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Surveillance on Key Wellbeing Problems and Management Activity of Equine in Ambo Town, West Shewa Zone, Ethiopia

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Abstract: Working horses, mules and donkeys play a central role in the livelihoods of many people IN Ethiopia. Working animals are livelihood assets and they maintain or enhance livelihood in Country. A cross sectional study was conducted between November 2014 to April 2015 on randomly selected working equine to observe management practices and welfare problems of working animals for the presence of lesions on different parts of the body and body condition status at Ambo town, western Ethiopia. 384 working animals were screened for various lesions on the skin. Among the studied animals, 29.7% (horses), 32.3% (donkeys) and 38% (mules) were thoroughly examined for work type, status of body condition and lesion on animal body. From a total of examined horses, mule and donkeys, 310 (80.7%) were lesion prevalence in their body parts in the study area. The variation in prevalence of lesion in horses, mule and donkeys were not significant (P>0.05). On the other hand, 54.4% were draught and 45.6% were pack animals and (28.4%), 50.5% and 21.1% revealed a poor, medium and good body condition score, respectively. Lesions due to lack of good management system such as: back sore (13.5%), belly (12%), limb tethering (8.1%), Tail base (5.2%) and breast (9.1%) were most frequently observed. Tail base lesions were significantly associated with pack type of work ($p < 0.05$); whereas back sore were associated with draught type of work ($p < 0.05$). In conclusion, even though owners take care of their animals, a great number of lesions associated with work type and body condition were noted. This finding shows that working animals experience multiple welfare problems in the study area. A broad equine health programs should be implemented in order to tackle the widespread problem in the study area in particular and in nation in general.

Key words: Ambo · Animals · Welfare Problems · Work Type

INTRODUCTION

Equine serve a number of functions throughout different parts of the world. They are the work animals in a number of third world countries, food livestock to specific countries and are companion animals to many people in developed nations. They provide a means of entertainment, by being involved in a wide variety of sports and leisure activities. Working animals play a fundamental role in human livelihoods through their direct and indirect contributions to financial, human and social capital in particular [1]. Working animals are multipurpose such as draught and load-bearing power, as well as outputs including manure. Use of draught and pack animals contribute to increase farm productivity [2].

Working animals create synergy in nutrient cycles, farming and marketing systems by enabling farmers and traders to transport harvests, market products, fodder and water for other livestock., Working animals are also central to people's transport capacity and range, providing families and entrepreneurs with access to supplies, services and goods [2]. Animal welfare is recognized as a central component of responsible animal husbandry and therefore should be a core part of all working animal systems. The welfare of working animals has a direct impact on their health and on their capacity to carry out tasks and jobs, which in turn affects the livelihoods of their owners and owners' families. However, good welfare practices for working animals are not given sufficient attention in Ethiopia, despite their

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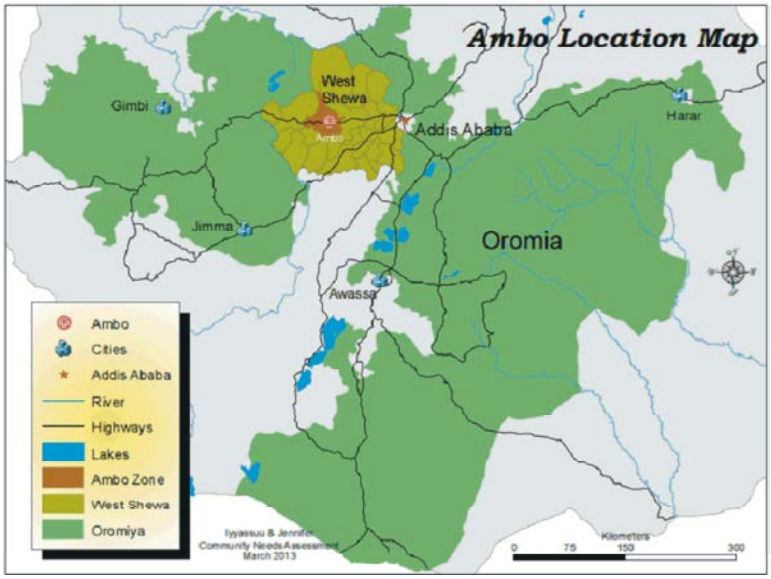

Fig. 1: PeaceCorps Ethiopia, Ambo Town March 2013 Sample Size Determination

positive impact on both animals and the people who own and use them. Therefore, the objectives of this study were to identify the problems occurred in equine of study area and to determine the prevalence of welfare problems of equine in the study area.

MATERIALS AND METHODS

Study Area: Ambo is located in the western part of Addis Ababa, 114 km from the capital Addis Ababa at 8°59'30''N latitude and between 37°47'30''-37°55'15''E longitude. It has an altitude ranges from 1872-2362 meter above sea level and a typical tropical climate with an average annual rainfall of about 980mm, humidity 57.88% [3]. The mean annual maximum and minimum temperature of the town are 24°C and 11°C, respectively. The rainy season extends from early June to late September [4].

