

Study on Health, Management and Welfare Problems of Working Donkeys in Wonchi District, Southwest Shoa Zone, Ethiopia

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Abstract: The study was conducted from December 2007 to April 2008 in the selected Woreda of South West Shoa zone of Oromia regional state to assess the socio economic importance, health and welfare problems and other management constraints of donkeys through retrospective clinical data analysis questionnaire survey and cross sectional study. A retrospective case record of donkeys presented to the study Woreda of South West Shoa zone veterinary clinic from 2004-2007 were analyzed. Results of retrospective study revealed that helminthes and external parasites (64.4%), infectious disease mainly pneumonia and trypanosomiasis (21.6%), physical injuries (14%) have been the major cause of health problems. 385 donkey owners were interviewed in the study Woreda. According to the information obtained from the questionnaire survey, donkeys play a major role in the daily activity of the society in the study area. However, management constraints like feed shortage, traditional health care, absence of grooming and hoof care and different cruelties on the animal together with the occurrence of parasitic, infectious diseases and physical injuries rendered efficient use of donkeys impossible. In cross sectional study a total of 385 cases of donkeys examined in the study Woreda showed 36% parasitic, 21% infectious disease mainly pneumonia and 24% physical injuries encountered. This result shows that in spite of varied uses of donkeys they are confronted by a series of health and welfare problems. Parasitism, pneumonia and physical injuries, abusing, overloading, overworking and unnecessary neglect and general maltreatment are still prevalent health and welfare problems. Therefore further studies on disease and welfare constraints hindering efficient use of donkeys in the study area is of paramount importance.

Key words: Donkey • Health and Welfare Problem • Wonchi District

INTRODUCTION

The donkey (*Equus asinus*) is a domesticated race of African wild ass. The term ass is normally used for animals found in the wild, whereas the term donkey is used for domesticated donkeys. Donkeys perform hard work under variable agro climatic conditions and withstand scarcity of feed and water, hardiness and little maintenance. The low purchase value of donkeys in the market made them the cheapest and suitable means of transport over the centuries. Currently the values of donkeys are well recognized than previous which gave a way to increase its purchasing expensive. The donkey is considered better than other draught animal's because of inherent tolerance for dehydration, low sweat rate and thermo ability [1].

According to FAO [2] there are 115.2 million domesticated equines (Horses, donkeys and mules) in the world, of which 44.3 million are donkeys. Ethiopia having 5.2 million donkeys is the second in the donkey population in the world and first in Africa possessing nearly 40% of African donkey population.

Many of the transport activities within the communities are related to subsistence tasks such as collecting fire wood, fetching water and transporting farm inputs to markets and homestead. In urban areas donkeys are used and provide a door to door transport service, providing the operators with a steady income [3, 4]. In remote rural areas of the country where modern transport is not available the contribution of donkeys in facilitating marketing of agricultural products is of paramount importance. Donkeys have reduced the domestic

transport burden of rural people especially women and have created employment and income generating opportunities for many people [5].

In spite of the invaluable services donkeys provide they are subject of routine and frequent neglect and maltreatment. This has resulted in considerably reducing their output, reproductive performance and most of all their longevity [6]. Although donkeys are described as hardy and resistant animals, they do succumb to a number of health problems. The most important ones are parasitic disease especially gastrointestinal parasites, harness sores and infectious diseases such as anthrax, tetanus and strangles. Gastrointestinal parasites are the most serious health Problems of donkeys in Africa, Contributing to poor body condition, reduced power output, poor reproductive performance and short lifespan [7].

As the welfare of animal is concerned, animals need to be protected to live peacefully in their environment without affecting their health and welfare. They must not be unnecessarily neglected to have access for feed, water and shelter or abused by beating and harming and deprived of their freedom of movement and exercise [8].

Although Ethiopia has very high livestock and wild life population, the country doesn't have animal welfare regulation for protecting its vast resources from different cruelties and other animal welfare problems. There are a number of constraints in the health and welfare of donkeys which leads them to receive minimum care, particularly as regards to veterinary care. There are some recognizable activities that have been conducted by the Donkey Sanctuary Ethiopia, Donkey Health and Welfare Project, to bring together baseline data leading the understanding of health, management and welfare problems of donkeys in and around Debre-Zeit, Amhara, Tigray and recently in South Nation Nationalities and peoples Regional State with limited activities in other parts of the country.

Therefore the objectives of this study are:

- To investigate the health and welfare problems of working donkeys in the study area.
- To assess diversified uses of donkeys
- To conduct retrospective study of disease problems over the last five years
- To study demography of donkeys
- To suggest some recommendations towards alleviating health and welfare problems of donkeys in the study areas.

MATERIALS AND METHODS

Description Study Area: The study was conducted in south West Shoa Zone of Oromia regional state from December, 2007 to April, 2008.

