

## Assessment on Working Donkey Welfare Issue in Wolaita Soddo Zuria District, Southern Ethiopia

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**Abstract:** A cross-sectional study was done with the objectives to assess welfare issues and associated risk factors compromising welfare of working donkeys in Wolaita Soddo Zuria district. A total of 335 working donkey and 100 donkey owner/user purposely selected from five peasant associations. Both direct (animal based) and owner interview were used to collect data. Out of total 335 working donkeys examined in the study area about 58.6%, 37.9%, 21.8% and 12.6% were suffering with different type of wounds, other disease signs, musculo-skeletal problems and dermatological diseases respectively, whereas about 80.9% animals showed abnormal behavior such as depressed and other odd sign. Donkeys used for draught purpose experienced higher prevalence of wound than those used for other purpose. Similarly significant difference was observed in the prevalence of wound among different body condition scores. Even though no significant difference was observed among age categories higher prevalence of wound problem was observed in donkeys >15 years (73.9%) than other age group. The current study also showed that the prevalence of wound was significantly associated with condition of harnessing in which donkeys without any harness had greater prevalence of wound (94.1%) than those with proper harness (57.2%). Among the 100 respondents interviewed for this survey 63% of persons working on donkeys were in adult age group. Most of the respondents (93%) of the study area had no knowledge and information on donkey welfare. Beating of working animal was widely practiced (68%). In conclusion working donkeys in the present study area were experiencing a compound health and welfare problems. Awareness creation through mass education, training and extension service should be promoted in the study area in order to ensure better donkey welfare and productivity.

**Key words:** Welfare • Working Donkeys • Wolaita Soddo

### INTRODUCTION

The world donkey population is estimated to about 44 million; half is found in Asia, just over one quarter in Africa and the rest mainly in Latin America [1]. Ethiopia has approximately 6.21 million donkeys or 32% in Africa and 10% of the world population [2], which makes Ethiopia harboring the largest population of donkeys in Africa and the second largest donkey population in the world after china [3]. In Ethiopia the majority of donkeys are found in highland areas, even though they are widely distributed in all agro-ecological zones of the country (arid to alpine) [4].

Poor infrastructure and very rugged topography in many part of rural Ethiopia have made transportation by vehicle inaccessible. Hence, farmers use alternative means

like draught animals especially, donkeys to combat transportation problems [5]. Moreover, increasing human population in Ethiopia has resulted in an increase in demands of donkeys for multipurpose activities such as transport crops, fuel wood and water, building materials and people by carts or on their back from farms and/or markets to home [6]. Working equines, particularly donkeys, play a significant role in helping to empower women in many developing countries [7].

In addition, in some part of the country these draught animals are used for tillage. In contrast to cattle, which are usually kept for their milk and meats as well as work, whose hides are cured for leather and even their dung has a number of uses [8], equine by-products are not generally used except as source of energy, therefore cheaper to replace them than other large animals.

Draught animals along with humans provide an estimated 80% of the power input on farms in developing nations [9], but animals often suffer from maltreatment, overloading and inappropriate feeding during work period [10].

Despite their invaluable contributions, donkeys in Ethiopia are given low status and are consequently the most neglected animals. This resulted in multiple welfare problems associated inaccessible water, feed and shelter at the working sites and suffering several lesions [11]. Some methods of hobbling to restrain donkeys cause discomfort and inflict wounds [12]. Loading without proper padding and overloading for long distances causes external injury to donkeys. This misuse, mistreatment and lack of veterinary care for donkey have contributed enormously to early death, majority of which currently have working life expectancy of 4 to 6 years. However, in countries where animal welfare is in practice, the life expectancy of donkeys reaches up to 30 years [13].

The animal welfare is being compromised internationally due to several constraints such as poverty and lack of knowledge. Research conducted in Ethiopia demonstrated that improvements in the welfare of donkeys had significantly improved their work output which in turn improved livelihood situations of the poorest communities in the rural and peri-urban areas [14]. The welfare of working donkeys in developing countries is therefore crucially important, not only for the health and survival of those animals, but also for the livelihoods of those people dependent on them [15, 16].

Working donkeys are prone to painful, debilitating and often fatal tropical illnesses and conditions such as tetanus, parasitic infection and colic. In addition, these animals work under difficult environmental conditions including intense heat, difficult topography, dehydration, malnutrition, lesions and hoof problems [17]. Animals are often engaged in work for long hours and when get free, they are left to browse and feed on garbage. These have a potential to affect negatively their welfare and quality of life [18].

