UNIVERSITY OF GONDAR
FACULTY OF VETERINARY MEDICINE

IDENTIFICATION OF COMMON CLINICAL DONKEY HEALTH PROBLEMS IN
GONDAR UNIVERSITY VETERINARY CLINIC

A thesis submitted to the Faculty of Veterinary Medicine, University of Gondar in partial fulfillment
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BY

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IDENTIFICATION OF COMMON CLINICAL DONKEY HEALTH PROBLEMS IN GONDAR UNIVERSITY VETERINARY CLINIC

BY

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TABLE OF CONTENTS

Contents
TABLE OF CONTENTS ................................................................. III
LIST OF TABLES AND FIGURES

Figure 1: % of affected system ........................................................................ 9
Table 1: factors for the occurrence of colic ....................................................... 10
## LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>Central statistical agency</td>
</tr>
<tr>
<td>NVI</td>
<td>National veterinary institute</td>
</tr>
<tr>
<td>SPSSA</td>
<td>Statistical package of social science</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

First of all, I would like to thank the Almighty “GOD” for helping me in the completion of this work and in every manner of my life. Next, my special thanks go to my advisor Dr. Reta Tesfaye and Prof Ramaswamy for attaching me with their project on identification of common clinical health problems of donkey and provision of laboratory reagents as well as for his supervision and valuable comments.

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ABSTRACT

A study was conducted from November 2014 to April 2015 on donkeys presented to Gondar veterinary clinic for any health problems with the aims of identifying common donkey health problems. Potential risk factors for the occurrence of the most common health problem, colic, was also assessed. A total of 86 sick donkeys were presented to the clinic. The overall prevalence of gastrointestinal diseases were 38.4% (N=33) followed by musculo skeletal diseases 26.7% (N=27), non specific spticemic diseases 9.3%(N=8), skin diseases 7.0%(N=6), respiratory 5.8%(N=5), reproductive 3.5%(N=3), ophthalmic 4.7%(N=4) and nervous system 2.3%(N=2). Out of the gastrointestinal disease condition, colic was the most common and it accounted 69.7% (N=23) followed by gastrointestinal parasitism 27.2 % (N=9). The occurrence of this common disease (colic) was associated with origin of the animal and abrupt feed change. Higher occurrence of colic was noticed on donkeys from urban area (40%) than rural (19.7%) and those exposed to abrupt feed change (94.4%) than those not exposed to abrupt feed change (7.4%). However, the occurrence of colic is not associated with feed type, body condition score, sex and age. Generally, a wide range of diseases were identified in the current study and the study has clearly indicated colic as a prevailing health problem of donkeys in Gondar veterinary clinic. Hence, implementing comprehensive waste disposal, health and feeding management should be practiced and further studies should be conducted to identify cause of non specific general health problems.

Key words: Common health problems, Donkeys, Ethiopia, Gondar Risk Factors.
1. INTRODUCTION

Donkeys (*Equus Asinus*) are the smallest members of the equine family which also includes horses, zebras, and mules. Since their domestication over 4000 years ago, they have been an important part of human civilization and culture and the wild ancestor of the donkey is the African wild ass, *E. africanus* (Saul et al., 1997).

Donkeys are intelligent creatures and will not run from trouble. They can be stubborn but only when they question their safety. There are more than 44 million donkeys in the world, mostly in developing countries, where they are used principally as draught or pack animals. Working donkeys are often associated with those living at or below subsistence levels. Small numbers of donkeys are kept for breeding or as pets in developed countries (Fistum and Ahmed, 2015).

Half the world’s donkey population, almost all of which is used for work, is found in Asia, just over one quarter in Africa and the rest mainly in Latin America (The Brooke, 2007). Ethiopia is a country with one of the highest donkey populations in the world with approximately 7.43 million donkeys, which is 32% of Africa’s and 10% of the world’s donkey population (CSA, 2015). The small-scale farmers and the High land areas of Ethiopia have the largest share with 2–3 animals per family and with female donkeys being the most common (70%) (Gebre Wold et al., 2004).