South West Shoa Zone: Southwest Shoa zone is located in Oromia regional state, with its capital at Welisso, which lies about 114km southwest of Addis Ababa. Geographically the zone lies between 8°16'-9°56' N latitude and 37°05'-38°48' E longitude [9]. The relief configuration of Southwest Shoa zone ranges from very High Mountain to lowland plains, where the altitude varies between 1600 to 3576m a.s.l. the mean annual temperature is 22.5°C with average minimum and maximum annual temperature of 10°C and 35°C respectively. The average annual rainfall ranges from 900-1900mm, with rain fall having bimodal phase. The small rainy season, "Belg" starts from February to April and the main rain, "Meher" start from June to mid-September. During the belg the land is prepared for plantation of maize, sorghum, enset (Enset, ventricosum). In the study area most of the crops (Bean, pea, lentil wheat and barley) are cultivated in highland areas where as teff, maize, sorghum and the likes are planted mostly in lowlandareas [9].

Livestock Population and Economic Activity: According to Southwest Shoa zone rural and agricultural office [9] the total livestock population of south west Shoa zone is estimated to be 957, 643 cattle, 194, 710 sheep, 154, 200 goats and 159, 575 equine. As in many parts of the country, the economic life of the people in the zone is mostly dependent on mixed farming in that 90% of the population is engaged in agriculture.

Livestock production occupies an enormous share in farm economy. The most important food crops produced are teff, wheat, maize, barely and in high land areas Enset (Ensetveritricosum). In this zone Wonchiworeda is selected randomly.

Wonchi: It is located at 123km distance south west of Addis Ababa. The maximum altitude of the area is 3280m and the minimum 1850m a.s.l. geographically the Woreda lies between 7°51'-9°81'N latitude and 36°84'-39°02'E longitude with 40% Dega (highland) and 60% Wweinadega (Mid highland).

Study Animals: The study animals were donkeys of WonchiWoreda, South west shoa zone of Oromia regional state.

The total number of donkeys in the Woreda was estimated to be 5827 [10].

All available donkeys irrespective of their age, sex and color in the selected Woredas of the zone were examined for any health, management and welfare problems during the study period. Moreover, the common use(s) of donkeys was also assessed.

Study Protocol

Questionnaire Survey: A structural questionnaire was designed and validated to cover a wide range of socio-economic aspects including donkey population size at house hold level, use, family income through the use of donkeys, frequency and magnitude of work, nutrition and management of donkeys, health and welfare constraints and major causes of culling donkeys. The questionnaire was randomly given to almost all available donkey owners at the study site. Respondents were briefed about the purpose and objectives of the survey.

Retrospective Study: This was an exploratory assessment carried out to ascertain occurrence and magnitude to any disease of donkeys in the study area. Data’s were collected from daily clinical records of the Woreda in an attempt to summarize the major health problems in the study area.

Cross-sectional Study: In the randomly selected kebeles of the Woreda, almost all available donkeys were subjected to a thorough physical clinical examination. Individual donkeys were restrained and detailed clinical examination was carried out. Observed external lesions, clinical sign, teeth condition, eye problems, nature of mucus membrane and any hoof and limb problems were recorded.

Collection and Examination of Fecal Samples: Fecal samples were collected from the study donkeys, directly from the rectum by using rectal gloves lubricated with paraffin oil. Each sample was labeled with the animal number corresponding to owners name, date and place of collection with indelible pen. Samples were kept in refrigerator 4°C to be examined within 7 days after collection.

Fecal Egg Count: Quantitative coproscopy for nematode eggs was carried out using modified Mc Master Technique [11].

RESULTS

Demographic Distribution: The total distribution of in donkeys, horses and mules each woreda of the zone is given below.

The human population size of Wonchiworeda is 108, 550 human to donkey population ration is:Human: Donkey (108, 550: 5827, ~ 19: 1).

Questionnaire Survey: A total of 385 people owning donkeys both in urban and rural areas of Wonchiworeda were interviewed. The results are presented in figure..... The mean age distribution of owners interviewed was 39 year ranging from 10 to 90.

Family Incomefrom Donkeys: In the study area donkeys are kept mainly for home use only to transport farm products to and from the market. None of the owners interviewed use their donkeys as a source of money earning for family living and their status in the society is very low.

Management Practice

Management and Frequency of Work: In the study area donkeys were used on average for 4 days per week. This corresponds to 3 to 5 days of work in a week. An exception to this relationship occurs in dry season where donkeys in some districts of the Woreda (Lemen) carry water all over the week. All the donkeys found in the Woreda are of pack type and carry an average load of 74 (Range 40-120) kg over an average period of 3.8 (Range 2-6) hours per day.

Table 1: Demographic distribution of donkeys, horses and mules in each woreda

Woreda	Donkey	Horse	Mule
Ameya	8, 200	5, 140	1, 930
Becho	9, 607	1, 835	837
Dawo	6, 883	2, 394	371
Goro	4, 610	13	618
Ilu	7, 142	2, 256	307
Kersa	10, 258	4, 225	2, 428
SebetaAwas	14, 428	1, 524	1, 605
SedenSodo	7, 322	5, 836	479
Sododachi	5, 234	571	894
Tole	12, 290	3, 194	2, 826
Wolisso	19, 962	3, 373	1, 044
Wonchi	5, 827	3, 708	395
Total	111, 763	34, 069	13, 734

Source: (South west shoa zone rural and agricultural office, 2008).

