

*Full Length Research Paper*

## Management practices and welfare problems encountered on working equids in Hawassa town, Southern Ethiopia

Solomon Mekuria\*<sup>1</sup> and Matusala Mulachew <sup>2</sup> Rahmeto Abebe<sup>1</sup>

<sup>1</sup>Hawassa University Department of Veterinary Medicine, Hawassa Ethiopia.

<sup>2</sup>Haramaya University Faculty of Veterinary Medicine, Harar Ethiopia.

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A cross sectional study was conducted between November, 2008 and April, 2009 to evaluate (observe) management practices and welfare problems of working equids at Hawassa town, Southern Ethiopia. Six hundred working equids were screened for various lesions on the skin. Sixty animal owners or users were interviewed about management practices. Among studied (observed) equids, 90% were draught, and 10% were pack animals. Fifty two percent (52%), 45 and 3% revealed a thin, medium and good body condition score, respectively. Lesions resulting from limb tethering (94.5%), lameness (89.2%), lesions affecting the lips (88.5%), girth/belly (81%), wither/spine (78.7%) and breast/shoulder (62.8%) were most frequently observed. Tail/tail base (79%), ribs/flank (81%), breast/shoulder (84.5%) and hind quarter (70.7%) lesions were significantly associated with pack type of work ( $p < 0.05$ ), whereas lip lesion (89.7%) and lameness (91%) were associated with draught type of work ( $p < 0.05$ ). Poor/thin body condition significantly correlated with wither/spine lesions ( $p < 0.05$ ). According to respondents, the average daily working time was  $7.9 \pm 0.2$  h with an average burden of 70 kg of goods and 3 persons. The average water supply at a time amounted to  $5.75 \pm 2.7$  liters. Among respondents, 53.3% provided water three times per day, and 41.6% of them only two times/day. The average amount of provided feed was  $12.2 \pm 3.4$  kg twice daily. Shelters were provided for all working equids at home, but only for a few experienced individuals were provision of shelter to equids at work sites. In addition, rubber shoeing was found to be of poorest quality, thus leading to high slip hazard. In conclusion, even though owners/users take care of their animals, a great number of lesions associated with work type and body condition were noted. This finding shows that working equids experience multiple welfare problems in the study area.

**Key words:** Equids, work type, management, welfare problems, Hawassa, Ethiopia.

### INTRODUCTION

Livestock is a backbone component of the agricultural sector in Ethiopia. It provides meat, energy for crop production, manure for soil fertility, raw material for the leather industry, serves as live bank and is used for

transportation. Equids are mainly kept for transportation purposes in different agro-ecological zones of Ethiopia. Their meat and milk are consumed only in a few areas. In some regions of North West Kenya and South West

\*Corresponding author. E-mail: [solmk2000@yahoo.com](mailto:solmk2000@yahoo.com)

Ethiopia, donkey meat is a delicacy and the milk believed to treat whooping cough (Fred and Pascal, 2006).

People in most peri-urban centers either own or rent horses, mules or donkeys to transport goods, people and even water (Mohammed, 1991). Despite their use, the husbandry practices of working equines are poor. Some hobbling methods cause discomfort and inflict wounds (Alujia and Lopez, 1991; Mohammed, 1991). In addition, inappropriate harnesses or yokes that may be heavy and ragged, long working hours and insufficient food, have a negative effect on the animals' health and welfare (safety) (Alujia, 1998). Working equines are also suffering from lack of shelters that would protect them from sun, rain and insect parasites at market or working sites. Only few owners provide water (4.38%) and feed (10.5%), and almost no one provides shelters at the working site (Solomon and Rahmeto, 2010). Food is preferably allocated to bovines than to equines. In many cases, local communities, professionals and institutions pay more attention to the maintenance of cattle, because it provides meat and milk (Pearson, 1992).

