



## Assessment of health and welfare problems of working donkey in Arbaminch Zuriya Woreda, Southern Ethiopia

Dr. Asegid yohannes (DVM)

Gamo Zone Livestock and Fishery Department, SNNPR, Ethiopia

E-mail: [asegiddumas1@gmail.com](mailto:asegiddumas1@gmail.com)

### Abstract

**Background:** A cross-sectional study was done from November 2020 to April 2021 with the objectives to assess the major health problems and associated factors compromising welfare and health of working donkeys in Arbaminch zuriya district, Southern Ethiopia.

**Results:** Both direct (Animal based) and owner/user interviews were used to collect data. A total of 384 randomly selected working donkeys were examined and owners or users were interviewed. Overall prevalence of problems related to musculoskeletal, nasal discharge, hoof condition, presence of ecto-parasite, sweating and eye were 46.9%, 38%, 78.9%, 10.9%, 50% and 44.8%, respectively. From these 24% were found with Back sore, 17.2% were with chest wound, 13% had Tail sore, and 10.9% were with wither wound, 4.2% were wound at Head and neck and 3.6 % were wound at Hind quarter were suffering with different type of wounds. The occurrences of wound vary significantly among age categories and higher prevalence was noticed in age 5-10 (80%) years. The body condition scoring was found to be significantly associated with wound prevalence. Donkeys with poor body condition had higher prevalence of wound (89.5%). High wound prevalence was observed in donkeys working for more than 7 hours (76.8%) than those working less. High wound prevalence was observed in donkeys working for more than >6 days per week than those working less. Among the 384 respondents interviewed 46.6% were in adult age group and most of the respondents (47.7.2%) of the study area had no knowledge and information on donkey welfare.

**Conclusion:** Working donkeys in the present study area were experiencing a compounded 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.

**Keywords:** Arbaminch zuriya Donkeys Prevalence Welfare Wound

### 1. Introduction

Ethiopia has the largest population of donkeys in Africa and the second largest donkey population in the world after [1]. It is estimated that the world donkey population is about 44 million; half is found in Asia, just over one quarter in Africa and the rest mainly in Latin America [2]. In Ethiopia the total number is estimated about 6.95 million donkeys and in the highlands farmers own an average of 2-3 donkeys per

family [3]. Although donkeys are found in all the ecological zones of the country the majority are found in the highlands [4]. In all zones of Ethiopia, donkeys offer the only realistic way of obtaining returns from agriculture above mere existence as pack animals. The increasing human population, demands for transport of goods to and from far, remote areas and construction activities around towns are making equines highly demanded animals [5].

Despite the donkeys' invaluable contributions to the people in Ethiopia the donkey is the most neglected animal and has a very low status[5]. Many of the working donkeys are owned by poor people and the animals' needs are often ignored. The donkeys are forced to work in harsh environments without sufficient resources and appropriate equipment may not be prioritized[6]. Studies have shown that working donkeys suffers from animal welfare problems such as gait abnormality, joint swelling, broken skin, deep lesions[7] and dental problems[8]. When their health deteriorates and they are unable to work they are usually abandoned and left to die[9]. In Ethiopia, the human population has increased and is expected to increase even more in the near future[10]. Due to the increasing population and the undeveloped infrastructure the demand of working donkeys will most likely increase. It will still take many years to develop the infrastructure in Ethiopia due to the characteristics of the terrain and the low economic status of the country[11]. Because of this, it is very important to manage the health and welfare problems associated with working donkeys, not only for the welfare of the animals but also for the livelihood for the people who own them[8].

Avoidance of management of pain and anguish in animals are commonly considered as ethical necessities in scientific researches and teaching. Hence, animal welfare entails appropriate disease prevention and veterinary care, suitable management, nourishment and gentle handling[12]. Despite their use, the husbandry practices of working donkeys are poor. Some hobbling methods cause discomfort and impose ophthalmic problems[13]. Therefore, the objective of the study was health and welfare assessment and associated risk factors of working donkeys in the study area.

## 2. Background

### 2.1 Donkeys, the backbone of rural transport

Donkeys are mainly owned by small-scale farmers and are used to carry goods on their backs or pull carts loaded with goods as firewood, animal feed, grains, water and building material. Each day thousands of donkeys enter Addis Ababa and other urban cities in Ethiopia, carrying different products[9]. Farmers that can afford cart or pack animals get higher prices for their crops when transporting it by themselves to markets, because they avoid paying margins to traders (Anderson & Dennis, 1994). Compared to motor

vehicles, animals are slower and do not have the same carrying capacity, but the animals have other advantages[19].