Even though donkeys are involved in various activities in rural and urban communities and provide invaluable support for the communities in their day to day activities, there is limited information regarding donkey welfare issues in study area particularly in Wolaita Soddo Zuria district, Southern Nation, Nationalities and Peoples Regional State. Little attention has been given for this animal and there was no study conducted regarding the welfare issues and major health management of donkey.

Studies to demonstrate the magnitude of this problem are lacking and scanty in the present study area. Therefore, this study was done with the objectives to assess welfare issues and associated risk factors affecting welfare of working donkeys in Wolaita Soddo Zuria district.

## MATERIALS AND METHODS

**Study Area:** The study was conducted in Wolaita Soddo Zuria district. This district is one of the 13 districts of Wolaita zone in Southern Nations, Nationalities and People Regional State (SNNPRS), Ethiopia, which is located 390 km away from Addis Ababa, in Southern direction. The district consists of 23 peasant associations (PA's), which are the smallest administrative units in Ethiopia. The area is located at latitude of 8°50'N and longitude of 37°45'E. The altitude varies from 1100-2950 masl. The highest mountain is Damota 2500 masl, which is located near Soddo town [19]. The area experiences mean annual temperature of about 20°C. The area is characterized by bimodal rainfall pattern with the high rainy season extending from June to September and a small rainy season occurring from February to April. The mean annual rain fall of the area ranges from 450-1446 mm with the lowest being in low land and highest in high land. Topographically, the area is marked by hilly, flat, steep slopes and a number of streams and mountains. Wolaita zone shares boundaries with four other zones of the SNNPRS. These include from north with Kembata and Tambaro zone; from south with Gamo and Gofa zones; from east with Sidama zone; and from west with Dawro zone. Mixed crop-livestock production is the predominant farming system in the area. The livestock population of Wolaita zone is estimated to be 886,242 cattle, 117,274 sheep, 99,817 goats, 1951 horses, 2174 mules, 54,209 donkey and 442,428 poultry [20].

**Study Population and Sampling Procedure:** A cross-sectional study was done from November 2014 to April 2015 in Wolaita Soddo Zuria district. Five peasant association, two from town (Fana and Mercato) and three from rural area (Ansome, Ofa Gandaba and Wachega Busha) were purposively selected based their accessibility, easy of logistic and number of donkeys populations in the area. A total of 335 working donkeys were considered for this study. From each peasant association donkeys were proportionally taken (Fana (70), Mercato (70), Ansome (65), Ofa Gandaba (65) and Wachega Busha (65). For this survey purposes 20 donkey

owner/ users from five peasant association a total of 100 respondents selected purposely in order to assess donkey welfare issues in the area.

**Data Collection:** Direct Welfare Assessment: Data collection format for direct assessment was developed and data were collected by direct physical examination of the donkey. Prior to the assessment, consent was obtained from animal's owners by introducing the objective of the study. Information regarding general body condition such as wound type, dermatological disease, musculo-skeletal disease, other disease signs and behavior, age categories, body condition score, work type and condition of harnessing were properly recorded on data collection format. Assessment carried out at field level, market and around homestead on the daytime. Animals were allowed to stand for 5-10 minutes after being held by head collar and lead rope before assessment began, without causing major disturbance to donkey routine work. According to Crane [21], age profile of donkey classified into four (<5, 6-10, 11-15 and >15) and additionally age of the animal also estimated based on the observation of the front teeth (incisors) [22].

Body condition score was done according to the criteria described by Pritchard *et al.* [23] and animals were examined from all sides without touching it. The donkey 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 conditions 0 to 5 were categorized into three distinct groups: Categories 0, 1 and 2 were grouped as "poor", category 3 was defined as "medium" and body condition scores 4 and 5 were categorized as "good". Based on the types of work animals were categorized as draught, pack, both draught and pack. "Draught" animals are those used for transport of goods by carts. "Pack" animals those used for transport of goods on their back (pack) and both for draught and pack [23].

**Indirect Welfare Assessment:** Semi-structured questionnaire was developed to collect data on major welfare problems in working donkey such as management practice (feeding, watering, health care and resting time), age of workers and people working on animal. These were obtained by interview made with 100 selected donkey owners/ user to assess the knowledge and perceptions regarding donkey welfare issues in the area.