The misuse, mistreatment and lack of general and veterinary care contribute in no small amount to the early death of working equids. In stark contrast, the life expectancy of equids reaches up to 30 years in countries where animal welfare is in practice (Svendsen, 1981; Fred and Pascal, 2006). The term "fit and feeling good" is to illustrate that animal welfare includes both emotional and physiological components. Physical wellbeing includes health and is compromised by injury and disease, whilst emotional wellbeing can be achieved by minimizing negative feelings such as fear, pain and distress, and by maximizing positive feelings such as happiness and comfort. A third component which overlaps with the previous two is instinctiveness. In the context of working animal welfare, this can be described as expression of normal behavior (Webster et al., 2004).

In Hawassa town, there are 3,000 working equids which are used for the transportation of goods and people, and experience various management and health care practices. The herein presented study has been conducted in order to assess these practices and identify major welfare problems.

## MATERIALS AND METHODS

### Study area

The study was conducted in Hawassa city, the capital of Southern Nations, Nationalities and People Regional State (SNNPRS), Ethiopia. The town consists of four sub-cities and 14 kebele's, which are the smallest administrative units in Ethiopia. The city is located 275 km south of Addis Ababa. It lies in central Ethiopia with an elevation of 1,800 meters above sea level, and exhibits a long and a short rainy season. The long rainy season extends from June

to September, whereas the short rainy season ranges from mid February to the end of April. The remaining months are dry periods. According to the municipality of Hawassa, the city harboured about 3,000 working equids in 2008/09. These animals were engaged in different types of work such as the transportation of people, water, building materials, and goods by carts and pack. Working equids mainly comprised horses and donkey, whereas only a few mules were found in the records. Topographically, the city lies in a plain which allows the use of carts, whereas the western part of the city adjoins Lake Hawassa. The maximum annual temperature does not exceed 30°C and minimum temperatures range between 11.2 and 19.2°C.

### Study design and animals

The type of study employed was a cross-sectional investigation on working equids in Hawassa city. The study was conducted from November, 2008 until April, 2009. Randomly selected animals were enrolled in the study (n = 600). Equids were selected regardless of work type, body condition, age and species, until approximately 20% of the total population were represented (N = 3000). Sixty animal owners/users were invited to complete questionnaires on behalf of equid welfare issues in the study area.

### Examination

Co-workers (assessors) were trained in regard to animal examination procedures and collection of data. Then two trained assessors and handlers examined each selected animal with the owner's consent. One assessor performed the examination whilst the other recorded the data, and vice versa. The examination was carried out at the working site during daytime. Animals were allowed to stand for 5 to 10 min whilst being held by a lead rope attached to the head collar. Initially, general information was recorded for each animal including work type, sex, species and age. Subsequently, the parameters body condition score and mucous membrane color change were assessed. Lesions were recorded with regard to number, severity, size and anatomical location. The examination of each animal took between five and ten minutes without causing major interruption of routine work (Dennison et al., 2006).

### Type of work

Animals were categorized as draught, pack, riding and other type of working equid. "Draught" animals were equids used for the transport of goods and people by cart. "Pack" animals were equids used for the transport of goods by pack. "Riding" animals are those used by owners for non-tourist riding, whereas the category "other work" included foals and non-functional animals (Pritchard et al., 2005).

### Body condition

The body condition of the selected animals was scored based on the criteria described by Carroll and Huntington (1988) and as cited by Pritchard et al. (2005). Body condition assessment was done by examining the animal from all sides without touching it. The equids' body condition was scored as 0 to 5 (0 = very thin; 1 = thin, 2 = fair, 3 = good, 4 = fat and 5 = very fat). However, for the purpose of data analysis, body condition 0 to 5 were assigned to three distinct

**Table 1.** Species of working equines, work types and body condition score proportion.

Species	Work type proportion		Body condition score category proportion		
	Draught	Pack	Thin (=1)	Medium (=2)	Good (=3)
Horses (n=384)	378 (0.98)	6 (0.02)	235 (0.61)	147 (0.38)	2 (0.01)
Donkeys (n=208)	161 (0.77)	47 (0.23)	76 (0.37)	117 (0.56)	15 (0.07)
Mule (n=8)	3 (0.38)	5 (0.62)	3 (0.38)	5 (0.62)	0
Total (600)	542 (0.90)	58 (0.10)	314 (0.52)	269 (0.45)	17 (0.03)

groups: Categories 0, 1 and 2 were grouped as "thin or poor", category 3 was defined as "medium" and body condition scores 4 and 5 were categorized as "good".