Donkeys are very appreciated for their characteristics; they are cheap, hardy, suitable for different terrain like dry areas and hills, resistant to diseases and easy to handle and train. In some parts of Ethiopia, the infrastructure is still not fully developed with low quality roads and in these areas people depend on their donkeys[20]. Donkeys are also used in agricultural operations, as ploughing[21]. The donkey is perceived as an unclean animal and due to this the meat is not eaten consequently the risk of theft is reduced and the farmer can allow donkeys to wander unsupervised which is another advantage with owning donkeys[9]. If the donkeys get too sick or injured so they no longer can be used for work, the owners lose their livelihoods, either temporarily or permanently. To keep donkeys in good condition is not only important for the welfare of the animals but also for the livelihood for the people who own them[8].

### 2.2 Management of working donkeys

#### 2.2.1 Housing

In rural areas in Ethiopia, it is common to keep the donkeys together with other livestock, mostly cattle. At night, donkeys are confined either in stables, in a *kraal* (enclosure) or at the owner's home. If the donkeys are not used for work during the day, they are grazing loose or tethered. Donkeys can also be tethered without access to pasture; under trees, in houses or kraals during the day[20].

#### 2.2.2 Access to feed

Wild donkeys spend approximately 14-16 hours per day foraging and feeding [22] and therefore the ideal diet for an equine is a high-roughage diet that contains a large amount of structural carbohydrates. The issue with roughage is that it takes a long time to eat, and time is something that working donkeys usually do not have. In developing countries like Ethiopia, the grass is often of poor quality and areas are often overgrazed. Feed that is more suitable for working donkeys is a balanced diet containing large amounts of long fibres with structural carbohydrate, and with a supplement of short feed containing non-structural carbohydrates [22]. For working donkeys in Ethiopia, the diet is based on grazing on grasslands and roadsides and feed supplements like crop by-products or concentrates is

sometimes provided[9]. When donkeys are kept at home the most common feeding regime is grazing with supplement of straw and grain mixtures and sometimes household wastes can also be fed. At markets there is no access to pasture but some owners feed their donkeys with grain or straw there[20]. When equine handlers were interviewed in western Ethiopia, 20% answered that they provided some form of feed at markets or workings sites[23]. Without good feed the donkeys do not grow properly, they get weak, cannot work as hard, get more susceptible to diseases and do not reproduce[9]. However, the donkeys survive due to their capacity to utilize feed of low quality[9] and compared to horses, donkeys can digest high fibre forage diets better[24]. The farmers are usually aware of how to improve the health and condition of their donkeys but it is the lack of resources (e.g. feed) that's constrains them[9].

### 2.2.3. Access to water

Like for any animal, water is vital for donkeys and over 60% of an equines body consists of water. [22]Donkeys are adapted to arid environments and can conserve body water in conditions of water deprivation[25] and absorb any water that is available in the feed. Even though donkeys are more thirst tolerant than horses and will maintain their appetites in conditions of water deprivation, they have the same water requirements as horses[22]. In a study in Ethiopia, where equine handlers were interviewed it was reported that 98.2% provided water at the home and 10.5% provided water to their donkeys at markets or working sites[23].

Even though donkeys are adapted to arid environments and are thirst tolerant[22], heat stress and dehydration can be a serious welfare problem. Signs of heat stress can be increased respiratory rate, increased respiratory depth, head nodding, apathy and flared nostrils[6]. conducted a study in Afghanistan, Egypt, India, Jordan and Pakistan during the cooler months between December and April[6]. The result reported that only 2.9% of the working donkeys showed signs of heat stress and dehydration, but in the summer months it is expected that the prevalence of heat stress signs would be much higher. Veterinarians have reported up to 80% prevalence of heat stress signs during the summer months[26]. In horses, as little as 3% dehydration can reduce the performance capacity [27]and therefore it is expected that dehydrated donkeys will have a decreased work capacity.

## 2.3 The hard life of a working donkey

### 2.3.1 Life expectancy

Donkeys can reach an age of 35 years if they are well managed, but the life expectancy of a working donkey in Ethiopia is merely 9-13 years[9]. In a study by[8], the average age was 7 years and only 4.4% were older than 15 years. The same study also showed that young donkeys worked with the same activities as older donkeys which can lead to poor health for the young donkeys. This result led to the researcher assuming that people who use donkeys may only be interested in short term immediate gain, rather than a long term working life of their donkey[8].