Internationally, over the past several years there has been consistent growth in numbers of donkeys with the largest increases in sub-Saharan Africa, the north of the Indian subcontinent and the tropical highlands of Latin America, where as the global population of mules has also been rising, but the number of horses has been static (Starkey and Starkey, 2004).

In many countries, the donkey is the work animal which has the most to offer in assisting rural people and alleviating poverty. This is particularly true in the difficult circumstances of the arid and semi-arid tropics to which the donkey is naturally well-adapted (Aboud *et al.*, 1998). Even these days despite the increase in mechanization throughout the world donkeys are still well deserving of the name beasts of burden (Simenew *et al.*, 2011).

In Ethiopia, donkeys are important animals to the resource where poor communities both in urban and rural areas, providing traction power and transport service at low cost and in the remote areas of
Ethiopia. Pack animals offer the only realistic way of obtaining returns from agriculture above mere existence. Donkeys provide the transport that brings food and water to millions in the remotest parts of the vast country, where roads and communications do not exist. (Kumar et al., 2014).

Drought, extreme temperature, poverty, ignorance, disease, increasing motorization, increasing environmental pollution and improper use of harness and padding equipment are risk factors that cause significant morbidity and mortality of working donkeys (Sells et al., 2010). Generally, donkeys harbor myriad infectious and parasitic agents, not all of which have been thoroughly investigated in this animal. Identification and treatment is often taken from knowledge of the disease from the horse (Pearson et al., 1999).

Despite their valuable contributions, donkeys in Ethiopia are accorded low status and are consequently the most neglected animals. They are overburdened and overworked through increased poverty and overpopulation (Gebrewold et al., 2004). Working donkeys are prone to painful, debilitating and often tropical illness and conditions such as tetanus, parasitic infestation, and colic. In addition, these animals work under difficult environmental conditions including intense heat, difficult terrain and often inappropriate equipment, with inadequate food and water, resulting in exhaustion, dehydration, malnutrition, lesions and hoof problems (Kumar et al., 2014).

The attention given by Governmental and non-Governmental organizations to donkeys has been far below to what it deserves. This might be partly due to the wrong perception that the donkey does not require a lot of care, that when donkeys do get sick they are quick to die, and the donkey's low traditional status (Pearson et al., 1999). Despite the huge numbers and the increasing importance of donkeys in the Ethiopian economy, knowledge about the health problems affecting their welfare is limited for most parts of the country. There is no study conducted in the current study area to identify common health problems in donkeys. Therefore the objective of this paper is;

- To assess common donkey diseases in University of Gondar veterinary clinic
- To identify the risk factors for the occurrence of the most common disease.
2. LITERATURE REVIEW

The donkey and the horse are closely related and many of the conditions that affect them are similar. However detecting illness in the donkey can be made more difficult by stoical nature. Dullness and depression may be the only symptoms exhibited. These subtle behavioral changes may also be accompanied by anorexia. This means that a donkey may be in the advanced stage of a disease before it is noticed or a diagnosis is reached. However, dullness does not always indicate disease in donkeys as they are naturally quiet animals, and other signs such as separation from a friend can induce this signs as well(Kumar et al., 2014).

2.1. Gastro intestinal diseases

A donkey develops abdominal discomfort and abdominal distention and even gastric reflux after taking large quantity of concentrated feed (Kawaguchia et al., 2004).

If a donkey has not passed manure for two days it may be constipated. It may be seen rolling wildly or refusing to move. If the donkey is clearly uncomfortable and constipation is suspected, the donkey should be fed some laxative oils. Force-feeding of a small quantity of mineral oil may be answer. If a donkey has diarrhea, take it from any rich pasture and feed a rough forage such as maize Stover (Cohen and Honnas, 1996).