**Data Management and Analysis:** All data collected during the study period were entered into Microsoft excel spread sheet and analyzed using SPSS version 20 statistical software. Descriptive statistics were used to summarize the data and Chi-square ( $\chi^2$ ) was used to determine the association of the wound problem with hypothesized risk factors. In all calculations, the confidence interval was set at 95% and statistical significant differences were considered at  $P - value < 0.05$ .

## RESULTS

General body condition of working donkeys under this study depicted in Table 1. This study revealed that out of 335 working donkeys examined in the study area about 58.6%, 37.9%, 21.8% and 12.6% were suffering with different type of wounds, other disease signs, musculo-skeletal problems and dermatological diseases respectively, whereas about 80.9% animals showed abnormal behavior such as depressed and other odd sign.

Concerning work type of animal, the study showed considerable association with wound prevalence. Donkeys used for draught purpose were higher prevalence of wound (71.8%,  $\chi^2=9.9$ ,  $P=0.005$ ) than those used for other purpose. There was a significant difference ( $\chi^2=26.465$ ,  $P=0.000$ ) in the prevalence of wound among different body condition scores. On the other hand higher prevalence of wound problem was observed in donkeys above 15 years of age (73.9%) than other age categories, but no significant different on overall wound prevalence among age group ( $P>0.05$ ). The current study also showed that the prevalence of wound was significantly associated with condition of harnessing ( $\chi^2=9.083$ ,  $P=0.004$ ). Those donkeys which are used with insufficient or without any harness were greater a risk of having wound (94.1%) than those with proper harness (57.2%) (Table 2).

Among the respondents interviewed for this survey 63% of persons working on donkeys were in adult age group. Regarding persons working on animals 79% of the participants responded as they were working by themselves with their own donkeys whereas only 21% respondents allow other persons to work on their animals (Table 3).

The present showed that most of the respondents (93%) of the study area had no knowledge and information on donkey welfare. Beating of working animal was widely practiced (68%). The majority of the respondent of the study area separately feeding their animal and give care and rest for sick animal (Table 4).

Table 1: General body condition of working donkeys in the study area (n= 335)

Conditions	Frequency	Percentage	Overall (%)
Type of wound			58.6
Back sore	31	9.3 %	
Chest/side wound	16	4.8 %	
Beat sore	82	24.5 %	
Bite(donkey) sore	21	6.3 %	
Tail base sore	46	13.7 %	
Dermatological Diseases			12.6
Sarcoid	14	4.2 %	
Ectoparasite	21	6.3 %	
Habronemiasis	7	2.1 %	
Musculo-skeletal problem			21.8
Lameness	38	11.3 %	
Fracture	11	7.3 %	
Hoof overgrowth and abnormal gait	24	7.2 %	
Other diseases			37.9
Digestive problem	13	3.9%	
Eye problem/ ocular discharge	70	20.9 %	
Respiratory problem	44	13.1 %	
Observation of behavior			80.9
Depressed	115	34.3 %	
Other odd signs	156	46.6 %	

(Other odd signs are biting other animal and human, nervous, tail tuck)

Table 2: Prevalence of wound based on work type, body condition score, age group and condition of harnessing

Variable	Number examined	Number affected	Prevalence (%)	$\chi^2$	P-value
Work type				9.901	0.005
Both draught and pack	8	2	25%		
Draught	78	56	71.8%		
Pack	249	140	56.2%		
BCS*				26.5	0.000
Poor	131	100	76.3%		
Medium	22	11	50%		
Good	182	87	47.8%		
Age				2.906	0.412
< 5	30	17	51.5%		
6-10	147	87	59.2%		
11-15	132	77	58.3%		
>15	23	17	73.9%		
Harnessing condition				9.083	0.004
Proper harnessing	318	182	57.2%		
Insufficient/ no harnessed	17	16	94.1%		

BCS\*= Body condition score

Table 3: Distribution age of workers and peoples working on animal (N= 100)

Attributes	Frequency	Proportion (%)
Age persons working on animal		
Young	19	19 %
Adult	63	63 %
Old	18	18 %
Person working on animal		
Owner	79	79 %
Other	21	21 %

Table 4: Distribution of respondent knowledge on donkey welfare (N=100)