### 2.3.2 Health problems

Working donkeys suffers from animal welfare problems such as gait abnormalities, tendon and joint swellings, skin lesions, ectoparasites[7, 23], lip lesions, tether and hobbling lesion [13] and dental problems [8]. In a study that was conducted in northern Ethiopia, 30.2% of the donkeys suffered from skin lesions, 33.8% of parasites, 19.3% had eye problems and 16.2% had dental problems. Further on, 18.2% suffered from leg issues such as overgrown hooves, abnormal gait and lameness [8]. Another study conducted on working equines in Ethiopia, reported that 16.9% had broken skin or deep lesions, 37% ectoparasites, 99.2% gait abnormalities, 99.5% sole surface abnormalities, 99.6% tendon and joint swelling and 3.4% firing lesions[7]. Firing lesions is caused either by the owner burn-marking the animal or by traditional medical treatments [7]. The majority of working donkeys also suffers from low BCS [7-8, 23]. The prevalence of health problems can differ between species, for example donkeys have significantly higher prevalence of gait and sole abnormalities than horses and mules. The result from studies on equine welfare not only differ between species but also between work-type as cart, pack or riding and between rural and urban areas[7]. Morgan [28]reported that 10.1% of the donkeys were lame in urban areas and 2.4% in rural areas. The cause of lameness differed; in rural areas, wounds (mainly hyena or donkey bites) were the most common reason, whereas in urban areas it was road traffic accidents. Burn [7]also studied the difference in equine welfare problems in urban and rural areas and found that skin lesions and displayed aggression was more common in urban areas. On the other hand, rural equines were thinner, mostly scored as three or less in BCS and had higher prevalence of

ectoparasites, gait and sole abnormalities, faecal soiling and tendon and joint swelling.

Diseases are another problem for the donkeys and can also cause economic defeats for the owners. A study conducted in southern Ethiopia[5] and reported that 5.5% of the donkeys suffered of injuries caused by infectious diseases. Diseases that are a problem for the donkeys are worms, external parasites, rabies, anthrax, skin tumours, pneumonia and hoof rot. Donkey owners have reported that euthanasia due to disease could have been decreased if they had access to veterinary service in their neighbourhood[20].

### **2.3.3 Improper work equipment and overloading**

Other common animal welfare problems are improper harnessing, overloading and overworking the donkeys[8]. In a study conducted in Ethiopia[5] by, 28.7% of the donkeys were overworked and overloaded and 26% of the donkeys suffered from external injuries due to improper harness and saddles[5].

A properly designed harness allows the working donkey to pull the load to the best of its ability without risk of injuries. On the other hand, a poorly designed or ill-fitted harness will result in fatigue, discomfort or lesions on the donkey[21]. Fitted harnessing can lead to skin lesions at the withers, back region and underneath the base of the tail[8]. Harness lesions will not only be painful for the animal, it will also increase the risk of secondary infections which will reduce the work capacity and longevity of the donkey [29]. Thin donkeys have less natural padding that protects them from friction, pressure and lesion caused by harnessing, and below score 3 in BCS is correlated with lesions of skin and deeper tissues[6].

Donkeys are often controlled by halters that can be made from rope, webbing, cotton or leather. Materials such as wire, chain or other materials that may chafe or cause skin lesions are unsuitable to use. A saddle can be used when loading products on the donkeys back and are usually made of wood consisting of two X-shaped pieces attached to two oval support pads. When using this form of saddle, it is important to use padding between the saddle and the animals' back, to protect the backbone. Materials that are recommended as padding are cotton, wool blankets and sheepskin. Plastic and synthetic material should be avoided because it will give the donkey lesions. It is also important that the load should be well balanced on

both side of the back, otherwise the donkey will use more energy in carrying it and will get exhausted [21]. To hobble donkeys i.e. tie two legs together with a short rope, is commonly performed to prevent the donkey from wandering off [21]. Hobbling the donkey in an unsuitable way can cause discomfort and wounds[23] and it is recommended that the hobbles should be made of soft materials to prevent chafing and wounds. Only the front legs should be hobbled, never the back legs together or one back leg to a front leg, and two animals should never be hobbled together[21]. It is recommended that a donkey should not carry more than one third of its body weight (i.e. between 40-80 kg,[21] but studies in Ethiopia show that donkeys carry loads between 60-100 kg. In markets in Addis Ababa, it is not uncommon to find donkeys carrying packs of 100 kg[9] and in southern Ethiopia, donkeys have been observed traveling up to 70 km per day while carrying an average workload of 150 kg [5].

