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Health and welfare problems of pack donkeys and cart horses in and around Holeta town, Walmara district, Central Ethiopia

Chala Chaburte[1,2*], Bojia Endabu[2], Feleke Getahun[3], Alemayehu Fanta[1,2], Zerihun Asefa[1,2] and Kassaye Aragaw[3]

[1]School of Veterinary Medicine and Agriculture, Addis Ababa University, Ethiopia.
[2]The Donkey Sanctuary, Ethiopia.
[3]School of Veterinary Medicine, Hawassa University, Awassa, Ethiopia.

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This study was conducted from October, 2013 to May, 2014 to identify and compare common health and welfare problems of pack donkeys and cart horses in and around Holeta town, central Ethiopia. The presence of the problems was directly assessed on 301 pack donkeys and 84 cart horses, and indirectly assessed in the areas where the study animals were living, grazing and working. Indirect assessments of the problems were also conducted using focus group discussions with 64 equine owners and 8 animal health professionals. Oral problems (2.3 and 16.7%), back sore (13.6 and 1.2%), girth sore (2.7 and 17.9%), tail base sore (15.6 and 0%), abnormal behavior (14.3 and 0%), epizootic lymphangitis (EL) (0 and 10.7%), wound (33 and 44%) and hoof overgrowth (62.5 and 35.7%) were identified on pack donkeys and cart horses, respectively. Indirect assessments indicated that the animals are affected by strangles, tetanus, anthrax, colic, lameness, EL, wounds, parasites, sarcoids, rabies, African horse sickness, owner abuses, shortage of feed and water, and housing problems in the area. This study revealed that back sore, tail sore and abnormal behavior were more frequently occurring in pack donkeys whereas girth sore and oral problems were more common in cart horses. Cart horses were highly affected by epizootic lymphangitis. Both species were more or less similarly affected by lameness, strangles, tetanus, colic, wounds, parasites, owner abuses, and lack of proper feeding, watering and housing. Therefore, awareness creation of the population about the use of these animals for working and good management system should be promoted by the government in the area. Capacity building services should also be delivered for local animal health professionals.

Key words: Donkeys, horses, health, welfare, Ethiopia.

INTRODUCTION

According to production statistics of the Food and Agriculture Organization of the United Nations (FAOSTAT), the population of equines in Africa was estimated to be 26.03 million, consisting 18.9 million donkeys, 6.06 million horses and 1.02 million mules in the year 2014 (FAO, 2017). In Ethiopia, there are about 7.43 million donkeys, 2.03 million horses and 0.4 million mules in the sedentary areas of the country (CSA, 2015). Accordingly, Ethiopia possesses approximately one third of the equine population of the African continent with

39% of all horses and donkeys each and 34% mules.

Equines have a prominent position in the agricultural systems of many developing countries (Feseha et al., 1998). In Ethiopia, the low level of development of the road transport network and the rough terrain of the country make donkeys and horses the most valuable, appropriate and affordable pack animals under the small holder farming system (Gebrewold et al., 2004). They play a great role in rural communities providing power and transport at low cost. They are used for various agricultural operations and provide the needed transport especially in rural areas where the infrastructure is not well paved. They transport water and food to remote areas during war and peace as well as guns and ammunition during war.

They are also used to carry building materials, fire wood, animal dung and charcoal, agricultural products and people. Horses and mules are faster and more powerful animals for work. However, it is more costly to buy and maintain them than donkey (Pearson et al., 2003; The Brooke, 2017).

Even though equines have huge number of population and invaluable contributions as an engine that power rural as well as urban economic development of the nation, they (particularly donkeys) are the most neglected and misused animals in Ethiopia. They suffer from a number of diseases including infectious and non-infectious, and shortage of feed that lead to poor productivity and work performance. Overloading for long distances and loading without proper harness (padding) cause external injuries to equines and expose them to other diseases. They are made to work overtime without adequate feed or health care, indicating poor welfare status of the animals in the country as is also seen in many other developing countries (Mekuria et al., 2013; Sumbria et al., 2017).

There is a paucity of information regarding the status of health and welfare problems of pack donkeys and cart horses in and around Holeta town, Walmara district. Such information would be useful for designing better strategies that would help to improve the health and welfare of pack donkeys and cart horses. Therefore, the objectives of this study were to assess the health and welfare status of pack donkeys and cart horses and to compare the problems between the two species in the study area.