Age of Loading: In the study area donkeys are loaded for the first time at an average age of 3.2 (Range 3-4) years.

Housing: Donkeys in all kebeles of the Woreda are herded together with other livestock in the day time.

At night 81.8% of respondents ascertained that, donkeys including other livestock's are housed sharing the same shelter with the family and the remaining is housed alone. As a result there is no risk of hyena bite in the study area which is the main cause of physical injury in central Shoa.

Nutrition and Water: Communal grazing in the pasture is the major source of food for donkeys in the study area. Some respondents supplement their donkey with barely during dry period when there is shortage of feed in the pasture. Almost all donkeys have access to water once or twice a dry.

Harness: In the area donkeys are used only for pack purpose. They are used for transporting goods for people from place to place being fitted with padding material. The padding materials (Old blanket, stratified sacks, Nylon, worn out cloths) are placed ideally between the load and the back in the mid thoracic region of the animal. The owner's use harness frame to load water and stone. Despite this the harness frame was not properly fitted on the back of the animal. The padding is not adequate enough to provide comfort while carrying the load. As a result it is common to see donkeys with various injuries in the presence of padding.

Hoof Care and Grooming: Generally speaking, grooming and shoeing is not practiced in the study area and most of the owners are surprised with this question. Concerning disposal of disabled/aged donkeys 71.4% of the respondents used to leave their donkeys out of door until it dies, 22.6% of respondents sell it to the local market in exchange of another donkey. The remaining of them (older people) keeps it in door because of humanity.

Castration: From the respondents and information obtained from the woreda's veterinary clinic castration is not practiced in the study area. But some of the owners perform traditional way of castration (The donkey is restrained physically, the testicles are grabbed and a wooden bar is placed under and the spermatic cord is beaten using iron bar) when donkeys are unmanageable for working purpose.

Health Care: The general perception of the society is that donkeys do not get sick unless they encounter a serious health problem. From the interviewee and information obtained from the Woreda's veterinary clinic the attitude of the people towards treating their animal when diseased is improved recently due to the sky rocketing market price of the livestock. Donkeys are brought to the clinic some times when diseased but the health care given to them is negligible and subjected to maltreatment by their owners. The majority of them buy veterinary drugs (Fenbendazole) from the pharmacy when their donkeys show sign of colic and emaciated. The rest of them use traditional herbal medicament and still some of them leave their donkey to recover by its own.

Traditional Treatment Practice: A mixture of garlic and tobacco is crushed together and to this is added a local alcoholic beverage "Areke" and administered to donkey during colic, abdominal distension or in case of gastro intestinal disease. In case of back sore the powder of old dry cell (Carbon black) is poured directly on to the wound.

Disease Occurrence: Concerning, the type and frequency of disease occurrence, the results of the respondents is given below. From the respondents' colic and respiratory problem accounts 35.6% and 21.3% of the complaint respectively, followed by physical injury.

Retrospective Data Analysis: A total of 2458 equines had been admitted to the study Woreda of South West Shoa zone during the year (2004-2007) for various clinical cases. The highest share of registered health problem accounted to parasitic diseases.

In addition to this 3441 equines against Africa horse sickness and 313 against anthrax was vaccinated during the intended period of time.

Cross Sectional Study: As everywhere in the country no matter how invaluable service donkeys provide, they are subject of routine and frequent neglect and maltreatment in the study Woreda. This resulted in reduced work output and lifespan of donkeys. The major health problems encountered were the following:

Parasitism: Out of 100 different faecal samples examined 86(86%) were positive for harboring of ova of any one of gastrointestinal parasites.

Table 2: Clinical disease recorded

No	Clinical disease recorded	Frequency
1	Trypanosomiasis	104
2	Helminthes and external parasite	1584
3	Respiratory problems	425
4	Physical injury and Miscellaneous case	345
Total		2458

Table 3: Helminth infection rate in donkeys

Infection	Frequency	Prevalence (%)
Mild (<500 EPG)	6	7.4
Moderate (500-1000 EPG)	36	44.4
Severe (>1500 EPG)	39	48.2
Total	81	100

Table 4: Mean EPG of each parasite

Parasite	Mean value	Prevalence	Range (95% CI)
Strongylespp	1212.5	81%	1035-1390
P. equorum	86.5	33%	52-121

Out of these positive cases 81(94.2%) were due to Strongyle infection and 33(38.4%) were due to parascarisquorum. Out of 385 animals examined for external parasites 32 (8.3%) were positive for harboring any of external parasites. out of these 12(37.5%) were tick spp and 20 (62.5%) were due to lice spp.

Physical Injury

Back Sore: There is a harness sore mainly due to poorly fitting harness materials or in adequate padding materials which cause frictional rub, lacerated wound or abrasion due to friction from improper load fastening materials such as stripes of tyre, sisal rope or nylon rope.

From 385 donkeys examined in the area 91 had injuries in different part of their bodies and it is common to see harness sores or scars when the sores have healed leaving white hair on most of the donkeys.