### **2.3.4 Treatment of sick donkeys**

When a donkey's health deteriorates, the owners use different treatment strategies. Studies in Ethiopia show similar results; most unhealthy donkeys do not receive any treatment but are instead forced to keep on working. Some owners take their donkeys to a nearby veterinary clinic or treat them traditionally [5, 8]. An example of traditional remedies that are used, by the owner or a local healer, is pouring plant juice or oil on the donkey. According to donkey owners, one constraint of donkeys is the absence of veterinary clinics. If the donkey is finally taken to a veterinarian it is usually in a progressed stage of illness and has usually been subjected to numerous traditional remedies [8]. A study Reported from southern Ethiopia, that when the donkeys were sick, 58.8% of owners still used their donkeys continuously regardless of the severity of the injuries, 25.6% gave the donkeys short term relief and 9.7% gave the donkeys long term rest until it was recovered[5]. It was also reported that when the donkeys' health deteriorates, 8.6% of owners left them by the road to fend for themselves[5]. Another study from Ethiopia, showed some different results; 10.6 % used traditional medicine, 88.2% took their equines to a veterinary clinic and only 0.5% left the animal untreated [23].

### **2.3.5 The physiological state of working donkeys**

Many studies have reported behavior problems such as unresponsiveness and apathy in working donkeys over

different parts of the world[7-8, 23]. A study [23] from Ethiopia showed that 23.1% of the donkeys were depressed. In a study by [6] 11.5% of the donkeys were described as apathetic or severely depressed, and when the observer approached the donkeys, 44.3% avoided the observer or showed signs of aggression and 43.6% did not show any response at all. Burn [7] reported similar results; 13.1% of the donkeys were apathetic/depressed, 64.6% did not respond when they were approached by the observer and 25.9% avoided the observer. The results also showed that there was a correlation between apathy and lack of response to the observer. The authors' states that it appears that equines that are subjected to severe and numerous physical problems enter a state of behavioural unresponsiveness. When "prey animals" do not respond to a possible threat, this is an indication of that the animal is of the boarder of its survival. Apathy was most prevalent in older and thinner donkeys and is associated with others indicators of poor health like abnormal mucous membrane colour and faecal soiling[7].

Beating of working donkeys is widespread and the owners beat their donkeys when they perceive the animal as lazy. Beating a donkey does not only cause wounds and physical pain but it also induces fear and mental stress in the animal [14], which is shown in other animals as well. The animal's fear of humans can cause severe stress in the animal[15]. An apathetic or depressed donkey is more likely to get beaten which can lead to chronic fear and significantly decreased welfare [14].

Donkeys are very social animals and social interactions with peers are important to them. A study from India showed that even fatigued and dehydrated donkeys first priority was to socialize with other donkeys. After a long working day, 8-12 hours, the donkeys were released and the first thing they did was to gather together and interact, the second thing they did was seek water and drink together as a group. The same study showed that after 5-6 months of hard work some donkeys became permanently apathetic and failed to socialize[14].

#### **2.4 Animal welfare assessment protocol**

Animal welfare is a multidimensional concept comprising good health, comfort, expression of behaviour etc. [16], therefore it is essential to include both health and behaviour when assessing animal welfare. Farm animal welfare has become a great

concern of the European public, and for this reason the European Union initiated the Welfare Quality® (WQ®) project. The projects aim was to develop a system for on-farm monitoring of animal welfare and to provide advice on improvements of welfare [30]. After the WQ projects termination, several protocols for horses have been developed in line with the approach [31,32]. To improve welfare of the working donkeys, essential feedback to the owner is necessary, as stated in the WQ® project. Feedback along with practical advice and alternative strategies can help the farmer to improve the animal welfare through informed decisions [33]. This strategy can also be useful for improving animal welfare of working donkeys.