MATERIALS AND METHODS

Study area

This study was conducted from October 2013 to May 2014 in and around Holeta town, Oromia Regional State, Oromia Special Zone Surrounding Finfine, central Ethiopia. Holeta town is found in Walmara district which lies at a distance of 40 km west of Addis Ababa. Its location is 9°30' N latitude and 38°30' E longitude at an altitude of 2400 m above sea level. It experiences a bimodal pattern of rainfall with the long rainy season extending from June to September and a short rainy season during March and April (Shiferaw et al., 2003).

However, there may be rains in any months of the year from small amount of clouds, letting additional moisture for the area. The least amount of rain fall occurs in November and the average rain fall is 1134 mm. The mean annual temperature of the area is about 14.3°C with a maximum of 24.5°C recorded from January to May and minimum of 1.6°C which is recorded during December (National Meteorological Services Agency). The district has an estimated number of 14,000 donkeys, 1,400 horses and 700 mules.

Study animals and sampling procedure

The study involved a total of 385 equines (301 pack donkeys and 84 cart horses) that were selected by, simple random sampling method from different market sites (Asgori, Gudu, and Holeta town), grain milling houses, animal health clinics and along the roads in Walmara district. Then, health and welfare problems of the randomly selected animals were assessed using direct observation and indirect assessments (Focus group discussion and assessments of the environment).

Study methods and data collection

The study employed direct observation of the randomly selected 301 pack donkeys and 84 cart horses for signs of health and welfare problems and observation of the environment where these animals were living, grazing and working. Focus group discussion with owners and attendants of the animals was also used to collect information regarding issues related to the animals' health and welfare.

Species, age, sex, body condition score (BCS), presence or absence of oral problems, wounds, lameness, clinical signs of different diseases and behavior of the study animals were observed and recorded properly.

The BCS of the animals was assessed according to Svendsen (1997); by observing and palpating fats and muscles covering body parts such as neck, ribs, vertebral column (spinal process), loin and rump of the animals. These indicators were strictly observed and the body condition of each study animal was recorded as poor, medium and good.

The presence or absence of any kind of wounds such as back sore, girth sore, bit sore, proud flesh, hobble sore, joint swelling, tail sore, hyena bites and other sores on the body of pack donkeys and cart horses was examined. The number and severity of wounds were identified and recorded. The type and location of the wound were assessed and recorded using body mapping. Abnormalities in the oral cavity and eyes were also assessed. The mouth of the animal was opened and examined for the presence of lesion and other abnormalities on its lip, tongue, gum, palates and teeth. At the same time, the age of each animal was estimated using the eruption and wearing of the incisor teeth.

The presence of hoof overgrowth, hoof deformity, hoof cracking

*Corresponding author. E-mail: chala892@yahoo.com.Tel: +251913289250.

puncture wound in the hoof, fracture and hoof loss (in abandoned animal), hobble wounds, posture and gait abnormality and musculoskeletal disorder were also assessed. The severity of the abnormalities, their location and the number of legs affected were also identified and recorded.

The alertness, reaction to human approach, proximity and touch, responsiveness to environment, depression (ear and head drop, tail tuck), difficulty to catch or handle, nervousness and other abnormal behaviors of the study animals were assessed by approaching and closely observing all the animals using “The Hand” tools.

The study animals were carefully assessed for any typical clinical signs of various diseases such as epizootic lymphangitis, strangles, pneumonia, African horse sickness, dermatophilosis, colic, ocular problem and other illness.

In order to triangulate the data obtained by direct observation on the status of health and welfare of the study animals, indirect assessment was also conducted using focus group discussions (FGD) and observation on the environment where the study animals were living, grazing and working. Focus group discussion (FGD) guide was designed and conducted among 72 people consisted of randomly selected 48 pack donkey owners, 16 cart horse owners and cart horse drivers, and eight animal health professionals living in the district (Holeta town, Asgori and Gudu villages).

All the members were males above 25 years old and have more than five years experiences of working with either pack donkeys or cart horses.

The participants of the discussion were grouped into nine FGD each consisting of eight members. The participants were given a chance to identify health and welfare problems of cart horses, pack donkeys in their localities and discuss severity and endemicity of the problems. Each participant got a chance to participate in the discussion.

Finally, the participants ranked the problems based on their effects on the animals from mild to severe. The status of the areas where the study animals were grazing, living and working was assessed carefully. The quality and quantity of feed and water made available to pack donkeys and cart horses in the field, markets, milling houses and homestead was also observed and recorded.