Respondent knowledge	Frequency	Proportion (%)
<b>Animal welfare knowledge</b>		
Free from injury and disease	2	2%
Free from thirst and hungry	5	5 %
No information	93	93 %
<b>Presence of animal beating</b>		
No	32	32 %
Yes	68	68 %
<b>Care for sick donkey</b>		
No	10	10 %
Yes	90	90 %
<b>Type care given for sick donkey</b>		
Traditional medicine	10	10 %
House medication	31	31 %
Veterinary clinic	49	49 %
Nothing	10	10 %
<b>Feeding method</b>		
Separately	89	89 %
With other animal	11	11 %
<b>Watering method</b>		
Separately	53	53 %
With other animal	47	47 %
<b>Presence of rest for animal</b>		
No	10	10 %
Yes	90	90 %

## DISCUSSION

In this study, it was observed that all donkeys were used for work, mainly for pack and drought. Similar reports were done by Mekuria *et al.* [24] in Hawassa town where all equines are mainly kept to transport people and goods in order to assure their owners' daily income. In the present study, the overall prevalence of wound in working donkeys was 58.6% which was in agreement with prevalence reported by Burn *et al.* [25] in Jordan (59%). However, this finding was higher than the prevalence of 40% in Central Ethiopia [26], 42.2% in Adet town [27] and 54% in Morocco [28]. On the other hand, the current result was markedly lower than the previous report 77.5% and 79.4% by Curran *et al.* [29] and Biffa and Woldemeskel, [6] respectively in Ethiopia. In the present study revealed that beat sore, tail base sore, back sore and donkey bite sore were among the major type of wound identified in the area. Earlier studies have identified that as there was a probability of occurrence of all type of wound on the same donkey [23, 30]. These wounds are often caused by a combination of multi-factorial reasons. The difference in management and husbandry practices including 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 were among risk factors that contribute to the onset of different type of wounds in working donkeys [24, 27].

The prevalence of dermatological disease such as, saricoid, habronemiasis and ectoparasites were common among working donkeys of study area. This might be associated with owner's poor knowledge of health care, feeding and irregular or no medication for parasites [31]. The present overall finding of dermatological disease was 12.6%, which is lower than the findings of Kumar *et al.* [32] in Mekelle city (23.7 %) and Sameeh *et al.* [33] in Jordan (22.7%) but, closely agree with the finding of Ahmed *et al.* [34] in Pakistan (11%) and Yilma *et al.* [35] in Debre Zeit (16%). Mekuria and Abebe [36] made similar observation, where higher prevalence of ectoparasites were found in donkeys than horses and suggested that donkeys were the most neglected animals in Ethiopia, receiving less attention by owners and kept under poor management conditions. Whay *et al.* [37] also reported that skin lesions as one of the major prevalent and severe welfare issue in working donkeys.

Most donkey cases that were observed in this survey mainly related to the musculo-skeletal system including lameness, fracture, hoof overgrowth and abnormal gait. Overall problem of 21.8%, which close to Kumar *et al.* [32] finding in Mekelle city (18.2%) and lower than Sameeh *et al.* [33] finding in Jordan (32.2%). This is likely due to many reasons such as overloading, lack of hoof care and continuous movement in various landscapes and on rough roads were the main reasons for the occurrences of musculo-skeletal problems. This implies that any type of interaction between limb abnormalities in these animals may have serious welfare and health problems [38].

From the present study it was observed that among other disease problems the most frequently encountered in the study areas were digestive problem (3.9%), respiratory problem (13.1%) and from eye problems such as ocular discharge (20.9%). This finding disagree with the report done by Sameeh *et al.* [33] who found 21%, 7% and 4% for digestive system, respiratory and eye problem respectively in Jordan. These differences might arise due to difference in topographical nature and misuse; low level of donkey health care, keeping characteristics of the donkey, digestive problem may also be related to high parasite burdens and impaction.

The behavioral part of the welfare assessment aims gives some insight into the animals' emotional state.

Movement of an animal away from an approaching observer may be an indication of fear of humans has been previously tested in farm animals [39]. Besides, animals with poor health problems may also fail to express their normal behavioral and physiological needs as well. The present study has revealed that 80.9% of the donkeys show abnormal behavior (depressed and other odd signs). This result higher than reports of Dennison *et al.* [30] 68% of working donkey shows abnormal behavior in Pakistan. The reason for the occurrence of such animal behavior could be due to reason that donkeys are the most neglected animals in Ethiopia receiving less attention by owners and kept under poor management conditions [40].