Colic is defined as abdominal pain, but it is a clinical sign rather than a diagnosis. The term colic can encompass all forms of gastrointestinal conditions which cause pain as well as other causes of abdominal pain not involving the gastrointestinal tract (Uhlinger, 1992). Epidemiological research has demonstrated that colic is complex and some studies have produced conflicting results about the impact of individual risk factors. However, many potential causal factors have been identified, for example, feed type, changes in management practices, lack of access to pasture or to water. While research has aimed to identify risk factors for colic in horses little is known about the incidence of the disease, or specific risk factors in donkeys which differ in many respects to other equids, for example in physiology, behavior and management (Crane, 1997).
Grain diets decrease the water content of ingesta in the colon due to a decrease in fiber, which binds to water. Grain in the diet also increases gas production and is more likely to create an intra luminal environment that favors gas production or altered motility leading to intestinal displacements (Lopes et al., 2004). Rapid fermentation of hydrolyzable carbohydrate favors proliferation of Lactobacilli spp. and production of lactate, which is poorly absorbed (Argenzio et al., 1974 and Garner et al., 1978). Accumulation of lactic acid may overpower the buffering mechanism of the cecum and colon and lower pH. In grazing horses, hindgut pH remains consistently around 6.4 - 6.7. A cecal pH of 6 was considered to represent sub clinical acidosis (Radicke et al., 1991) and a pH below 6 was associated with clinical conditions such as osmotic diarrhea, overgrowth of undesired bacterial populations and lysis of desired bacterial populations, increasing the risk of endotoxemia and laminitis (Sprouse et al., 1987 and Bailey et al., 2003).

Many causes of colic in equine are difficult to classify as the problem often resolves and a specific cause is not identified. Severe causes of colic are frequently identified at surgery or post-mortem (Duffield, 2008). Proudman (1992) conducted a study of first opinion colic case and found spasmodic or unexplained conditions to be responsible for the majority (72%) of all colic episodes in the equine. Impactive colic has been found to be responsible for the majority (58%) of all colic episodes in the donkey at donkey sanctuary. When the location of impaction was identified, 62% were found to be at the pelvic flexure (Duffield et al., 2002).

2.2. Musculoskeletal

Wound mean discontinuity of the normal tissue which includes any area of the skin that is broken, red or raw. They can be caused by accidents, fights, beating or stone thrown. Unfortunately most wounds are caused by harnesses or packs that are improperly fitted or inadequately padded (Biffa and Woldemeskel, 2006.)

In several countries in the region, donkeys appear to be routinely used with inefficient and often cruel harnessing systems. They are frequently over-laden. Some farmers without oxen have started to use donkeys to plow, despite a lack of appropriate donkey harnesses and suitable implements (Abdo et al., 1998).
Back problems can be extremely disabling for a donkey. Problems can vary from simple soreness, with sensitivity to pressure, through spinal and pelvic misalignments to a full-blown injury. There may or may not be chronic pathology (Knottenbelt, 2003).

Saddale sore is associated with the size and cleanliness of the paddle, strape/polythen rope, imbalance loading and the body condition of the working donkey. The most common site of wound are wither, shoulder, and tuber coxa (Sells et al., 2010).

Low body condition score is an indicator of reduced body fat (Henneke et al., 1983), consequently, equids with a low body condition score may have less natural padding protecting them from pressure, friction and shear lesions caused by harness (Sells et al., 2010).

2.3. Respiratory diseases

Donkeys are susceptible to the same respiratory diseases as horses. However, as donkeys are very stoic and tend not to be athletic, signs may get missed and diseases may progress significantly before illness is noticed. The respiratory system starts at the nose which leads to the windpipe (trachea), which branches into bronchi leading to each lung. Tiny hairs in the nasal passages trap dust and other particles that would otherwise irritate the sensitive lining of the lungs. Mucous production throughout the system also serves to trap foreign particles. Coughing is a reflex designed to ‘cough up’ mucous covered foreign particles (Donkey sanctuary, 2014).