Data analysis

The data obtained from the study were entered into Microsoft excel spread sheets and then transferred to Stata statistical software version 11 for analysis. Descriptive statistics were computed for summary of both qualitative and quantitative data. Comparisons of prevalence of health and welfare problems among pack donkeys and cart horses were made using Pearson’s Chi-square test. P-values less than 0.05 were considered as a significant in all analyses.

RESULTS

In this study, a total of 301 pack donkeys and 84 cart horses were included. All cart horses and majority of pack donkeys (81%) were males.

The majority of cart horses (54.7%) and pack donkeys (43%) were in the age group of 6 to 10 years, while 14 and 36% of cart horses and pack donkeys, respectively were young (five years old or less). Only 13% of the horses and 4% of the donkeys had good body condition (Table 1).

Animal based assessment results

Health and welfare problems of pack donkeys

Different health and welfare problems of 301 pack donkeys were observed and quantified. Hoof overgrowth, wounds, diseases, dehydration, tail sore and back sores were among the most commonly observed problems (Table 2). Among the pack donkeys affected by hoof overgrowth, 45.2, 10, 35.1 and 9.6% had problem on their four, three, two and one legs, respectively (Figure 1).

Health and welfare problems of cart horses

The direct assessment done on cart horses identified that, wounds, girth sore, hoof overgrowth, diseases and dehydration were the most frequently observed problems (Table 3).

Comparison of health and welfare problems of pack donkeys and cart horses

Different health and welfare problems were identified on pack donkeys and cart horses. Epizootic lymphangitis (10.7%) was only observed on cart horses, but tail sore (15.6%) and abnormal behaviors (14.3%) were only observed on pack donkeys ($P<0.05$). Cart horses were more affected by oral problems and girth sores than pack donkeys, however; pack donkeys were more affected by back sore and hoof overgrowth than cart horses ($P<0.05$). The other problems occurred more or less in equal proportion on both species ($P\geq0.05$) (Table 4).

Indirect assessment results

The focus group discussion made among the donkey owners showed that the general health and welfare of pack donkeys in the study area were mainly affected by anthrax, strangles, sarcoids, owner abuse, colic, wounds, hoof overgrowth, parasites, rabies and black leg. The problems were ranked based on their acuteness, rate of transmission, severity and epidemiology in the population of the animals from severe to mild. The participants agreed that, poor management system is practiced by the owners which expose pack donkeys to different health and welfare problems. They also identified that over loading, drenching with local medicinal plants, loading pregnant and young donkeys, and reluctance to bring their donkeys to the veterinary clinic are problems that are poorly recognized by the owners but have major effect on health and welfare of pack donkeys in the district. The discussion was also made among the owners of cart horses during focus group discussion which indicate that cart horses are affected by epizootic

Table 1. Demographic data of pack donkeys and cart horses used in the study.

Factor	Level	No. observed	
		Donkeys (%)	Horses (%)
Age	0-5 years	108 (36)	12 (14)
	6-10 years	129 (43)	46 (54.7)
	≥11 years	64 (21.26)	26 (31)
Sex	Male	244 (81)	84 (100)
	Female	57 (19)	0
Body condition	Good	12 (4)	11 (13)
	Medium	220 (73)	51 (60.7)
	Poor	69 (22.9)	22 (26.2)
Total		301	84

Table 2. Major health and welfare problems of pack donkeys identified (N=301).

Problems	Number affected	Percentage
Oral problem	7	2.3
Wound	99	33
Back sore	41	13.6
Tail sore	47	15.6
Girth sore	8	2.7
Hobble sore	7	2.3
Bite sore	8	2.7
Abnormal Behavior	35	11.6
Disease	88	29.2
Dehydration	63	20.9
Ocular problem	26	8.6
Hoof overgrowth	188	62.5
Hoof Deformity	13	4.3
Posture/ gait abnormality	6	7.1

Figure 1. Lameness due to hoof overgrowth on the legs of a donkey.

Table 3. Major health and welfare problems identified in cart horses (N=84).

Problem	Number affected	Percentage
Oral problem	14	16.7
Wound	37	44.1
Girth sore	15	18
Disease	29	34.5
Ocular problem	4	4.8
Dehydration	16	19.1
Epizootic lymphangitis	9	10.7
Hoof overgrowth	30	35.7
Hoof Deformity	2	2.4
Posture/gait abnormality	9	10.7

Table 4. Comparison of health and welfare problems in horses (N=84) and donkeys (N=301).