### **3. Materials and Methods**

#### **3.1 Description of Study Area**

The study was carried out between November 2020 to April 2021 In South Nation and Nationality Peoples Regional State Gamo Zone in Arbaminch Zuria woreda. Arba Minch Zuria is located 505 km south from Adis Abeba. Geographically situated between 37°20'0''E longitude and 5°55'0''N latitude at altitude range of 1120-2400 meters above sea level and has a land area of 469.58 km<sup>2</sup>. The district is divided into 18 kebeles and bordered on the south by Derashe district, on the west by Geresse and Gacho Baba districts, on the north by Chench, on the northeast by Mirab Abaya and on the east by Oromia region. The average temperature of the district is 27<sup>0</sup>c. Rainfall pattern is bimodal, erratic and unreliable, with the mean annual rainfall of 750.5 mm. The agro ecologies of the area are about 56% is lowland and 44% is midland (GZFEED, 2019).

The main farming system in the area is mixed livestock and crops farming system and small ruminants are important animal species kept. The total donkey populations in Arbaminch Zuria, districts 6992 (GZFEED, 2019).

#### **3.2 Study animals**

The study was conducted on indigenous breed of working Abyssinian donkeys which plays major role in the area. Both sex and all age groups of working donkeys were included in the study.

**4. Results**

**4.1 Description of wound on different anatomical locations**

The direct assessment data was collected by assessing age, sex, work type, body condition, distribution of wound, mucous membrane problem, and other illness

signs observed from the examined donkeys. Out of 384 donkeys sampled, 280 of them were found to be wounded; the overall prevalence of wound was 72.9 (Table 1).

**Table 1. Description of wound on different anatomical locations and its frequency**

Wound	Frequency in number	Percentage (%)	Overall percent (%)
Back wound	92	24%	72.9
Chest wound	66	17.2%	
Tail sore	50	13%	
wither wound	42	10.9%	
Head and neck wound	16	4.2%	
Hind quarter	14	3.6%	
<b>Total</b>	<b>280</b>		

Out of 280 wound exposed donkeys, 24% were found with Back sore, 17.2% were with chest wound, 13% had Tail sore, and 10.9% were with wither wound, 4.2% were wound at Head and neck and 3.6 % were wound at Hind quarter. (Table 1) Majority of them were in medium body condition (70.8%) followed by

poor (16.9%) and good (12.2%) body condition. Overall prevalence of problems related to musculoskeletal, nasal discharge, hoof condition, presence of ecto-parasite, sweating and eye were 46.9%, 38%, 78.9%,10.9%,50% and 44.8%, respectively. (Table 2)

**4.2 Health condition of working donkeys**

**Table 2. Health condition of working donkeys in the study area (N=384).**

Type	Major health problems	Frequency	Percent (%)
<b>Musculoskeletal problems</b>	<i>Normal</i>	204	53.4
	lameness	81	21.1
	Fracture	34	8.9
	Hoof overgrowth	65	16.9
<b>Type of wound</b>	<i>Back wound</i>	92	24
	Chest wound	66	17.2
	Tail sore	50	13
	wither wound	42	10.9
	Head and neck wound	16	4.2
	Hind quarter	14	3.6
<b>Presence of External parasite</b>	Yes	42	10.9
	No	342	89.1
<b>Eye problem</b>	Yes	172	44.8
	No	212	55.2
<b>Coughing</b>	Yes	46	12
	No	338	88
<b>Sweating</b>	Yes	192	50
	No	192	50
<b>Nasal discharge</b>	Yes	146	38
	No	238	62

**Table 3. Descriptive statistics for sex, age and body condition score of physically examined donkeys. (n=384)**

Variable	Number examined	Percentage (%)
<b>Sex</b>		
Male	245	63.8
Female	139	36.2
<b>Age (year)</b>		
<5	39	10.2
5-10	215	56
>10	130	33.9
<b>BCS</b>		
Poor	212	61.7
Medium	40	26
Good	28	12.2

From 384 examined donkey 63.8 % were male , 33.9% were >10 years age and only 12.2% of the donkeys had ideal body condition while 26% and 61.7% had moderate and poor body condition,

respectively. (Table 3) Most of the donkeys (81%) included in the study were housed indoor during the night. 61.2% of the donkeys studied were used to pull cart and the rest (38.8%) were used as pack animals.