Some of the main causes of the respiratory disease in donkey are viral and bacterial infection, parasitic, allergies, and anatomical problems. They are prone to many of the same problems as horse, the most serious of which being strangle caused by the bacteria *Streptococcus equi*. Viral and bacterial infections in donkeys manifest as the donkey that looks ill with respiratory signs which may include coughing, nasal discharge and fever (Thiemann, 2012).

Donkeys are affected by the lung worm parasite *Dictyocaulus arnfieldii*, while this rarely causes a problem in the donkey. It will cause severe coughing in horse and ponies that contract the parasite. Heavy lung worm burdens in the donkey may make other respiratory disease worse. In young
donkeys infection with parascaris worm migrating through the lungs will also cause irritation and coughing (Donkey sanctuary, 2006).

2.4. Skin Disease

Sarcoides are commonly occurring equine skin tumors that have been heart ache for equines and their owners for centuries. Sarcoids are the most skin tumors of equine worldwide. Although common, sarcoids vary greatly in their size and appearance, the nature in which they grew and potentially spread and the way they respond for treatment (Donkey sanctuary, 2006).

Cutaneous habronemiasis (summer sore) is a seasonal, granulomatous skin diseases caused by aberrant habronema larvae. It is caused by house and stable flies depositing infective larvae on moist mucous membrane or pre existing skin lesion. Deposition of larvae in existing wounds is a major problem in the tropics among working donkeys. The classical lesion of the habronemiasis is an ulcerated or raised granuloma at the medial canthus or on a line from the medial canthus that overlies the course of the nasolacrimal duct (Svendsen, 2008).

2.5. Reproductive system disease

In spite of the importance of mules and donkeys to the economies of many developing countries, knowledge of their reproductive pattern remains fragmentary. Donkey dystocia cases have been reported, but their true incidence and nature is not known. Malformations like *schistosomus reflexus* and fetal ankylosis have been reported as a cause of dystocia (Dubbin et al, 1990).
3. MATERIALS AND METHODS

3.1 Study Area

The study was conducted from November 2014 to April 2015 in Gondar town, which is located 738km north of Addis Ababa at latitude and longitude of 12.3-13.8°N and 35.3-35.7°E. It has an altitude of, 2200meters above sea level. The annual mean minimum and maximum temperature of the area vary between 12.3-17.7°C and 22-30°C, respectively. The resident of the town is estimated to be 201,958. The town receives bimodal rain fall, the average annual precipitation rate being 1000mm that comes from the long and short rainy seasons (CSA, 2010). The live stock population in the town and its vicinity comprises of 8,202 cattle, 22,590 goats, 2,695 sheep, 1,065 horse and 9,001 donkeys (CSA, 2013).

3.2 Study Design

Donkeys presented to the clinic for any health problem during the study period was thoroughly examined for disease condition(s) according to Kelly (1984). Personal interview and clinical examination was used as a tool to identify the systems affected. This was supported with laboratory examination whenever applicable. Potential risk factors that may have influence on the occurrence of the most common disease, colic, such as sex, age, body condition scores, feed type, sudden feed change and origin of the donkeys were also assessed through clinical examination and interviews of the owners. Finally, diseases were categorized based on the systems involved such as gasterointestinal, musculoskeletal, skin, respiratory, reproductive, nervous, ophthalmic and non-specific diseases. Further, tentative and definitive diagnoses were made based on the findings.

3.3 Study Population

A study was conducted on 86 clinically sick animals which were presented to university of Gondar veterinary clinic. All Donkeys presented to the clinic for any health problem were included in the study. .
3.3 Data Management and Analysis

The data collected from 86 donkeys were entered into Microsoft excel spread sheet and analyzed using SPSS version 20 statistical software. Descriptive statistics were used to quantify the results and Chi-square ($\chi^2$) was used to determine the association of potential risk factors with occurrence of the most common health problem, colic. In all calculations, the confidence interval was set at 95% and statistical significant differences were considered at (p<0.05).
4. RESULT

Out of 86 donkeys presented to University of Gondar veterinary clinic during the study period, 38.4% (N=33) were found having gastrointestinal problems, 26.7% (N=23) with musculo skeletal problems and 9.3% (N=8) with non specific septicemic disease conditions. The details of systems affected are presented in Figure 1.

