these individuals not only be legally recognised but that they also be regularly trained to increase their competency in practice. It is important to note that at least human beings can communicate their feelings and so can tell what is ailing them. Animals however don't speak and therefore require expertise in illness diagnosis and drug administration. Perceptions about animal illnesses and how these direct treatment are therefore of paramount importance. Training of community based animal health practitioners or paravets becomes quite important in this case. Such training should thoroughly take into consideration the emic perceptions of these practitioners so as to isolate what can be dangerous practices from good ones. The training can as well help avoid unethical practices such as drug misuse and mal-administration.

Furthermore the findings show that in both animal and human health, practitioners commonly consulted are those who have been recognized by the community members over a long period of time as offering effective treatments either to animals or humans. The clients who consult such practitioners have trust in them because of the belief in the efficacy of the remedies that they offer. Such honesty is derived from among other things the perceived good administration of drugs in which case they are known not to be swindlers of drugs bought from farmers nor do they either overdose nor underdose their charges. These practitioners are also trusted

use of the good way they talk to people as well as due to the affordable fee they charge for their services. Practitioners should be recognized for they are good entry points in whatever animal or human health intervention is envisaged. If some training program is envisaged priority should be given to individuals in this category who lack such training.

sometimes the same health practitioners attend to both human and animal health problems, proper training on drug handling is necessary for the benefit of both human beings and animals. One farmer, Mr. Donji cited a case in which another farmer kept both human and animal drugs together. When the farmer got sick, an injector (quack doctor) was called to administer chloroquine drug on him. Instead the injector used adamycine (animal drug) that was kept together with the chloroquine. When the mistake was discovered the victim farmer was rushed to hospital where he was attended. Even though this happened as a mistake, mishandling of drugs by those practitioners attending to both animal and human health problems is a possible threat. Both human and animal health is at risk of being affected by such kind of mishandling.

The future of herbal medicine in Kenya seems bleak especially after disagreements with medical doctors on the need to promote the administration of herbal medicine besides conventional medicine in hospitals. Modern biomedical practitioners are against the integration of the two (herbal medicines with conventional medical practices) (East African Standard Monday, March 04, 2002. Serious attention has not been directed towards herbal medicine. While this continues to be so, the western multinational companies are increasingly researching into the ingredients of herbal plants. Once they have established their medicinal value as the recent trend indicates, then they apply for patenting and upon achieving the patents they try to prohibit the use of such herbal plants. These multinationals are currently advocating for the establishment of an international law, which if signed will automatically mean the prohibition of the use of herbs for which they have patent rights. Specifically earmarked are plants such as *orubaine* (neem plant) and *mukombera* (*Mondia wyeterei*), which are traditional to Africa and Asia. This means that Bondo livestock farmers will be forced to pay for the use of herbs that are native to their own communities. The immediate casualties of the envisaged protectionist regime will be the traditional herbalists who will be forced to pay royalties to multinational corporations to use their own herbs (Daily Nation July 10 2003). It is therefore imperative for third world countries such as Kenya to develop institutions and technologies that can help safeguard traditional knowledge as well as their resource endowments.

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APPENDICES

APPENDIX 1: INTERVIEW GUIDE FOR OPEN-ENDED INTERVIEWS

What kinds of domestic animals do you keep?

What are the major constraints experienced by livestock producers in this area?

What are the common livestock diseases in this area? Name the most common diseases for each type of domestic animal you have.

(i) Name of the disease

(ii) In which season is the disease more prevalent?

(iii) How does the disease present itself? (Signs and symptoms)

(iv) What causes the disease?

(v) How can the disease be prevented?

(vi) How do you treat the disease? Where herbal medicine is mentioned inquire into their names, preparation as well as accessibility.

How effective are these treatment/preventive strategies? How would you compare modern animal healthcare practices with the traditional techniques? (Probe on issues to do with efficacy, cost, availability, toxicity, backwardness, knowledge about etc.)

What other things do you do to ensure that your animals are healthy?