### Lesions and abnormalities

Lesions of any size and severity at the external corners (commissures) of the mouth, where the bit would lie, were considered as lesions of the lips. Scars, hairless skin and broken skin were also regarded as labial lesion. Absence of lesions was scored with '0' and presence of lesions with '1'. Lesions on the limbs were considered as being caused by tethering/hobbling, if any kind of hair loss, scars, healed or fresh lesion were present along the limb (Pritchard et al., 2005; Dennison et al., 2006). Mucous membrane of the mouth was assessed based on the color of the mucosa of the upper gum. Pale, yellow, white, or purple color were considered as abnormal, whereas pinkish was taken as normal. Eye abnormalities were scored with "1" if excessive lacrimation, blindness, opec colour, or other clinical aberrations were observed. Apparently healthy eyes received score '0'. Wounds of the skin and deeper tissues were assessed according to the area, depth and location. Only substantial tissue abrasions were considered as true lesions and were recorded. Tissue abrasions of at least 2 × 2 cm<sup>2</sup> (quadratic lesion), 1 × 4 cm<sup>2</sup> (rectangular lesion) or 2.3 cm in diameter (circular lesion) were quoted as substantial lesions (Dennison et al., 2006). The observed animals were deemed positive for ectoparasites when they were found to harbor at least one external ectoparasite of any species (tick, lice, flea, mites or nits).

### Statistical analysis

The raw data collected were managed into Microsoft excel and then descriptive statistics and 95% confident interval were used to summarize the proportion. Each observation were compared with assumed risk factors, to analyze the association of risk factors with each observation. The stata-9 (Stata corp. 4905 Lakeway Drive college station, TX77845, USA) software and level of significance was considered when "P < 0.05".

## RESULTS

Among the studied equids (EQUINES: horses; EQUIDS: horses, mules, donkeys), 64% were horses, 35% were donkeys, and 10% were mules. Most horses were kept for draught (carting) purposes (98%) followed by donkeys and mules. Draught type of work included transportation

of people and goods using handmade carts. The majority of horses revealed a thin body condition (61%). In general, 90 and 10% of working equids were involved in draught and pack type of work, respectively. From these, 52% revealed a poor body condition as shown in Table 1.

### Proportion of lesions and abnormalities in relation to species, work type and body condition

All working equids were analyzed in relation to the assumed risk factors or problems encountered. Comparisons made between risk factors and species, work type and body condition score are shown in Tables 2, 3 and 4. Species comparison was only made between donkeys and horses, with mules being omitted due to their small number. As shown in Table 2, limb tethering, lameness, lip lesions, girth/belly lesions and wither/spine lesions were observed for the vast majority of animals. Neck, tail/tail base and breast/shoulder lesion were significantly associated ( $\chi^2 > 3.84$ ;  $P < 0.05$ ) with donkeys as compared to horses. On the other hand, lesion of wither and spine, lameness and eye(s) abnormality significantly predominated ( $\chi^2 > 3.84$ ;  $P < 0.05$ ) in horses. There was also a significant difference regarding the presence of ectoparasites between these two species.

As shown in Table 3, only a few factors were significantly associated with work types. Lip lesions, lameness and abnormal gait showed a significant association with draught type of work. Tail/tail base, ribs/flank, breast/shoulder, hindquarter lesions and ectoparasites were significantly associated with pack animals. A further analysis was made in regard to the risk factors and the type of work on species level. Wither/spine, tail/tail base, ribs/flank and breast/shoulder lesion were significantly more associated ( $P < 0.05$ ) with pack donkeys than draught donkeys; whereas lip lesion, abnormal gait and lameness were predominantly seen in draught donkeys (Table 4).