![Image of disease classification](image_url)

Figure 1: Disease classification based on systems affected

Out of the gastro intestinal disease conditions, colic takes the first line which accounted 69.7% (N=23) followed by gastro intestinal parasitism (27.2%, N=9) which was identified by clinical examination and further confirmed by fecal examination and treatment response to Ivermectin. One case of rectal prolapsed (3.1%) was also identified under gastrointestinal disease conditions.

The occurrence of colic in donkeys was assessed for its association with potential risk factors such as feed type, origin, abrupt feed change, sex, age and body condition score. Statistical significant
association (p< 0.05) was observed in origin of the animals and abrupt change of feed as shown in Table 1.

Table 1: the association of risk factors for the occurrence of colic.

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Total number</th>
<th>No affected</th>
<th>Proportion</th>
<th>X²</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤5</td>
<td>29</td>
<td>9</td>
<td>31.0%</td>
<td>0.694</td>
<td>0.707</td>
</tr>
<tr>
<td>5-10</td>
<td>53</td>
<td>12</td>
<td>22.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;10</td>
<td>4</td>
<td>1</td>
<td>25.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>31</td>
<td>6</td>
<td>19.4%</td>
<td>0.987</td>
<td>.233</td>
</tr>
<tr>
<td>F</td>
<td>55</td>
<td>16</td>
<td>29.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kebele</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>61</td>
<td>12</td>
<td>19.7%</td>
<td>3.849</td>
<td>0.048</td>
</tr>
<tr>
<td>Urban</td>
<td>25</td>
<td>10</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>32</td>
<td>7</td>
<td>21.9%</td>
<td>1.226</td>
<td>.747</td>
</tr>
<tr>
<td>Moderate</td>
<td>34</td>
<td>10</td>
<td>29.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal</td>
<td>18</td>
<td>4</td>
<td>22.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td>2</td>
<td>1</td>
<td>50.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roughage</td>
<td>28</td>
<td>5</td>
<td>17.9%</td>
<td>1.301</td>
<td>0.191</td>
</tr>
<tr>
<td>Roughage+supplement</td>
<td>58</td>
<td>17</td>
<td>29.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sudden change of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>feed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>17</td>
<td>94.4%</td>
<td>56.7</td>
<td>.000</td>
</tr>
<tr>
<td>No</td>
<td>68</td>
<td>5</td>
<td>7.4%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Musculo skeletal system is the second most common disease in donkeys presented to University of Gondar veterinary clinic, which accounted 26.7% (N=23). Among diseases categorized under musculo skeletal system, wounds of different types 52.1% (N=12) including, back sore, puncture wound, local abscess, stone bite, wheel abscess and lacerated wounds were identified on different parts of the body. Mechanical obstruction of blood vessels as a result of tight straps or harness application to the donkey and subsequent edema formation 30.4%, (N=7), hernia 13.0% (N=3) and pelvic fracture 4.3% (N=1) due to car accident were also identified with the current study.
Eight cases (9.3%) of non specific systemic diseases were observed during the study period. The animals showed general systemic disturbances such as fever, anorexia, and increased vital signs. Whole blood samples were taken from these donkeys for bacteriological examination and the results were negative in all the cases.

Skin diseases in this study accounted 7.0% (N=6) which was caused by parasitic infestation such as mange mites, lice and habronemiasis, one case for each, and three cases of sarcoid were identified during the study period.

In the current study, the proportion of respiratory diseases were 5.8% (N=5). Out of these, two cases were due to strangle and the other one case was due to *dictyocaulus* parasite. These findings were supported by laboratory examination. Apart from this, one donkey with respiratory problem was presented to the clinic following faulty drenching of fluid by the owner himself. The remaining one case was due to unidentified cause.