Farrriery (Hoof and limb problem) STheowners who perform mixed job (Farm and trade) drive their donkey longer distance from market to market. Thus, the hoof wall in these donkeys wear more quickly than it can be replaced, therefore the hoof wall come in contact with the ground and this leads to damage of the sensitive lamina ending up with lameness. When these donkeys are left and graze on the pasture for some time the hoof wall will regenerate and the donkey resume its normal gait.

Equine Welfare: The welfare state of an animal is the physical, mental and natural state of an animal with regard to its attempt to cope with its environment. Although Ethiopia has very high livestock population the country doesn't have animal's welfare regulation for protecting her vast resources from different cruelties and other animal welfare problems.

As the welfare of animals is concerned animals need to be protected to live peacefully in their environment without affecting their health and welfare. They must not to be unnecessarily neglected to have access for feed, water and shelter or abused by beating and harming and deprived of their freedom of movement and exercise. The attitude of the people in the study area towards their donkey is more or less similar to as people in any part of the country. Donkeys are seriously abused by beating, overloading or over driving.

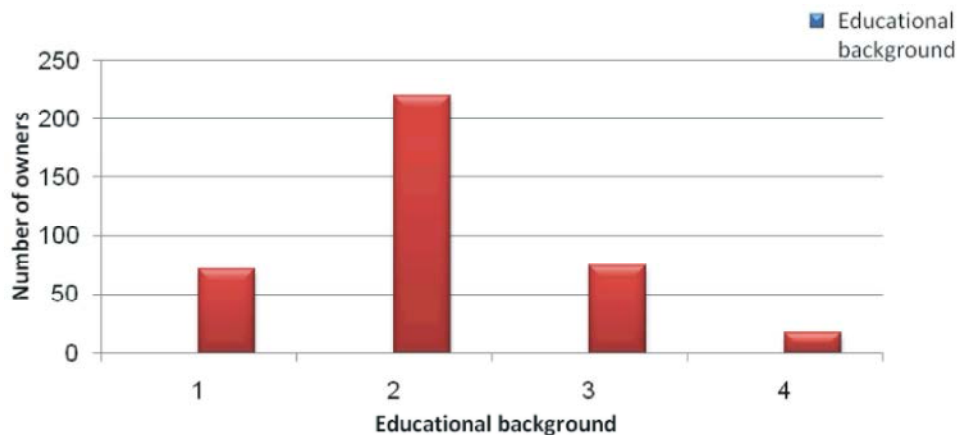


Fig. 1: Educational background of owners interviewed

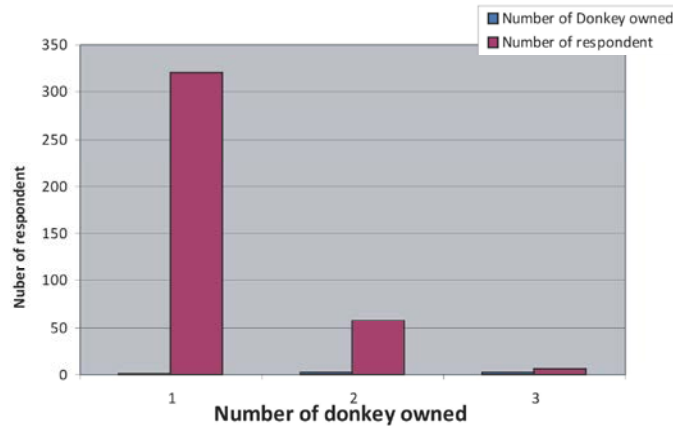


Fig. 2: Number of donkeys owned per house hold in Wenchi district

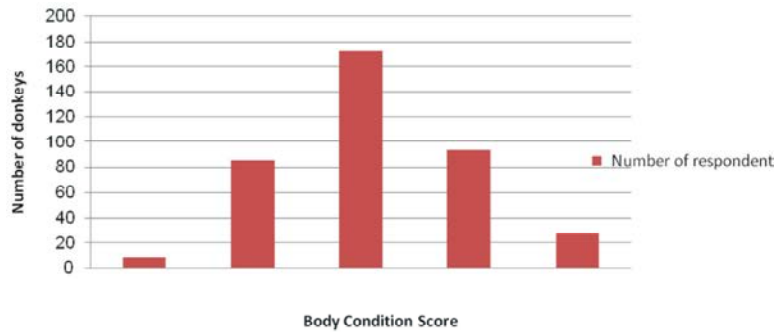


Fig. 3: Body condition score of sampled donkeys

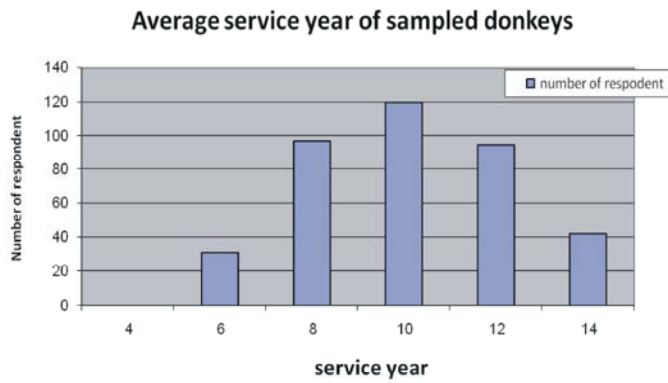