However, it was difficult to compare draught horses with pack horses because of the diverging sample size. Yet, the proportions of the few lesions seen in draught horses were very high. Even so, wither/spine, lip lesion, limb/tethering lesion were more often associated with

**Table 2.** Lesions and health parameter of working horses and donkeys

Parameter	Total	Donkey	Horse	Species difference	
	(n=600)	(=208)	(=384)	$\chi^2$	P-value
<b>Lesion on skin and/or deep tissue</b>					
Ear lesion	4.8	5.7	4.1	0.77	0.38
Head lesion	6.7	7.7	5.2	1.46	0.22
Neck lesion	10	14.4	7.6	7.1	0.01
Wither/spine lesion	78.7	73.6	81.5	5.1	0.02
Tail/tail base lesion	55.7	62.5	51.3	6.84	0.01
Back sore lesion	60.8	56.7	62.5	1.87	0.17
Ribs/flank lesion	57.5	59.6	56.3	0.63	0.43
Breast/shoulder lesion	62.8	67.8	59.9	3.59	0.06
Girth/belly lesion	81	82.7	80.2	0.54	0.46
Hind quarter lesion	58.2	62.5	55.5	2.74	0.19
<b>Observation of health</b>					
Lip lesion	88.5	86.5	89.3	1.02	0.31
Abnormal m/m	49.8	48.1	50.5	0.32	0.57
Limb tethering lesion	94.5	94.2	95.1	0.18	0.67
Firing lesion	49.3	54.3	46.9	2.99	0.08
Ectoparasites	29.3	34.6	26.3	4.5	0.03
Abnormal gait	75.7	79.8	73.7	2.75	0.09
Eye(s) abnormality	61.3	50.9	66.1	13.05	0
Lameness	89.2	84.1	92.2	9.2	0

\*Eight of them were mule and omitted from statistical analysis to minimize biasness

draught horses than other factors (Table 4). Wither and spine lesion occurred significantly more frequently in thin equids that is, with a percentage of 81.8 when compared to others ( $\chi^2 > 3.84$ ;  $P < 0.05$  as shown in Table 5).

### Watering and feeding management

According to 99% of the respondents, the average labour time per equid and day amounted to  $7.9 \pm 0.2$  h, with an average of 70 kg and three travelers being transported over an average distance of  $25 \pm 2$  km. The mean working span of carthorses amounted to  $4.4 \pm 0.8$  years. Experience of provision of water was 100% although the amount of water given to a single working equid per day varied according to respondents. The average amount of water per supply was  $5.75 \pm 2.7$  L. The absolute amount of water per supply varied between 3, 5, 6, and above 7 L, according to 11.6, 56.6, 15 and 16.6% of respondent, respectively. The majority of owners provided water 3 times per day (53.33%) followed by two times per day (41.6%). A minority (3.3%) of respondents supplied their equids with water one time per day.

Feed mainly consisted of cereal and other plant by-

products such as wheat bran, maize residue, chopped sugarcanes, and green grass. According to animals' owners, 28.3% fed concentrates like chopped sugarcanes and cereal by-products, whereas 65% fed mixtures of concentrates and green grass. Only 6.6% of respondents reported to solely provide green grass. The average amount of feed given per day was  $12.02 \pm 3.4$  kg. The majority of the respondents fed at different frequencies. Thirty-three percent of respondents provided feed once a day, whilst 25 and 42% of the respondents fed twice and thrice daily, respectively. According to the majority (99%) of the respondents, the average daily expense for feed and supplements per equid was  $19.4 \pm 7.3$  ETHB, which is equivalent to 1.5 USD. The mean purchase price for feed shows seasonal variations in function of the availability of grass.