This study also identified four (4.7%) ophthalmic problems in which three were corneal opacity and one case of keratoconjunctivitis.

Nearly four percent (3.5%, N=3) cases of reproductive system problems were identified in the current study. From these, two cases were difficulties of birth at full term pregnancy being as vortex presentation and carpal flexion. The remaining one case was due to expulsion of the fetus at six month of pregnancy.

In this study 2.3% (N=2) cases of nervous system diseases were diagnosed. From this one case was tetanus and the other was rabies. Suggestive history from the owners and clinical signs were used to diagnose these disease conditions.
5. DISCUSSION

Gastrointestinal disease conditions, particularly colic, was identified as the most common health problem of donkeys which accounted about 38%. This finding agrees with the report by Cox et al. (2009) that indicated colic as the single most common diagnosed in a large population of donkeys. The occurrence of colic may be associated with the ingestion of foreign materials like plastic, dried and molded injera which are left in the road side. Lack of ample drinking water supply may also contributed for its high prevalence in addition to abrupt change of feed.

In this research, occurrence of colic was significantly associated (p<0.05) with origin of the donkeys. Colic was higher (40%) in donkeys originated from urban area as compared to the rural ones (19.7%). This may be due to the fact that, donkeys from urban area are prone to free access to mouldy or coarse feed, ingestion of polythene bags, fertilizer sacks and used fabrics of nylon clothes which are the major causes of impaction colic (Bojia et al., 2006).

Sudden feed change was also significantly associated (p<0.05) with the occurrence of colic in this research. This is due to the fact that, sudden change of feed in equine alters the ecosystem of intestinal micro flora which will reduce the ability to digest feeds in the cecum and colon (Frape, 1999). A donkey developed abdominal discomfort and distention together with cardiovascular collapse and gastric reflux after ingesting of suddenly changed feed (Kawaguchi et al., 2004).

On other hand, the occurrence of colic in this research was not significantly associated with age, sex, body conditions and feed types (p >0.05). Some studies suggest that, the association between age and colic have produced conflicting views, though many researchers have found that older equines are at increased risk of suffering with colic (Reeves et al, 1989 and Kaneene, 1997). Cohen et al.,(1999) reported that some studies in equine have found no association between colic and the type of feed. Frequent and regular feeding of small quantity of supplementary feeds to the donkey may not have impact for the occurrence of colic (Clarcke et al., 1990). Sexes, age groups and donkeys with different body conditions may had similar exposure to the main cause of colic. Out of 86 sick donkeys which were presented to university of Gondar veterinary clinic, musculo skeletal disease conditions were the second common diseases of donkey next to gastrointestinal system disease conditions. It accounted 26.7% from the total 86 donkeys and from this musculo skeletal system
disease conditions, the majority, about 52%, were wounds of different type which includes contaminated and infected wounds on different parts of the body. Its proportion from the overall health problem was 14% (12/86). This result is lower than 27.3% prevalence of wound in the northern Ethiopia reported by Helen (2001). Similarly, the present result is also lower than the report of Mandefero (2008) who reported 25.8% prevalence of wound in Sidama zone. The difference may be due to variation in the study animals as many wound cases may not come to veterinary clinic to seek treatment.

Edema on the ventral side of abdomen was identified in 7 cases. Tightly applied improper and ill fitting straps causes mechanical obstruction of blood and lymphatic vessels and lead to stagnation of blood to the lower ventral abdomen and consequently edema was formed.

Three cases of hernia were also diagnosed in the current study. Animal owners keep cattle with donkeys and donkeys get sudden attack from horny animals. One case of the pelvic fracture was due to car accident. Domestic animals and vehicles share same main road and this exposes animals for car accident.

Over nine percent of the diseases identified were non-specific systemic diseases. The absence of bacterial identification and isolation during the laboratory diagnosis suggest that the diseases were most likely viral diseases.