Problem	No. affected (%)		P-Value
	Horse	Donkey	
Oral problem	14 (16.7)	7 (2.3)	0.000
Wound	37 (44.0)	99 (33)	0.059
Back sore	1 (1.2)	41 (13.6)	0.001
Bite sore	1 (1.2)	8 (2.7)	0.431
Hobble sore	2 (2.4)	7 (2.3)	0.976
Girth sore	15 (17.9)	8 (2.7)	0.000
Tail sore	0 (0)	47 (15.6)	0.000
Abnormal behavior	0 (0)	35 (14.3)	0.001
Disease	29 (34.5)	88 (29.2)	0.351
Ocular problem	4 (4.8)	26 (8.6)	0.241
Dehydration	16 (19.0)	63 (20.9)	0.706
Epizootic lymphangitis	9 (10.7)	0 (0)	0.000
Hoof overgrowth	30 (35.7)	188 (62.5)	0.000
Posture/gait abnormality	9 (7.1)	6 (3.0)	0.082
Hoof deformity	2 (2.4)	13 (4.3)	0.417

lymphangitis, colic, parasites, owner abuse, strangles, lameness, wounds and sarcoids which were ranked based on their severity, epidemiology and rates of transmission of the diseases. It was also identified that epizootic lymphangitis was the most common problem of cart horses in the area. Many cart horses were observed suffering from disease which eventually resulted to death. Infected cart horses were also working until the disease gets severe.

The result of the discussion made among eight animal health professionals showed that, pack donkeys are suffering from different health and welfare problems (Table 5) in Walmara district. These problems are mainly due to the low attention given to pack donkeys by their owners. The scarcity of facilities in the clinics was also found as one of the constraints to provide appropriate treatment for donkeys suffering from different health problems and to initiate owners to bring their sick donkeys to the clinic.

Based on their clinical experiences at their respective sites of the district, the professionals were also able to rank the problems after making participatory discussions. Accordingly, parasites (18.5 %), owner abuse (Over loading, beating, loading under aged donkeys and pregnant donkeys, improper housing) (17.4%) and wounds (14.2%) were mentioned to be the most important causes of health and welfare problem in donkeys in the district (Table 5). The status of health and welfare problems of cart horses in the study area was also discussed among the professionals. It was identified that cart horses are suffering from epizootic lymphangitis (14.5%), parasites (14.1%), and owner abuse (13.2%)

Table 5. The proportional effect of health and welfare problems of pack donkeys and cart horses identified by animal health professionals working in the district.

Health and welfare problems	Percentage value	
	Pack donkeys	Cart horses
Owner abuse	17.4	13.2
Colic	12.6	10.5
Tetanus	11.3	9
Epizootic lymphangitis	0	14.5
Strangles	8.1	7.6
Hoof problems	10.3	9.4
Parasites	18.5	14.1
Wounds	14.2	9
Anthrax	4	6.5
African Horse sickness (seasonal)	3.6	6.2

among others (Table 5). The participants agreed that cart horses are given more attention than pack donkeys by their owners. This is because; horses are more respected in the community and expensive to purchase than donkeys.

The assessment made in the environment where pack donkeys and cart horses were living, grazing and working indicated that the attention given to pack donkeys by their owners is minimal. Donkeys do not have separate house and live together with cattle. Their stable is not paved evenly and not cleaned regularly. As a result, the stables are muddy with scattered stones inside. Most of the pack donkeys do not have access to feed and water for at least three hours in the markets until the owners finish their business. The milling houses where donkeys are also kept in muddy, have no enough space for the number of donkeys they serve.

In most of the fields where donkeys are grazing, sufficient grass was observed but scarcity of water was noted. In contrast, cart horses had separate houses with 2 to 3 horses living together. Their stables were cleaned regularly and paved with flat stones. In the market, they were kept on feed but without water.

DISCUSSION

In this study we identified and compared common health and welfare problems of pack donkeys and cart horses in and around Holeta town, Walmara district. The result has revealed that pack donkeys and cart horses are affected by multiple management, health and welfare problems in the area. Although the majority of pack donkeys and cart horses were adults, six and above years old 36% of pack donkeys and 14% of cart horses were below five years of age. This indicates that owners in the study area begin to use donkeys and horses for work before they are mature enough. Age at maturity of equine is estimated at four years and it is recommended not to work with them until this age, as this predisposes them to structural deformity such as sagged back (lordosis) and early demise.