### Housing, harness and shoeing management of working equids

Obtained data indicated that 100% of respondent provided shelter at home, whereas only 35% provided shelters of various quality at the working site. Shade is

**Table 3.** Lesions and health parameter of working equids in relation to the type of work.

Parameter	Draught	Pack	Significance difference	
	(=542)	(=58)	$\chi^2$	P-value
<b>Lesion on skin and/or deep tissue</b>				
Ear lesion	4.8	5.1	0.02	0.89
Head lesion	6.3	10.3	1.39	0.24
Neck lesion	9.9	12.1	0.25	0.61
Wither/spine lesion	77.7	88	3.28	0.07
Tail/tail base lesion	53.1	79.3	14.54	0
Back sore lesion	60.5	63.8	0.23	0.63
Ribs/flank lesion	54.9	81	14.55	0
Breast/shoulder lesion	60.5	84.5	12.88	0
Girth/belly lesion	80.1	89.7	3.12	0.07
Hind quarter lesion	57	70.7	4.13	0.04
<b>Observation of health</b>				
Lip lesion	89.7	77.6	7.51	0.01
Abnormal m/m	49.1	56.9	1.28	0.26
Limb tethering lesion	94.1	98.3	1.76	0.18
Firing lesion	48.7	55.2	0.87	0.35
Ectoparasites	28	41.4	4.49	0.03
Abnormal gait	76.8	65.5	3.59	0.05
Eye(s) abnormality	61.3	62.1	0.01	0.9
Lameness	91.1	70.7	22.69	0.0

usually provided by trees surrounding the market/working site. The floor of this natural shelter usually consists of tamped soil.

The type of harness used by the respondents was made of products like rubber adjusted with nails. According to 30% of the respondents, working equids also wear rubber shoes. Farriers use to change these rubber shoes at different time intervals. According to 21% of the respondents, the horse shoes at 3 week-intervals, whereas 18.0 and 25% respondents changed the horse shoes every second week or after more than a month, respectively depending on the activity of their animals. The costs for shoeing amounted to 3 ETHB or 0.2 USD. The method of shoeing consisted in covering the entire sole including the frog with an adjusted piece of tyre rubber. The nails used were traumatic and excessively long, penetrating the hoof wall beyond the white line that leads to damage of the sensitive portion of the hoof.

## DISCUSSION

The objective of this study was to address equids management and welfare problems caused by inadequate management. Once the risks associated with

issues have been identified, methods of decreasing or eliminating the effects of these risks can be incorporated into specific interventions that will be planned and implemented (Dennison et al., 2007).

In Hawassa town, 100% of equids are kept to transport people and goods in order to assure their owners' daily income. This observation is in agreement with reports by Blackeway (1994), Pritchard et al. (2005) and Dinka et al. (2006), describing that equids are mainly kept for transport purposes and only rarely as source of meat or milk. The working equid population of Hawassa mainly consists of an almost equal number of donkeys and horses which indicates that these species are fully integrated in the owners' daily life. The relative small number of encountered mules may be explained by their sometimes difficult behavior which makes them less attractive as working equids despite their sturdy nature and endurance.

The study revealed different welfare problems: most of them were lesions at different body sites of investigated equids. Donkeys showed a significant association with neck and tail/tail base lesions ( $P < 0.01$ ;  $\chi^2 > 3.84$ ). This might be due to several risk factors; such as frequent beating and trauma induced by the movement of the crupper, when the owner tries to accelerate the speed of