The present study shows that donkeys used for draught purpose were significantly with higher prevalence of wound (71.8%,  $\chi^2=9.901$ ,  $P=0.005$ ) than those used for other purpose. This finding higher than the reports of Pritchard *et al.* [23] in Afghanistan and Pakistan (31.8%,  $P<0.001$ ). The possible explanations for this variation might be due several reasons such as environmental factors like bumpy roads and rugged land-scape, the fit of the harness and saddle not cover all parts; gravitational force directed back ward pulling, the frequency of work and the load all contribute to the onset of health problems. Other possible reasons might also due to the fact that animal owner do not train their donkey before using for draught power and animal do not adapted the work easily that result on beat by owner, self-trauma with wheel tree and breeches.

According to Henneke *et al.* [41] poor body condition score is an indicator of reduced body fat. In the current study wound was found to be significantly associated with body condition, where donkeys with poor body condition found to be developing wound than those having good body condition ( $\chi^2 = 26.5$ ,  $P= 0.000$ ). This is in line with the reports by Solomon *et al.* [42] in Hawassa town and Pearson *et al.* [26] in central Ethiopia, who indicated that poor physical condition occurs mainly due to malnutrition is the leading causes of sores in donkeys. The probable reason for such association is due to donkeys with a poor body condition score might have less natural padding protecting them from pressure, friction and shear lesions caused by saddle. In contrast no significance difference between wound prevalence and body condition score on the research done in morocco by Sells *et al.* [28]. These might be due to dehydration and decrease the elasticity of the skin in poor body condition animals and the prominence of bones leading to easy skin injury. Hence, poor body condition could be due to other

factors like poor management, shortage of nutrients because of scarcity of feed and less supplementary diets.

The present finding has showed that higher prevalence of wound was observed in older donkey (73.9%) than other age group, but no significant difference in the overall wound prevalence among age groups ( $P > 0.05$ ). This finding was in agreement with the report of Demelash and Moges [43] who stated that older donkey had greater wound risk than other age group. This might be due to more exposure to work and carrying, heavy load over a long distance, less owners' attention to wound management and the immune defense mechanism of an animal also reduce with age advancement.

In the present study donkey without proper harness had a prevalence of (94.1%) wound compared to properly harnessed animal (57.2%) with significant difference ( $\chi^2 =9.083$ ,  $P=0.004$ ). This is in line with the reports of Kumar *et al.* [32] from Mekele city, Ethiopia, who stated the higher prevalence of wound at the back region, could be due to improper harnessing which inflict injuries to the working animal. Other researcher also reported that improper-fitting and improperly made tail straps that usually has sharp edge, causes lesions on the underneath of the base of tail of working donkeys [44].

The majority of the participant enrolled in the present study confirmed that they practice separate feeding and watering system for their donkey, which closely agree with the report of Dinka *et al.* [45] in southern Ethiopia (98.6%) who reported that the majority of the respondents provided feed and water separately at different frequencies in a day. The type and amount of feed fed requirement varies according to the workload of the donkey [46]. Anderson and Dennis [47] suggested that animals which are being used year round for transport, need more feeds than animals that are only worked for short periods seasonally.

The current study showed that 90% of respondent provide care for their sick animal out which 49% of respondents took donkey to nearby veterinary clinic, 31% provide house medication (treat with medication purchased from local market) and 10% gave traditional medications. This result was disagreed with the findings of Kumar *et al.* [32] in Mekelle city that 31.6% of diseased donkeys were taken to the nearby veterinary clinics, 10.5 % were treated traditionally and 57.9% did not get any help from their owner and forced to work regardless of their health problem. Other study also identified that low number of donkeys in Ethiopia presented annually to the clinic compared to other domestic animals [5]. This difference might be influenced by owner economic status

and knowledge on donkey welfare issues as the majority of working animal owners are poor, illiterate and most of them were not aware of animal welfare issues and engaged in earning extra money with the animal [31].

In conclusion present study revealed that welfare issues were the major problems encountered in working donkeys in Wolaita Soddo Zuria district. Beat sore, tail base sore, back sore and donkey bite sore were among the major type of wound identified in working donkeys in the study area. Others like musculo-skeletal, dermatological diseases and eye problem were commonly encountered health problems in donkeys. Owner's poor awareness owners to provide good nutrition, veterinary care and animal beating practice were among indicators of poor donkey welfare. Therefore based on the current finding it can be recommended that comprehensive awareness creation on donkey welfare issues should be promoted through training, extension service by the government and different NGOs. Policies and legal frameworks that used to support animal welfare issues and inspect animal facilities should be promoted in order to ensure animal welfare issues.

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