Fig. 4: Average service year of a donkey

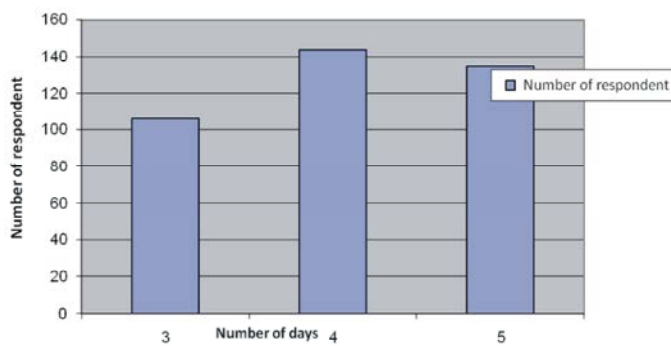


Fig. 5: Work done in days per week

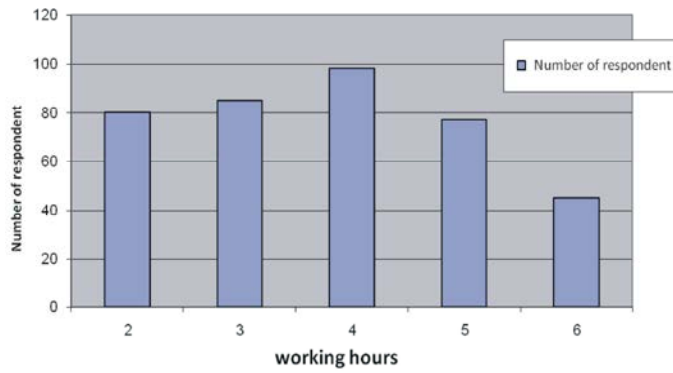


Fig. 6: Working hours in a day

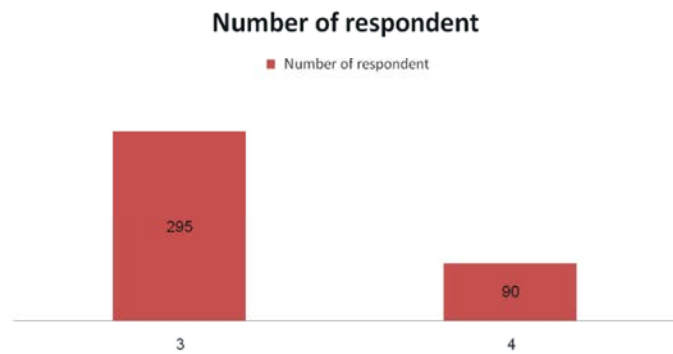


Fig. 7: Age of loading for the first time

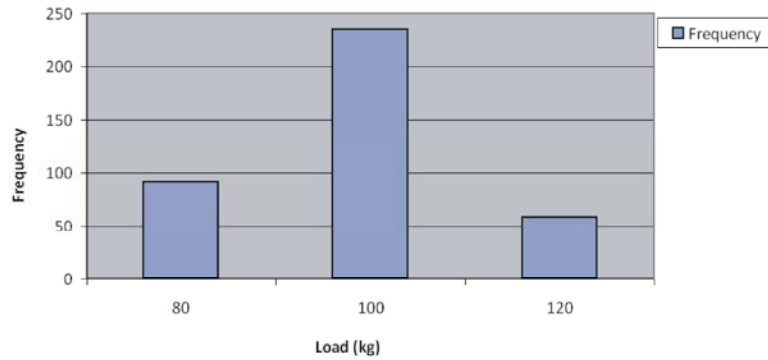


Fig. 8: Load carried by a donkey: Maximum

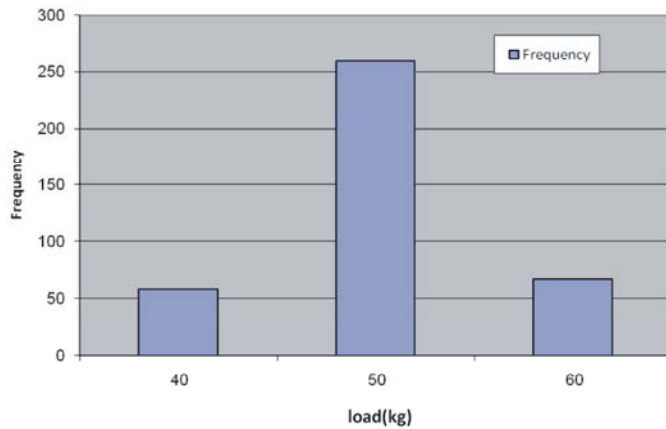


Fig. 9: Load carried by donkey: Minimum

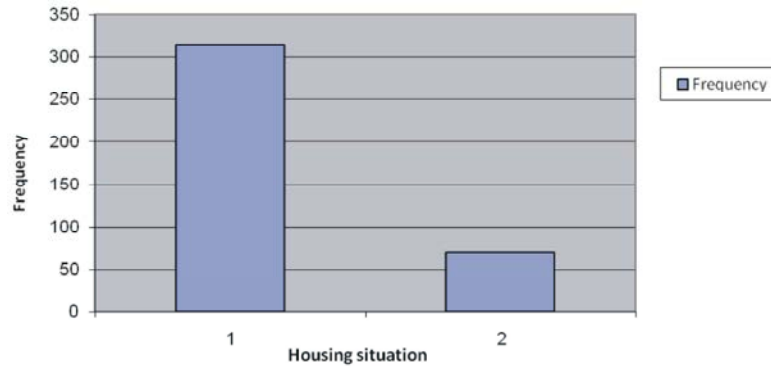


Fig. 10: Housing of donkeys

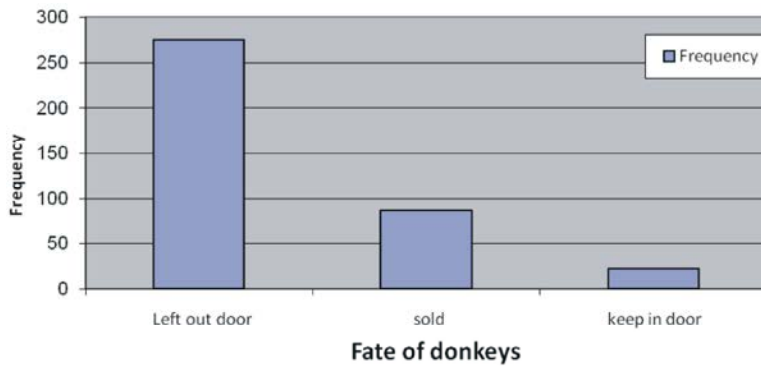


Fig. 11: Fate of donkeys unfit for work

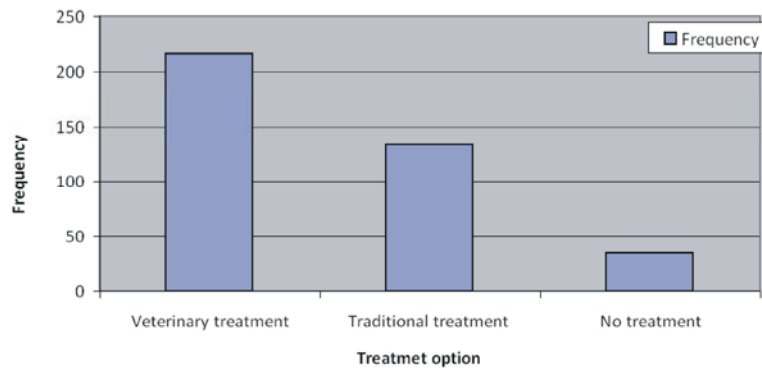


Fig. 12: Treatment coverage

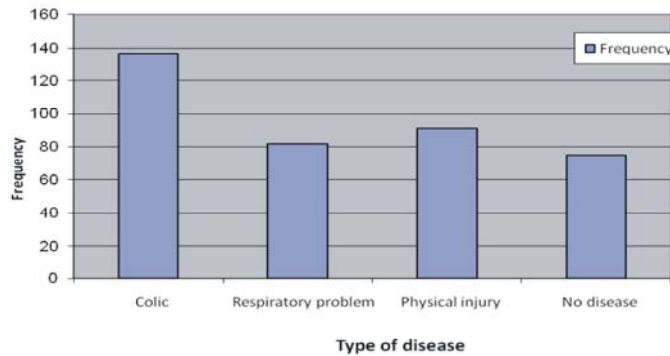


Fig. 13: Disease occurrence

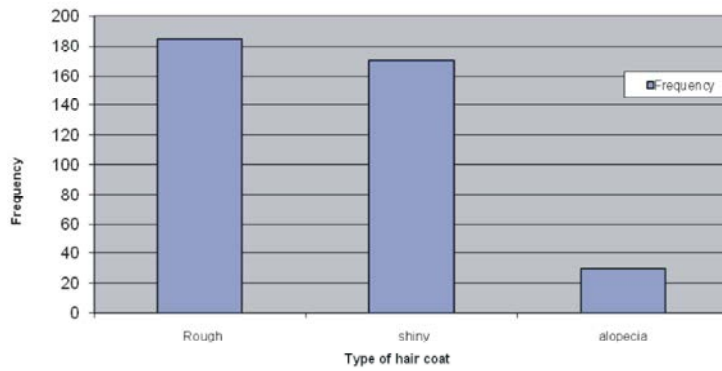


Fig. 14: Nature of hair coat of sampled donkeys

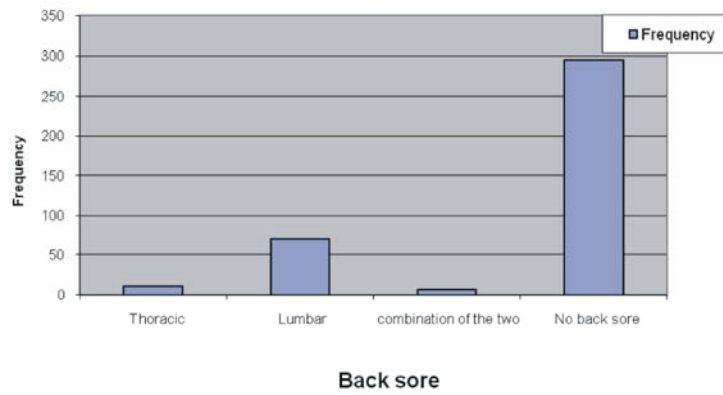


Fig. 15: Back Condition

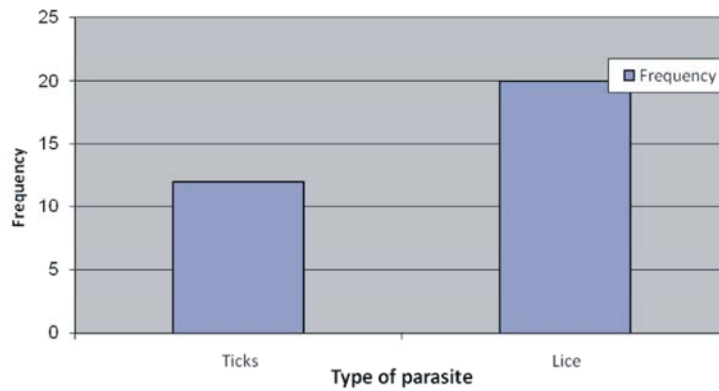


Fig. 16: External parasites encountered

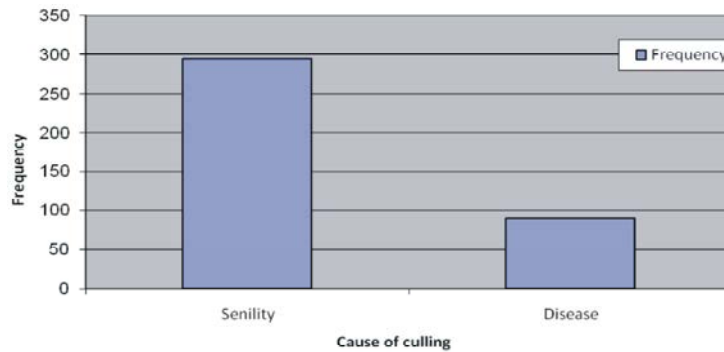


Fig. 17: Culling of donkeys

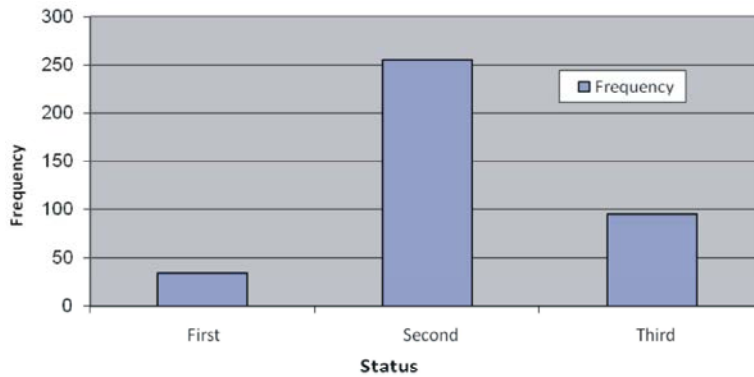


Fig. 18: Status of donkey in the society

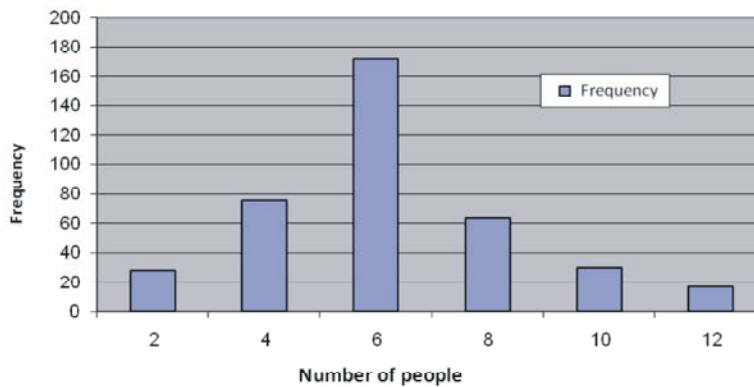


Fig. 19: People in the household of the interviewed owners

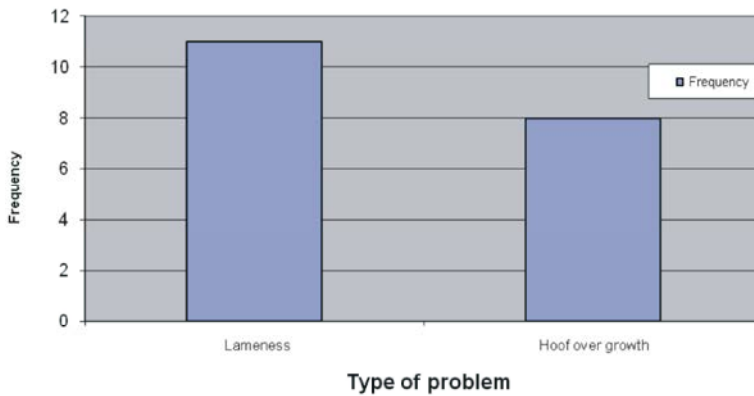


Fig. 20: Prevalence of hoof and limb problems

DISCUSSION

Retrospective Study: These data were obtained from medical records of the study woreda's veterinary clinic therefore, it is recognized that there may be biases in the study that are inherent to a retrospective studies. Taking this fact into account, the retrospective clinical data showed that helminthes and external parasites (64.4%) were found to be the most important health problem in the woreda. This could be related to the existence of favorable