In addition, several diseases including respiratory system, reproductive system, skin, nervous system and ophthalmic diseases were identified in the current study. Detecting illness in the donkey is difficult due to their stoical nature. Dullness and depression may be the only symptoms exhibited. This means that a diseased donkey may not be easily recognized by the owner. Furthermore, since the majority of the donkeys belong to poor community; it is less likely that they take their donkeys to the veterinary clinic when the donkey becomes sick. This fact has been demonstrated by Yilma et al, (1991) in which the number of the donkeys taken to the veterinary clinic is much less than other domesticated animals. Therefore, donkeys are rarely presented to clinic for most diseases, particularly when the owners do not consider as major problem. Even though the exact prevalence of each disease cannot definitely determined with the current study, it indicates the wide spread of donkey diseases in the study area.
6. CONCLUSION AND RECOMMENDATIONS

A wide range of donkey diseases were identified in the current study area. The most common problem was gastro intestinal problems, particularly colic. Colic was found associated with origin of the animal and abrupt feed change. Wounds were also the second most common problems of donkeys presented to the clinic. Surprisingly considerable number of edema associated with tightly applied improper and ill fitting straps was observed. Generally, several diseases including respiratory system, skin, nervous system, and reproductive system ophthalmic diseases and other non specific disease conditions were identified in the current study. Based on the above conclusion, the following recommendations are forwarded

- Attention should be given to control and prevent donkey health problems by stakeholders.
- Waste materials such as feed and any other plastic bags should be disposed appropriately.
- Increasing awareness about use of proper and safe application of harness among donkey owners is important
- Awareness creation to donkey health and feed management should be expanded to the community.
- Further studies should be done on specific diseases of donkeys particularly focusing on viral donkey diseases.
7. REFERENCES


Donkey Sanctuary, 2006. Respiratory disease in the Donkey available at:

Donkey Sanctuary, 2014. Diseases of the Donkey available at:


8. ANNEX

1. Donkey body condition scoring chart

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor</td>
<td>All bones easily felt, back bone prominent, neck meets shoulder abruptly, ribs can be seen from a distance, bell tucked up, hip bones visible</td>
</tr>
<tr>
<td>2. Moderate</td>
<td>Some muscle development overlying bones, ribs not visible but can be felt with ease, poor muscle cover on hind quarters, hip bones felt with ease</td>
</tr>
<tr>
<td>3. Ideal</td>
<td>Good muscle development, neck follows smoothly in to shoulder, ribs just covered by light layer of muscle, belly firm with good muscle tone, good muscle cover in hind quarters, hip bones rounded in appearance</td>
</tr>
<tr>
<td>4. Fat</td>
<td>Thick neck, crest hard, shoulder covered in even fat layer, belly overdeveloped</td>
</tr>
<tr>
<td>5. Obese</td>
<td>Thick neck, crest bulging with fat and may fall to one side, shoulder rounded and bulging with fat, belly pendulous in depth and width</td>
</tr>
</tbody>
</table>