Probe for:

(i) Buying of pharmaceutical drugs

(ii) Prayers

(iii) Ritual observance

(iv) Quack veterinarians

(v) Herbal medicine (inquire whether available or not)

How do people in this community gain knowledge about animal diseases and how to treat them? Are there restrictions as to who should gain access to such knowledge? What restrictions are observed in passing such knowledge from one source to another?

What other traditional treatments or manipulations are done to improve livestock health and production (probe on issues such as bone setting, venipuncture, dehorning, castration, retained placenta removal, breeding practices, debeaking, docking, ear notching, feather plucking etc.) For each treatment or manipulation explain why it is done, how it is done and evaluate whether results have always been positive or negative.

Explain the animal feeding and housing practices employed by members of this community. How do you ensure that these are done in such a way that they improve the health and productivity of these animals?

Do you call veterinary officers to attend to your animals and advise you on how to manage animal health problems? If so when do you call them?

Do you treat all animals that fall sick? Give reasons for your answer.

Are there instances when any of the animals you keep can fall sick but you don't offer any treatment? If so then explain why.

What happens to an animal that dies because of sickness? (Find out whether there are different practices for different sicknesses).

How do people explain animal disease outbreaks or epidemics in this area?

Do you have any beliefs restricting some persons from attending to animals (e.g. women in menstruation period, a spouse whose partner has died or a married woman who goes back to her parental home (*migogo*) etc)

Are there some diseases that can attack animals because of misconduct against the gods, the ancestors or even against the elders? Can disease also originate from spirits? (Find out about the role of nyawawa in animal health. Establish whether these diseases have links with certain places or seasons of the year)

What can you say about role of witchcraft or evil eye on animal health?

Explain how you deal with human health problems. Do you consider human health problems as similar to animal health problems especially in terms causes and treatments?

APPENDIX 2: INTERVIEW GUIDE FOR KEY INFORMANTS

What are the major constraints to livestock production in this area?

Name the common livestock diseases in this area. Identify the seasons when they are prevalent. What are their causes and how are they identified? Describe the ways of treating or preventing these diseases in this community. Explain how knowledge about prevention and treatment is gained. Are these strategies effective?

What other strategies are used by farmers in this community to solve animal health problems. Give the advantages and the disadvantages of these strategies.

In this community, do people rely more on traditional animal treatment techniques or mainly on modern treatment methods? Why is this so?

How frequently do modern veterinary practitioners attend to animal health problems or are called to give advice on animal healthcare? Why is this so?

Identify other treatments or manipulations done to improve livestock health and production. What is your opinion about such treatments and manipulations in terms of their efficacy?

Are there animal health problems which are considered unnatural and for which supernatural intervention is sought? What is the role of witchcraft and evil eye? What about the role of spirits, misconduct against the gods, ancestors, the departed as well as elders?

Describe how people go about solving human health problems in this area. Do you deal with animal health problems the same way you do with human health problems or you deal with them differently?

APPENDIX 3: FOCUS GROUP DISCUSSION GUIDE

- (1) What kind of domestic animals are kept in this community?
- (2) What problems do livestock farmers in this area experience?
- (3) What are the common livestock diseases in this area? Name for goats, cattle, sheep and poultry.

Cattle diseases

(i) ***Aremo:***

- (4) What is *Aremo*?
- (5) How does it present itself?
- (6) How do you treat it? Why do you resort to such treatment methods?
- (7) How do you prevent it?
- (8) When is it common (season)?

(ii) ***Aginga:***

- (9) What is *Aginga*?
- (10) How does it present itself?
- (11) How do you treat it? Why do you resort to such treatment methods?
- (12) How do you prevent it?
- (13) When is it common (season)?

(iii) ***Achany:***

- (14) What is *Achany*?
- (15) How does it present itself?
- (16) How do you treat it? Why do you resort to such treatment methods?
- (17) How do you prevent it?
- (18) When is it common (season)?

Goat Diseases:

(i) ***Achur:***

- (19) What is *Achur*?
- (20) How does it present itself?
- (21) How do you treat it? Why do you resort to such treatment methods?
- (22) How do you prevent it?
- (23) When is it common (Season)?