factors facilitating the wide occurrence of the disease. In the study area it may be due to geographical location of the area that favors the development, survival and pasture transmission of helminthes larvae. Infections disease mainly pneumonia (17.3%) was also the major health problem in the study woreda. It is mainly associated with drenching of animals for various disease problems and due to internal parasite, other predisposing factors like overworking, malnutrition and over loading were the commonest features lowering donkey's

resistance. This concept agrees with Feseha [12] that indicates malnutrition, exhaustion, traveling, overcrowding predispose donkeys to respiratory disease.

The other important health problems of donkeys recorded in the clinic were physical injury (14%) and trypanosomiasis (4.3%). Generally in the study oreda helminthes and external parasites (64.4%), infectious disease (21.6%) and physical injuries were the major health problems of donkeys recorded.

Cross Sectional Study: Out of 385 animals examined in the study Woreda 91(23.6%) had injuries on various body parts. Most of the injuries were resulted due to poorly fitting harness frame, laceration or abrasion. The owners force their animals to work despite the presence of physical injury. This is due to lack of other alternative for transporting their packs or due to carelessness. Thoracic, lumbar and hind quarters are mostly affected. From quantitative faecal egg analysis the prevalence of Strongyleinfection is 81%. This finding is in consistent with the work done by Feseha *et al.* [13] and Yilma *et al.* [14] which indicates that the prevalence of strongyle infection in working donkeys of Ethiopia is in the range 70-100%. The result of comparison of level of helminthes infestation revealed that 48.2% of donkeys were infected massively (>1500 EPG).