Although good body condition was observed in 4 and 13% of pack donkeys and cart horses, respectively, the majority of the population were with poor to medium body condition (BCs$\leq$2). This indicates that apart from health and management associated problems, shortage of quality feed and clean water may be the main factor that contribute for poor body condition of pack donkeys and cart horses. This was also supported by the findings obtained from focus group discussions and assessments done on the study area. Interestingly, whilst equines are considered as one of the most important animals for the security of the household economy, as it was indicated during focus group discussions, they, particularly donkeys are given low priority in terms of access to quality feed and water in the society. This was also supported by the findings of previous studies (FAO, 2014; Pritchard et al., 2005; Wilson, 2002).

The next frequently observed problem was wounds on different body parts of pack donkeys (33%) and cart horses (44%).This might be caused by different factors such as environmental factors, the behavior of the owner, the frequency and type of work, type of harness materials used, ill-fitted harness and absences of padding on the back of the animals which is supported by the previous works (Ashinde et al., 2017; Biffa and Woldemeskel, 2006) that indicated frequent beating, overwork, loose fit and synthetic harness materials that may induce wounds. Moreover, the present finding has also showed significantly higher prevalence of wounds in cart horse than pack donkeys which is similar with the findings of Fikru et al. (2015). This might be due to the fact that cart horses are exposed to different types of injuries as a result of improper infrastructure of the working areas, stress and beating during training and driving which may affect the normal healing process of wounds.

Our study revealed lower prevalence (33%) of wounds in donkeys than a previous study (47.7%) from another

Figure 2. (a) Girth sore due to improper use of harness (b) Lip lesion due to improper and ill-fitted bit.

part of Ethiopia (Ashinde et al., 2017). This may be due to the variation in the type work, frequency of work, harness materials used and the level of awareness of the owner or donkey driver about animal welfare in the two study sites.

In the present study, pack donkeys had significantly much higher proportion of tail base sore (15.6%) than cart horses (0%). The lesion is induced by excessive rubbing on this site by the rope that passes under the tail of pack donkeys where there would be frequent movement and rubbing as the animal moves forward. None of the cart horses included in the study had tail base sore. This is because; cart owners do not use rope under the tail in the study area. The study done on working equids in Hawassa town, Southern Ethiopia, also showed higher prevalence of tail base lesion in donkeys (62.5%) than horses (51.3%) (Mekuria et al., 2013). However, in the present study, the magnitude of the lesion in both species is much lower than that of the previous study. This might be due to the fact that our study was exclusively done on pack donkeys and cart horses, while the other previous study was done on draught, pack, riding and other type of working equids.

In this study, oral problems (16.7%) and girth sore (17.9%) were more frequently observed on cart horses than donkeys (see Figure 2a). This might be due to the frequency of the application of the harness materials used and ill-fitted harness, particularly lip lesions which significantly associated with the bit type (Figure 2b) used for leading cart horses (Usman et al., 2015). Similar findings (oral problem (3.4%) and girth sore (10.1%)) were also reported by Amante et al. (2014) from Nekemte Town, East Wollega Zone, Ethiopia. The magnitude of the prevalence of oral lesion and girth sore in the present study area is higher than in the previous study site. This can be associated with the differences in the type of the harness materials or bits used, type and duration of work, and the level of awareness of the owners and donkey drivers in the two areas.

Our study revealed that back sore is more prevalent in pack donkeys (13.6%) than in cart horses (1.2%) in the study area (Figure 3). This indicates that pack donkeys are loaded without saddles or improper and ill-fitted saddles in the area. The owners also did not take their donkeys to animal health clinics to be treated. This is supported by the information from focus group discussion with animal health professionals. However, the prevalence is lower when compared with the prevalence (19.5%) of back sore in donkeys reported from a previous study (Amante et al., 2014). This might be related to the differences in the type of work, harness and saddle design, and level of awareness of owners or users about how to load the animals.