#### 4.3 Respondent's characteristics

**Table 4: Distribution of respondents characteristics; (n=384)**

Attribute	Number examined	Percentage (%)
<b>Person</b>		
Owner	326	84.9
Not owner	58	15.1
<b>Sex</b>		
Male	368	95.8
Female	16	4.2
<b>Age (year)</b>		
Young(<25)	144	37.5
Adult(25-45)	179	46.6
Old(>45)	61	15.9
<b>Educational status</b>		
Illiterate	168	43.8
Elementary	153	39.8
High school	63	16.4

The general variables associated with donkey keeper respondents are distributed by sex, age, and educational status are presented in Table 1. Out of a total 384 respondents 95.8% were male. Almost half age of the respondents were >45 years (46.6%) and

37.5% of donkey owners were between the age of 25-45 years. Concerning educational status 39.8% of respondents had elementary school education, 43.8% could not read and write and only 16.4% had high school education. (Table 4)

**4.4 respondent’s knowledge on working donkey welfare**

**Table 5. Distribution of respondent’s knowledge on working donkey welfare**

Respondent knowledge	Number examined	Percentage (%)
<b>Animal welfare knowledge</b>		
No information	183	47.7
Freedom from thirst and hungry	80	20.8
Freedom from injury and disease	57	14.8
Freedom from pain and discomfort	26	6.8
Freedom from fear and distress	21	5.5
Freedom to express normal behavior and enough space to move	17	4.4
<b>Care for sick animal</b>		
Taking to vet clinic	261	68
Traditional medication	35	9.1
Leave to self-healing	88	22.9

Out of the total respondents, 47.7% (183) were not aware of animal welfare, 20.8% were not aware of freedom from thirst and hungry, and 14.8% were not aware of freedom from injury and disease. The

drivers’ responses about care for sick animal were 68% (261) taken to Government Veterinary Clinic or private clinic, 9.1% (35) given traditional medication and 22.9% (88) left to self-healing.

**Table 6. Prevalence of wound based on work type, sex, BCS, age, duration of work and load (N=384)**

Variable	Number examined	Number affected	Prevalence (%)	2	P-value
<b>Sex</b>					
Male	245	180	73.5	0.105	0.746
Female	139	100	71.9		
<b>Work type</b>					
Pack	149	106	71.1	0.389	0.533
Draught	235	174	74		
<b>BCS</b>					
Poor	237	212	89.5	91.91	0.000
Medium	100	40	40		
Good	47	28	59.6		
<b>Age (year)</b>					
<5	39	20	51.3	16.503	0.000
5-10	215	172	80		
>10	130	88	67.7		

<b>Shelter at night</b>					
Yes	311	228	73.3	0.129	0.719
No	73	52	71.2		
<b>Frequency of use per week(day)</b>					
<3	25	13	52	10.733	0.005
3-6	226	177	78.3		
>6	133	90	67.7		
<b>Duration on work (hour)</b>					
<4	19	7	36.8	15.156	0.001
4-7	98	68	69.4		
>7	267	205	76.8		
<b>Frequency of watering Per day</b>					
once	7	5	71.4	0.025	0.987
twice	161	118	73.3		
Three	216	157	72.7		

Prevalence of wound was higher in donkeys used for draught purpose(74%) than those working for pack and other purposes, but no significant difference was observed on overall wound prevalence among work type ( $p>0.05$ ). Males were more prone to wound prevalence than female but the difference in the prevalence of wound among sex was not significant ( $p>0.05$ ).

There was significant difference in the prevalence of wound ( $p<0.05$ ) among different body condition scores. Donkeys with poor condition score were having highest prevalence (89.5%) of wound followed by those with medium and good body condition. The present study also revealed that the occurrence of wound significantly differs ( $p<0.05$ ) with respect to the age of the donkey. Highest wound prevalence was observed in donkeys with age 5-10 (80%) years and greater than 10 years (67.7%) than those in the younger age group (Table 6).

The result also showed a significant association ( $p<0.05$ ) between the duration of work and the prevalence of wound. High wound prevalence was observed in donkeys working for more than 7 hours

than those working less. And also there is a significant association ( $p<0.05$ ) between the frequency of use of donkey per week and the prevalence of wound. High wound prevalence was observed in donkeys working for more than >6 days per week than those working less.