Source: donkey sanctuary, 2006
2. Age determination based on dentition

<table>
<thead>
<tr>
<th>Age</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>The mouth of a colt at birth. None of the teeth have penetrated the gums.</td>
</tr>
<tr>
<td>1 year</td>
<td>One year of age. All temporary teeth are present. The corners are not yet in wear.</td>
</tr>
<tr>
<td>3 years</td>
<td>A typical 3-years-old mouth showing the large permanent center teeth, both upper and lower. Contrast these with the small, light-colored temporary teeth.</td>
</tr>
<tr>
<td>4 years</td>
<td>At 4-years-old, the well-developed permanent centers, immature intermediates and milk teeth at the corners appeared. Tusks or canines have appeared.</td>
</tr>
<tr>
<td>5 years</td>
<td>At 5 years, all of the temporary teeth have been replaced by permanent teeth. Although the corner teeth are well-matched from a profile view, they show very little wear in the view of the upper jaw. The upper centers are beginning to appear round on the inside back surface.</td>
</tr>
<tr>
<td>6 years</td>
<td>6-year-old mouth shows some wear on the corner teeth as viewed from the side. Cups in the lower jaw in the centers should be worn reasonably smooth at this age. They show relatively less wear than is customary in the normal 6-year-old mouth. The dovetail or notch is apparent, but the angle of incidence shows little change.</td>
</tr>
<tr>
<td>7 years</td>
<td>At 7 years, dovetail has usually developed to its maximum. The angle of incidence has not obtained very much sharpness and perhaps is typical for this age. Cups are coming out of the lower centers and intermediates, with very prominent cups still showing in the corners and in all of the upper teeth. Dental stars have not appeared.</td>
</tr>
<tr>
<td>8 years</td>
<td>8-year-old mouth shows the notch almost completely gone from the upper corner tooth. Cups have all disappeared from the lower jaw, but none in the upper jaw have worn out. The teeth are showing much more ovalness on the back surfaces than at younger ages, and angle of incidence is becoming sharper. Dental stars have appeared in four lower and two upper incisors.</td>
</tr>
<tr>
<td>9 years</td>
<td>9-year-old mouth shows a tendency toward less width of the teeth and more length. The profile view shows more steepness to the angle of incidence; however, this angle does not appear to show the acuteness of a typical 9-year-old mouth. Cups are gone from the lower jaw and the two centers above. All teeth are tending toward more ovalness except the upper corners. Dental stars are merging with central enamel rings, which are becoming small and round.</td>
</tr>
<tr>
<td>10 years</td>
<td>10-year-old mouth shows a typical angle of incidence with reappearance of notch on the upper corner. Ordinarily cups are gone</td>
</tr>
</tbody>
</table>
from all of the teeth but the upper corners at 10 years of age. Back
surfaces of upper centers are changing from ovalness to angularity.

12 years old  The mark has gone from the centrals. Stars are now round. The groove in the
upper corner teeth is about one centimeter long.

15 years old  Only stars on the teeth. The groove is now half way down the upper corner
teeth.

19-20 years old  Seen from the side, the teeth have a forward slope. The groove extends down
the whole tooth.

20-25 years old  The teeth have an even more forward pointing angle and the groove is
growing out (it disappears at about 30 years old). The tops of the now have a more triangular shape.

3. Data collection and result recording format

UNIVERSITY OF GONDAR

FACULTY OF VETERINARY MEDICINE

Date………………………
Case No……………………

1. Owner’s name……………………Kebele……………………phone No……………..
2. species of animal………………breed………………sex……………age………………
   Body weight……………………body condition……………pregnancy /month………..
3. Housing type………………herd structure………………herd size………………
4. Types of feed……………………………………
5. Purpose of animal……………………Capacity to carry………………………….
6. Frequency /day/week…………………… padding type…………………………
7. Types of hoof………………………………
8. History……………………………………………………………………………………….
9. Vital signs, A) BT……………..B)PR…………………..C)RR…………………………
10. Clinical sign and other findings
11. Body system involved……………………………………………………………………
12. Differential Dx…………………………………………………………………………
13. Tentative diagnosis………………………………………………………………………
14. Type of sample taken………………Dx method………………result………………
15. Confirmatory/definitive diagnosis……………………………………………………
16. Treatment…………………………………………………………………………………

Student in charged:………………

Approved by:………………………….
9 DECLARATION

I, the under signed declare that the information presented here in my thesis is my original work, has not been presented for degree in any other university and that all sources of materials used for the thesis have been duly acknowledged.

Name: Mulugeta Anteneh

Signature: ______________

Date of submission: 12/06/2015

This thesis has been submitted for the examination with my approval as University of advisor.

Name: Dr. Reta Tesfaye (DVM, MSc, Assi prof)

Signature: ________________________