Study Design and Animals: A cross-sectional study was conducted on randomly selected equine (114 horse; 146 mule; 124 donkey) from November 2014 to April 2015 on working animals in Ambo town, west shewa, Ethiopia. Health status related to lesion and the body condition of the animal were evaluated. Body condition was scored on the selected animals was recorded based on the criteria described by Pritchard *et al.* [5] and Oudman [6].

Since there was no previous study in the area, 50% expected prevalence was considered to determine the sample size with 95% confidence level and 5% absolute precision. Accordingly, the sample size required for the study was 384. The sample size for the study was calculated by using formula of Thrusfield [7]. Animals were selected regardless of work type, body condition and species. Eighty animal owners requested to complete questionnaire in the study area.

Techniques Used to Assess the Status of Equine.

Physical Examination: The examination was carried out at the working site and veterinary clinic. Initially, general information should be recorded for each animal including work type, species and observation of lesion [8, 9]. Subsequently, the parameters body condition score should be assessed. The body conditions of the selected animals were scored based on the criteria cited by Pritchard *et al.* [5]. Body condition assessment was done by examining the animal from all sides without touching it. The animal' body condition were scored for analysis, accordingly, 1 for poor, 2, medium and 3 for good were used. Animals were categorized as draught, pack. Draught animals were used for the transport of goods and people by cart. Pack animals were used for the transport of goods by pack [5]. The examination of each animal was conducted between five and ten minutes without causing major interruption of routine work [10].

Questionnaire Survey: In addition to the direct physical examination each randomly selected equine owner has been interviewed at work place and veterinary clinic with

a semi-structure interview to extrapolate examined equine information regarding owner's general information, equine management practice health care, working nature types of work.

Data 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 was compared with assumed risk factors, to analyze the association of risk factors with each observation. Coded data were stored in Microsoft Excel 2007 spread sheet and entered in to a data base using SPSS for data analysis. Percentages measures prevalence and χ^2 square to measure association of risk factors with each observation and level of significance was considered when $P < 0.05$.

RESULTS

A total of 384 animals, 29.7% (horses), 32.3% (donkeys) and 38% (mules) were thoroughly examined for work type, status of body condition and lesion on animal body. In this study, major activities of the equine owner's utilized mules as draught type of work included shuttling people and transportation of wood and products from agriculture for markets. From a total of examined horses, mule and donkeys, 310 (80.7%) were having prevalence of lesion in their body parts. Specifically, the variation in prevalence of lesion in horses, mule and donkeys were not significant ($P>0.05$; Table 1).

In connection, it was obvious that body condition score category within species indicated that majority of mules revealed a medium body condition (41.8%) when compare to horse (53.5%) and donkey (58.1%). In general, out of 54.4% of draught type proportion of working animals, 84.2% was mules followed by horses (64.9%) and donkeys (9.7%). Similarly, medium body condition scored (50.5%) followed by poor and good body condition was revealed in draught and pack type of work (Table 2).

According to this study, the presence of breast lesion, limb tethering, tail base lesions, back sore and belly lesions were the main lesion encountered at the time of examination. Tail base and breast lesion were occurred on donkeys as compared to mules and horses. On the other hand, lesion of limb tethering predominated in horses. There was also back sore and belly was encountered in mule when compared with horses and donkeys. The species were not significant ($P>0.05$) against the lesion (Table 3).

Table 1: Prevalence of lesion among species wise

Species	No. of examined animals	No. of lesion	Prevalence %	X^2	P value
Horse	114	93	81.6%	0.093	0.412
Mule	146	119	81.5%		
Donkey	124	98	79%		
Total	384	310			

Table 2: Work type proportion and body condition score category within species

		Work type proportion		Body condition score category		
Species	No. of examined	Draught	Pack	1	2	3
Horse	114	74(64.9%)	40(35.1%)	36(31.6%)	61(53.5%)	17(14.9%)
Mule	146	123(84.2%)	23(15.8%)	49(33.6%)	61(41.8%)	36(24.7%)
Donkey	124	12(9.7%)	112(90.3%)	24(19.4%)	72(58.1%)	28(22.6%)
Total	384	209(54.4%)	175(45.6%)	109(28.4%)	194(50.5%)	81(21.1%)

Table 3: Distribution of lesion on different body parts.