A comparative assessment of body condition score revealed that there is a significant statistical difference between the two ($P < 0.05$). As the body condition increase the prevalence of strongylus infection decrease. These results agree with the work of kianifard and Chen [15] in east shoa and west shoa region of Ethiopia.

Questionnaire Study: The finding of the questionnaire indicated that the number of people living per household who owns donkeys is 5.24. 83.1 % of the respondents owned one donkey and rest owned more than one donkey. The majority of donkeys owned were matured working ones.

In the study area donkeys are used for pack transportation. The respondents explained that a donkey in the study area was found to carry an estimated average load of 74 (Range 40 to 120) kg and travel for a period of 3.8 (Range 2 to 6) hours per day.

They work for 3 to 5 days in a week except that they carry water an over the week in day period.

Most donkey owners claimed that parasitism (Colic) is the main health problem of working donkeys in the study area. Physical injury and pneumonia (Coughing)

were next health constraints reported by owners'. Traditional treatment practices like drenching of different plant preparations predispose donkeys to other diseases like pneumonia.

CONCLUSION

Donkeys both in vast rural territory of Ethiopia and cities are still the most utilized means of transporting farm and industrial inputs. Observation from the questionnaire survey indicates that donkeys are important domestic animals playing a vital role in the lively hood of the people in the study site. This is due to the fact that modern transport hasn't yet sufficiently available or of which is not affordable by most residents of the rural entails heavy cost for construction of roads suitable for modern transport means. The cheapest and the remaining alternative means at least for the time being is the use of donkeys.

The diversified uses of donkeys are transporting of firewood, charcoal, fruit, vegetables and grains to market location and grain mills.

In spite of varied uses of donkeys they are confronted by a series of health and welfare problems. Parasitism, pneumonia and physical injuries abused by beating, overloading, overworking, unnecessary neglect and maltreatment are still prevalent health problems from the above findings and conclusive remarks the following recommendations are forwarded:

- The community should be made aware of the value of donkeys, the proper management and health care to these economically important animals, so as to maximize the efficiency it can produce to its full potential.
- To reduce the incidence of back sore problems improvement of presently available methodologies of harnessing is mandatory.
- Strategic treatment before and after rainy season against gastro intestinal parasites is effective to get rid of the parasite burden of the animals and minimizes pasture contamination by dropping fecal egg count.
- Government and nongovernment organizations should work for the health and welfare of donkeys in the study area.
- There should be more comprehensive and detailed study on various aspects of donkey diseases particularly on parasites.

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