Lameness is one of the most prevalent health problems of equines and it can be caused by a wide range of conditions (Putnam et al., 2014). In this study, the high proportion of observed lameness on cart horses (35.7%) and pack donkeys (62.5%) was caused by hoof overgrowth. This high prevalence of the problem indicates lack of veterinary services, lack of farriery training courses and poor management practice by the owners in the study area. Our finding showed higher prevalence of lameness in donkeys when compared with the prevalence (40.2%) of lameness reported from a study on cart pulling donkeys in Hawassa, Southern Ethiopia (Fekadu et al., 2015). This difference might be due to the difference in working and grazing areas, and type of work in the two study areas. The previous study was done entirely on cart pulling donkeys that may face lameness due to injuries at knee joints, elbow and shoulder areas, and hoof cavity. The working area of the previous study is also relatively dry which facilitates natural trimming of the hoof of the donkeys. However, the present study was done on pack donkeys and the area is

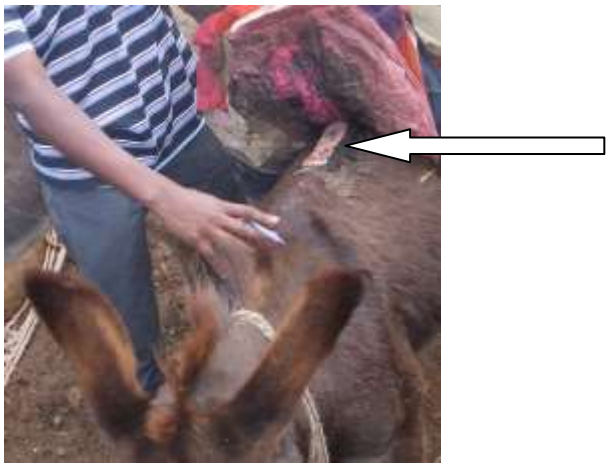

Figure 3. Back sore on pack donkey.

wetter because it gets relatively more rain. This facilitates the overgrowth of the hoof of the animals.

In this study epizootic lymphangitis was only observed on cart horses (10.7%). This may be due to the fact that horses have less resistance to the disease than donkeys. The use of a single harness for different cart horses is well practiced in the area. This can facilitate the transmission of the disease among cart horses and may contribute to the high prevalence of the disease. The current prevalence is lower when compared with the prevalence (24.9%) of the disease reported from central Ethiopia (Asfaw et al., 2012) and from a study on cart horses in 28 towns' cart horses in Ethiopia (Ameni, 2006). This might be associated to the difference in the number of animals involved in the studies (large number of cart horses (390 and 19,082), respectively) in the previous studies. The altitudes of the study areas may also contribute to the difference in the prevalence of the disease.

The current study indicated that 88% of the observed pack donkeys showed normal behavior (alert, responsive to surroundings, head and ears up) and 14.3% of male donkeys showed abnormal behavior (nervousness, depression, unresponsiveness). However, none of the assessed cart horses showed any type of abnormal behavior. This might be due to the low level of awareness of pack donkey owners on how to approach and change the abnormal behavior of their donkeys. The owner of cart horses have more frequent approach and work with their animals and this may shape the behavior of cart horses.

The information from animal health professionals revealed that pack donkeys and cart horses are suffering from different diseases and conditions (tetanus, strangles, parasites, anthrax, African horse sickness (AHS), colic, owner abuse, hoof problems). When the burdens of the problems are compared among two species of the animals, except anthrax and AHS, it is more prevalent in pack donkeys than cart horses. This is because pack donkey owners are reluctant to bring their donkeys to the clinic for treatment. They also have wrong perceptions that donkeys are resistant to pain, injuries, diseases, and they do not know whether donkeys are treated in veterinary clinics. This was also supported by the information obtained from discussion with animal health professionals working in the clinics of the study area.

CONCLUSION AND RECOMMENDATION

The present study revealed that pack donkeys and cart horses are suffering from multiple health and welfare problems in Walmara district. Back sore, tail sore and abnormal behavior were more frequently occurring problems in pack donkeys whereas girth sore and oral problems were more common in cart horses. Cart horses were highly affected by epizootic lymphangitis. Both species were more or less similarly affected by lameness, strangles, tetanus, colic, wounds, parasites, over loading and beating.

Apart from the occurrence of health problems, the attention given to proper feeding, watering and housing by the owners was found very limited. Therefore, awareness creation of the population about the use of these animals for working should be promoted by the government through delivering mass education and extension program, training and advice services in the area to ensure better management practices, and hence productivity of the animals. Capacity building services should also be delivered for animal health professionals on how to treat different health and welfare problems of the animals in the study area.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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