## 5. Discussion

In this study, it was observed that all donkeys were used for work, mainly for pack and draught. In the present study, the overall prevalence of wound in working donkeys was 72.9 %. This finding was higher than the prevalence of 40% in Central Ethiopia [34], 42.2% in Adet town [35], by Burn *et al.* [36] in Jordan (59%) and 54% in Morocco [37]. On the other hand, the current result was markedly lower than the previous report 77.5% and 79.4% by Curran *et al.* [38] and Biffa and Woldemeskel, [5] respectively in Ethiopia. In the present study revealed that tail base sore(13%), back sore(24%), Chest wound(17.2%), wither wound(10.9%), Head and neck wound(4.2% ) and Hind quarter sore(3.6%) 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 [6, 39]. 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 behavior 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 [13, 35]. The prevalence of external parasite (10.9%), eye problem (44.8%), coughing (12%), sweating (50%), nasal discharge (38%), musculoskeletal problem such as, lameness (21.1%) and hoof overgrowth (16.9%) were common among working donkeys of study area. This finding disagree with the report done by Sameeh *et al.* [40] who found 7% and 4% for respiratory and eye problem respectively in Jordan. Musculoskeletal problem which close to Kumar *et al.* [32] finding in Mekelle city (18.2%) and lower than Sameeh *et al.* [40] 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 musculoskeletal problems. This implies that any type of interaction between limb abnormalities in these animals may have serious welfare and health problems [42]. This might be associated with owner's poor knowledge of health care, feeding and irregular or no medication for parasites [43]. Mekuria and Abebe [13] 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.* [44] also reported that skin lesions as one of the major prevalent and severe welfare issue in working donkeys.

The current study revealed that higher prevalence of wound was examined in 5-10 year old donkeys (80%) than other age groups. This finding disagree with the report done by Tesfaye *et al.* [45] who reported 69.2% wound in older age groups than other age groups and disagree with reports of Biffa and Weldemeskel [5] in Hawassa who reported that older equines had greater wound risk than other age group. The current finding 5-10 years old age with high wound prevalence might be due to more exposure to work and carrying heavy load over a long distance, less owners' attention to wound management and frequent use of middle age group donkey for long days without rest time.

There was significant association between prevalence of wound and body condition ( $P=0.000$ ) with 89.5 % of poor body conditioned donkeys affected with wound. This result was found to be in agreement with the reports of Abdela *et al.* [46], Tesfaye *et al.* [45], Tsega *et al.* [47] and Henneke *et al.* [48] who reported strong association between prevalence of wound body condition. These might be due to dehydration which decreases the elasticity of the skin in poor body condition animals and the prominence of bones leading to easy skin injury.

The result also showed a significant association ( $p<0.05$ ) between the duration of work and the prevalence of wound. High wound prevalence was observed in donkeys working for more than 7 hours than those working less. And also there is a significant association ( $p<0.05$ ) between the frequency of use per week and the prevalence of wound. High wound prevalence was observed in donkeys working for more than 6 days than those working less.

The present study revealed that 77.1% of respondent provide care for their donkeys (68% taken to government veterinary clinic or private clinic and 9.1% traditional medication) and 22.9% left to self-healing. The result is closely related with those of Tesfaye *et al.* (2016) in Mirab Abaya that showed 84.2% of the respondents provide care for their sick animal out of which 48.3% took donkey to nearby veterinary clinic.

## 6. Conclusion

The present study revealed that the cart pulling donkeys in and around Arbaminch zuriya woreda were faced the multi-factorial health and welfare problems. absence of approved policy in working animals, poor animal welfare knowledge, overworking, and working donkey with poor body condition and frequent use of middle age group donkey for long hour were major factors causing health and welfare problems. The distribution of wound on different body parts were assessed and Back sore, chest wound, Tail sore, and wither wound, wound at Head and neck and wound at Hind quarter were the major wounds examined on working donkeys. Lameness problem, external parasite skin problem, other eye and cough signs, frequently occurred in donkey's health situation in this study area. Lack of awareness of animal welfare knowledge and less attention to husbandry practices to feeding management, housing condition, watering the donkeys, and health care of animals were indicators of

the minimum understanding of the health and welfare of this study population. These situations strongly call for awareness creation on animal welfare by government and charity organizations interested in animal welfare. The country should also have policy on working animal handling and management. The standardized harnessing equipment should be available in market.

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**How to cite this article:**

Asegid yohannes. (2021). Assessment of health and welfare problems of working donkey in Arbaminch Zuriya Woreda, Southern Ethiopia. *Int. J. Adv. Res. Biol. Sci.* 8(12): 83-95.  
DOI: <http://dx.doi.org/10.22192/ijarbs.2021.08.12.009>