**Table 4.** Proportion of lesions and health parameters for different types of work in donkeys and horses.

Parameter	Donkey			Horse		
	Draught (n=161)	Pack (n=47)	P-value	Draught (n=378)	Pack (n=6)	P-value
<b>Lesion on skin and/or deep tissue</b>						
Ear lesion	16.4	4.2	0.61	4.2	0	1
Head lesion	8.7	6.4	0.7	5.3	0	0.56
Neck lesion	14.9	12.7	0.71	7.6	0	1
Wither/spine lesion	70.2	85.1	0.04	81.2	100	0.24
Tail/tail base lesion	57.1	80.8	0	51.3	50	0.94
Back sore lesion	56	59.6	0.65	62.4	66.7	0.83
Ribs/flank lesion	53.4	80.9	0	56.1	66	0.6
Breast/shoulder lesion	63.4	82.9	0.01	59.5	83.3	0.24
Girth/belly lesion	81.4	87.2	0.35	79.9	100	0.22
Hind quarter lesion	61.5	65.9	0.58	55	83.3	0.17
<b>Observation of health</b>						
Lip lesion	90.7	72.3	0	89.2	100	0.39
Abnormal m/m	45.9	55.3	0.26	50.5	50	0.98
Limb/tethering lesion	93.2	97.8	0.22	94.9	100	0.57
Firing lesion	54.7	53.2	0.85	46.3	83.3	0.41
Ectoparasites	31.6	44.7	0.09	26.5	16.6	0.58
Abnormal gait	85.1	61.7	0	73.5	83.3	0.58
Eye(s) abnormality	49.9	55.3	0.49	65.9	83.3	0.66
Lameness	89.4	65.9	0	73.5	83.3	0.41

the donkeys. Further analysis indicated that lesions of the wither/spine, tail/tail base, ribs/flank, breast/shoulder showed significant association with pack type of work; whereas lip lesions, lameness and abnormal gait were associated with draught type of work. Similar findings were reported by Dennison et al. (2007) where pack donkeys had a significantly higher proportion of tail/tail base lesions than draught animals. It is also supported by Blackway (1994), Pritchard et al. (2005), Swan (2006) and Solomon and Rahmeto (2010) that the chance of tail/tail base lesion occurrence is very high when pack animals frequently cope with long distances. In addition, it was reported that lip lesions predominantly occur (79.4%) in horses and for draught type of work and less frequently develop in donkeys and more general in pack animals.

Within the horse group, it was difficult to compare the effects of draught and pack type of work because of the uneven ration between draught (n = 378) and pack horses (n = 6). However, it could be shown that the draught type of work is likely to induce lameness, wither/spine, lip lesion and hobbling lesion, in 73.5, 81.2, 89.2 and 94.9% of horses, respectively. This finding is suggestive for a direct correlation between health problems and the type of work. Especially lip lesions

were significantly associated with the bit type used for leading/braking of draught animal. Lameness was associated with continuous movement in various landscapes and on bumpy roads. Nawaz et al. (2007) reported that among the bit characteristics jointed bar, sharp projection, dirt and rusty bar, ring bar connection was found to be related to lip lesions. This finding is supported by Dennison, et al., (2007), Blackway (1994), Pritchard et al. (2005), Swan (2006) and Solomon and Rahmeto (2010).

Observations of lesion in relation to work type in donkeys were also analyzed. Accordingly, tail/tail base, ribs/flank, breast/shoulder and hindquarter lesions were significantly associated with pack type of work ( $P < 0.01$ ;  $\chi^2 > 3.84$ ). The causes for the development of these lesions are complex and multifactorial. Environmental factors, the type of harness material used (natural or synthetic), the fit of the harness, the behaviour of the owner, the frequency of work and the load all contribute to the onset of health problems. In general, bumpy roads and rugged land-scapes, a loose fit and synthetic harness materials, frequent beating and overwork may induce lesions and lameness. This finding is in agreement with reports by Blackway (1994), Pritchard et

**Table 5.** Proportion of lesions and health parameter when compared with the body condition score category.

Body condition score category	Poor (=315)	Medium (= 268)	Good (=17)	Significance difference	
				$\chi^2$	P-value
<b>Lesions of the skin and/or deep tissue</b>					
Ear lesion	3.5	6.7	0	4.09	0.12
Head lesion	6.1	7.4	5.9	0.46	0.79
Neck lesion	10.2	10.4	5.9	0.36	0.84
Wither/spine lesion	81.8	76.2	58.8	6.8	0.03
Tail/tail base lesion	52.9	59.9	70	4.4	0.11
Back sore lesion	60.5	62.8	35.3	5.1	0.07
Ribs/flank lesion	57.6	57.9	47.1	0.8	0.67
Breast/shoulder lesion	63.7	60.9	76	1.85	0.39
Girth/belly lesion	78.9	82.9	88.2	2.04	0.36
Hind quarter lesion	53.8	62.1	76.5	6.47	0.06
<b>Health parameter</b>					
Lip lesion	88.2	88.1	100	2.27	0.32
Abnormal m/m	52	45.6	47.1	1.14	0.57
Limb tethering lesion	94.6	94.1	100	1.09	0.58
Firing lesion	48.1	50.6	52.9	0.44	0.8
Ectoparasites	28.3	30.5	29.4	0.32	0.85
Abnormal gait	75.5	74.7	94.1	3.28	0.19
Eye(s) abnormality	64.1	58.4	58.8	1.99	0.34
Lameness	88.2	90.7	82.4	1.77	0.41