Lesion on body	Total	Horse	Mule	Donkey	÷2	*p*-values
Limb tethering	31(8.1%)	13(10.5%)	12(8.9%)	6(4.8%)	5.190	0.226
Back sore	52(13.5%)	12(10.2%)	25(17.1%)	15(12.1%)	8.164	0.089
Belly	46(12.0)	13(11.4%)	18(12.3%)	15(12.1%)	11.844	0. 073
Breast	35(9.1%)	7(6.1%)	9(6.2%)	19(15.3%)	0.772	0.237
Tail base	20(5.2%)	5(4.4%)	7(4.8%)	8(6.5%)	1.460	0.142
Total	310(80.7%)	93(24%)	119 (31%)	98 (25.5%)		

Table 4: Distribution of lesion of working animals relation to types of work

Lesion	Draught(n=209)	Pack(n=175)	Total(n=384)	χ^2	*p*-values
Limb tethering	23(11.0%)	8(4.6%)	31(8.1%)	2.765	0.18
Back sore	30(14.4%)	22(12.6%)	52(13.5%)	11.63	0.031
Belly	30(14.4%)	16(9.1%)	46(12%)	6.828	0.117
Breast	11(5.3%)	24(13.7%)	35(9.1%)	5.120	0.171
Tail base	10(4.8%)	10 (5.7%)	20(5.2%)	14.54	0.00

As shown in Table (4), the lesions were significantly associated with work types. Back sore showed a significant association (P<0.05) with draught type of work. Tail base lesions were significantly associated with pack animals lesion.

DISCUSSION

According to World Veterinary Association, animal welfare is a scientific discipline which incorporates applied aspects of ethology, bioethics and the concepts of suffering and wellbeing [11]. There is a growing recognition and collection of evidence that working animals play a significant role in supporting the livelihoods of the families who own them and in fulfilling socio-economic functions that benefit animal owning households and the wider community [12]. In particular, their contribution to income generating activities has recently attracted attention and interest. Like other African countries such as South Africa, Nigeria, Khartoum and Kenya, equine were widely used in Ethiopia. Accordingly, Hanekom and Sisay[13], Tilahun [14] and Mukiria *et al.* [15] reported that even if their benefit are reflected as under respect, their role in the rural area in general and urbanization process in particular in Ethiopia play great role. Varieties of wellbeing problems revealed in the present study, most of them were lesions or sore at different body sites (back sore, tail base sore, breast, belly sore and limb tethering) were among the major type of wound identified in the area. In the study area, the horse, mule and donkey have almost equal population in study area which indicates that these species are fully incorporated in the owners' day to day life income generation. The surveillance in connection with this is totally agreed with reports of Pritchard *et al*. [5], Mekuria *et al.* [9], Blackeway [16] and Dinka *et al.* [17], as all of them described that equine are mainly kept for transport purposes. The overall prevalence of wound in working equine were 80.7% which was agreed with the prevalence of wound in donkey that was 77.5% [18] and 79.4% [19], in Ethiopia. However, this study prevalence is higher than the prevalence of 40% recorded in Central Ethiopia sululta, oromia [20], 42.2% in Yilmana Densa District Adet town [21], 54% in Morocco [22] and 59% in Jordan [23]. The result of this study directed that lesions of the tail base and breast lession showed that significant association with pack type of work; whereas back sore were associated with draught type of work were revealed. Similar finding were reported by Mekuria *et al.* [9] and Dennison *et al.* [24], where pack donkeys had a significantly higher proportion of tail base lesions than draught animals. This is likely due to many reasons such as; overloading, lack of rest even in the weekend, cruelly beating and trauma induced by improper putting of saddle. It is also supported by other records [5, 9, 16, 25, 26], that the chance of tail base lesion occurrence was very high when pack animals frequently cope with long distances. It has been assumed that the type of work promotes the occurrence of certain lesions at different body sites. In the present study, pack animals were found to be more likely to suffer from tail base and breast lesions. The greater distribution of the wound were found at back region (14.3%) followed by a limbs tethering (4.4%) and tail region (7%). Our results agreed with Helen [27] who reported similar situation in the northern Ethiopia and this higher prevalence of wound at the back region could be due to improper harnessing that cause injuries in working donkeys. Similarly, the present result also agrees with the previous report of Mandefro [28], in which, those ill-fitting and improperly made tail straps that usually has sharp edge, causes lesions on the underneath of the base of tail of working donkeys. This is time of sunny, when the rain falls and grass growth is not available. However a large percentage of owners provided supplementary feed which may also have contributed to the generally medium body condition but it was not significant because of variation in sample size, poor management, poor housing and inappropriate use of harness material.

CONCLUSSION

Working equine animals play diverse socioeconomic roles, helping to maintain and enhance all categories of capital assets contributing to a sustainable livelihood. It was concluded that equine make a significant contribution to development of Ethiopia because of their major role in

transportation of agriculture product, wood for heating, water, building materials, as a source of income for immediate household expenses and sometimes sport. Despite this contribution, there is a need to improve the welfare of working animals in the country. Farmers should be assisted with veterinary services and be trained in nutrition and correct harnessing of the working animals. Welfare authorities need to consider supporting special programmes in flood-prone areas in order to facilitate vaccination programmes, provision of feed and shelter and hygienic disposal of carcases in the event of loss of life.

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