(ii) ***Achiya:***

- (24) What is *achiya*?
- (25) How does it present itself?
- (26) How do you treat it? Why do you resort to such treatment methods?
- (27) How do you prevent it?
- (28) When is it common (season)?

(iii) *Aluny*:

- (29) What is *Aluny*?
- (30) How does it present itself?
- (31) How do you treat it? Why do you resort to such treatment methods?
- (32) How do you prevent it?
- (33) When is it common (season)?

(iv) *Awir*:

- (34) What is *Awir*?
- (35) How does it present itself?
- (36) How do you treat it? Why do you resort to such treatment methods?
- (37) How do you prevent it?
- (38) When is it common (season)?

Sheep Diseases:

- (39) What diseases attack sheep?
- (40) How do these diseases present themselves?
- (41) How are these diseases treated? Why do you resort to such treatment methods?
- (42) How are these diseases prevented?
- (43) When are these diseases common (season)?

Poultry Diseases:

- (44) What diseases attack Poultry?
- (45) How do these diseases present themselves?
- (46) How are these diseases treated? Why do you resort to such treatment methods?
- (47) How are these diseases prevented?
- (48) When are these diseases common (season)?
- (49) What other things can you do to prevent or treat Animal diseases? How do you ensure that your animals stay healthy and productive?

50) How do people gain Knowledge about Animal disease treatment and prevention?

Other treatment and manipulations:

(51) Why is venipuncture done to animals?

(52) Why is dehorning done to animals?

(53) Why is castration done to animals?

(54) How do you deal with retained placenta?

(55) Why is debeaking done?

(56) Why is docking done to sheep?

(57) Why is Ear notching done to animals?

(58) Why is feather plucking done to poultry?

(59) What breeding practices are practiced in this area to ensure that animals produce healthy and more productive offspring?

(60) When do veterinary officers attend to animals in this community?

(61) Between traditional (herbal) medicine and modern veterinary drugs, which do people rely on more?

(62) In what instances can you fail to treat sick animals?

(63) What do people say about disease outbreak in this community?

(64) Do you have any beliefs restricting some persons from attending to animals (e.g. a woman in menstruation period, A spouse whose partner has died or a married woman who goes back to her parental home (*migogo*) etc)

(65) Are there some diseases that can attack animals because of misconduct against the gods, the ancestors or even against the elders? Can diseases also originate from spirits?

(66) Are there animal diseases that are caused by witchcraft or by evil eye?

(67) What causes diseases amongst the human beings?

(68) How do you treat human diseases?

(69) What is the relationship between human healthcare and animal healthcare in terms of disease causation, prevention and treatment?

SHORT

1. What kinds of domestic animals do you keep?
2. Can you recall when you encountered any health problems with the animals you keep (be they cattle, sheep goats or poultry)?
3. What happened?
4. What caused whatever happened?
5. What was done?
6. What else was done?
7. Why was it done like that?
8. Who did that?
9. Why is it that it is this person who did it?

N/B: If possible find out about these for all the animals kept by the farmer being interviewed.

APPENDIX 5: NARRATIVE GUIDE FOR HUMAN SICKNESSES AND REMEDIAL ACTIONS

PORT

1. Has somebody been sick in this household?
 2. If yes what was the problem?
 3. What caused the problem?
 4. What was done?
 5. What else was done?
 6. Why was it done like that?
 7. Who did that thing?
- Why is it that it is this person who did it?

APPENDIX 6: GUIDE TO NARRATIVES ON FEEDING PRACTICES

- 1. How do you feed animals in this area? Inquire for all animals (cows, sheep goats, donkeys, poultry, cats and dogs).**
- 2. How do you ensure that this feeding is effective? I.e. leads to the improvement of livestock health. Inquire for all the animals named above.**
- 3. What do you consider as bad animal feeding practices? Why do you consider these as bad feeding practices? Inquire for all the animals.**
- 4. What feeding practices can lead to malnutrition or poor health?**
- 5. How can these be improved on to ensure good health and productivity for the animals?**