al. (2005) and Swan (2006), where pack animals coping with long distances frequently develop lesions.

Fifty-two percent (n = 314) of studied animals had a poor body condition score and of these, 90% (n = 284) were engaged in draught type of work whereas only 9.5% (n = 30) were pack animals. Among the latter, wither/spine lesion were significantly associated with thin or poor body condition score ( $P < 0.05$ ;  $\chi^2 > 3.84$ ). Pritchard et al. (2005) found a lower prevalence (1.8%) of wither and spine wounds in pack animals, but did not compare the frequency of wounds with the body condition score.

It has been assumed that the type of work promotes the occurrence of certain lesions at different body sites. In the herein presented study, pack animals were found to be more likely to suffer from tail and tail base, ribs/flank, breast/shoulder and hindquarter lesions. In contrast, draught animals significantly suffered from lip lesions and lameness ( $\chi^2 > 3.84$ ;  $P < 0.05$ ). Animals with thin or poor body condition score were found to be more often affected by wither and spine lesion than equids in good body condition. However, Shaw et al. (2007) reported that the interaction with the body condition is difficult to explain but concluded that fatter donkeys wearing metal shafts were less likely to suffer from breast

and shoulder lesions. Longer and smooth shafts were found to be less dangerous than shorter and protrusions surfaces.

The current study showed that the average amount of feed given per day was  $12.02 \pm 3.4$  kg and that the frequency of feeding per day varied in the study area, with 33, 25 and 42% of respondents providing feed once, twice and thrice per day, respectively, and average daily cost amounting to  $19.4 \pm 7.3$  ETHB or 1.5 USD. Dinka et al. (2007) reported that the amount of feed given per individual and day was  $7.4 \pm 0.39$  kg, with 46, 24 and 24% respondents feeding once, twice and thrice daily, and with costs amounting to  $6.8 \pm 0.2$  ETHB or 0.5 USD. Except for the costs, both studies are in agreement. The costs may vary according to the availability and the type of feed in the study areas. Besides, working equids in Hawassa are not allowed to graze. It was also noted that the watering system in Hawassa is superior as far as the users provide water along the road side whilst equids are at work.

On the other hand, although all studies agree that owners/users provide shelters for their animals at their home, only 35% of them provide shelters at the working place, that is a shadowy place under the trees or a closed shelter. Similar findings were reported by Solomon and

Rahmeto (2010), where almost all users and owners had no experience in providing shelters at working sites. Poor management associated with a lack of shelter at the working site seems to constitute a countrywide problem, exposing the animal to sun, rain, insect bites and resulting stress. Poor management was also noted in relation to shoeing, where rubber is used to cover the entire sole including the hoof frog. This puts the animals' health at risk. Equids may slip and fall on muddy or sloppy grounds. Moreover, microorganisms and parasites may damage the entirely covered sole and deposit their larvae, especially when the weather is humid.

## Conclusion

Although animal users and owners are trying to improve maintenance issues, the working equids of Hawassa are still suffering from multiple welfare problems. It is hence imperative to increase the awareness of owners and users in regard to these unresolved issues. Further investigations on the risk factors associated with equid welfare are warranted as to improve the situation of these working animals. The herein presented findings may help in initiating training programs aiming at accustoming owners and users to improved harness material, adequate bits, alternative shoeing procedures and correct behaviour.

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