Prevalence of skin wounds in working donkeys in Bukombe, Tanzania

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Abstract

Background Preventable wounds are a common welfare issue in working donkeys in many countries. In the Bukombe District of Tanzania, there are estimated to be 3000 working donkeys, used primarily to transport loads for direct income generation. For historical reasons, oxen-yoke carts are used; their design is inappropriate for donkeys and results in serious neck wounds. The project aim was to assess the prevalence and nature of wounds in working donkeys.

Methods In November 2018, 148 donkeys owned by 48 owners were examined, and data were collected.

Results The study revealed that one or more wounds were present in 56.1% of the population and yoke-related, dorsal neck wounds comprised 79.5% of these. These wounds ranged in surface area from 1 cm² to 300 cm². Clinically, 96.6% of all wound types were superficial and the majority of these (51.1%) were granulating.

Conclusion These data will enable the future evaluation of targeted interventions aimed at reducing the prevalence of these specific wounds.

Working equids are an essential source of transport and power in many developing countries and provide a vital contribution to rural economies. Welfare issues are associated with poor resources and lack of understanding of basic husbandry, and manifest commonly as overloading, overworking, inappropriate handling and lack of access to basic veterinary care. Furthermore, harness-related wounds are a common and important contributor to poor welfare in these animals. There are estimated to be 3000 working donkeys in the Bukombe district of Tanzania (R Itaba, personal communication), which is situated in the northwest of the country. These donkeys primarily transport loads comprising bricks, sand, logs and other materials and are heavily relied on as a direct source of income generation (R Itaba, personal communication). Oxen were originally the working animal of choice in this region. In more recent times, donkeys have replaced oxen, with the community still using the original, heavy, ox-yoke carts; this is in contrast to some other countries where more appropriate harness methods are used.

As part of a larger research project on donkey welfare, which also included owner demographics and attitudes towards their donkeys, conducted by the Worldwide Veterinary Service (WVS) and Tanzania Humane Charity, this paper aims to evaluate the prevalence and nature of wounds in working donkeys in the Bukombe district.

Within a 2-week period in November 2018, data were collected on the current health and welfare status of the donkeys in 8 of the 17 wards in Bukombe. Nearby locations where donkey worked daily were visited. Owners were approached and invited to participate in the survey. The working conditions and welfare status of each donkey were assessed using a number of animal-based measures based on a previously published protocol. In addition, skin wounds were assessed, described and recorded as reported previously by Rayner et al. A skin wound was defined by the authors as “an injury to the skin which has resulted from a physical event, which
causes compromise of, and disruption to, the skin, and may involve underlying subcutaneous and deep tissues”. Skin wounds were assessed by location, cause, dimensions, severity and clinical status of each wound. A smartphone app, designed by the WVS charity for data collection in field conditions, was used to enter data at the time of assessment. Owners remained with their animals during the assessment.

A total of 148 donkeys owned by 45 owners were included. All owners who were approached agreed to participate in the survey. The majority were adults (over 3 years) (93.0%), stallions (75.7%) and employed primarily to transport bricks from the kilns (93.9%). Working conditions varied by season; at the time of the survey, the rainy season resulted in reduced working hours, with the majority of donkeys working between 3 and 5 hours per day (82.2%) for 3–5 days a week (73.3%).

Examples of oxen-yoke carts and typical wounds observed on the necks of the working donkeys are shown in figure 1.

One or more wounds were present in 56.1% of the sample population and wounds on the dorsal neck resulting from the use of ox-yoke carts comprised 79.5% of these (figure 2). Yoke-related neck wounds ranged in surface area from 1 cm² to 300 cm² (median 9 cm²). Clinically, 96.6% of all wound types were superficial (defined as involving the skin and subcutaneous tissue only). Those involving muscle and other deep tissue amounted to 3.4%. The majority were granulating (51.1%) (this included exuberant tissue) while 35% were exudative. Bleeding or necrotic wounds, or fibrosis (scarring), were observed rarely (2% each). Many owners attempted to treat the yoke-related neck wounds by applying local 'remedies', for example, engine oil, which was considered to have lubricating and protective properties.

Donkeys play an important role in socioeconomic factors of the local population in Tanzania; however, data reporting on their welfare status are limited. There are a number of reports in the literature describing the prevalence of skin wounds and other welfare issues among working donkeys globally, with a number focusing specifically on skin wounds either in the field or under experimental conditions.

Much of the research on working donkey welfare has been focused in Ethiopia with prevalence of wounds varying between 37.9% and 79.4% [4, 6, 15, 17, 21–23]; our findings on wound prevalence in this population of working donkeys concur with these values. Yoke carts are traditionally used in oxen where the anatomy and strength of this species facilitate the ‘driving’ forward the weight of a load with the yoke held in place by the dorsal hump. By contrast, the yoke is mobile along the length of the neck of the donkey, and its weight, along with the constant pressure and movement, causes wounds. Wound healing is further hindered by a lack of basic wound care, ineffective local remedies and the necessity to continue to work donkeys daily for direct income generation. This likely results in a reduction in the working performance of donkeys and a negative impact on the local economy. Interventions are urgently needed to improve the welfare of these working equines currently suffering from chronic pain, including exploring the drivers and constraints present within the community for replacing these current ox-yoke carts for more appropriate, harness versions. It is likely that a combination of lack of awareness by owners of alternative harness cart options, as well as financial constraints, plays a role in maintaining the presence of the current ox-yoke carts, but further investigations are needed.

It is recognised that the method of recruitment of owners may have resulted in the introduction of biases into the sample population; the busy and often chaotic nature of the working locations visited precluded the ability to recruit owners randomly; in addition, donkeys that were absent from these locations were not included in the sample. Nevertheless, these data are important in highlighting the high prevalence of neck wounds in working donkeys resulting from the inappropriate use of yoke carts in this region of Tanzania. These baseline data will enable future evaluations of targeted interventions aimed at reducing the prevalence of these specific wounds.
Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Ethics approval The study was approved by the University of Edinburgh’s ethical review committee (ref 14.19).

Data availability statement All data relevant to the study are included in the article.

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References
1. FAO 2014. The role, impact and welfare of working (traction and transport) animals. Animal Production and Health Report [Internet], 2014. Available: http://www.fao.org/3/a-1381e.pdf [Accessed 16 Jul 2019].
2. Rahman SA, Reed KC. 197–202 of the World Organisation for Animal Health Animal Welfare Working Group, 123, 7th B Main Road [Internet]. Vol. 33, Rev sci. tech. Off. int. Epiz. Blackfriars Road, 2014. Available: https://doc.ox.int/eam/resource/directMedia/KqDo3sTXNDiJuB9U7996c5dyP1P4.jsessionid=9d5e99599c4835028f5623a44818binaryFieldId=116678cid=1532 [Accessed 16 Jul 2019].
3. Burn CC, Dennison TL, Whay HR. Environmental and demographic risk factors for poor welfare in working horses, donkeys and mules in developing countries, 2010. Available: https://ac-eiscdn-com.ezproxy.is.ed.ac.uk/S1090023109003815/ 1-s2.0-S1090023109003815-main.pdf?_tid=a5a1bf65-1e52-4fcd-be46-0941ba9f71a6&acdnat=1446666870_e0df89764119985c0268f9062ed6c25 [Accessed 7 Jan 2019].
4. Pritchard JC, Lindberg AC, Main DCJ, et al. Assessment of the welfare of working horses, mules, donkeys, and working equines in developing countries. Prev Vet Med 2005;69:265–83.
5. Sellis PD, Pinchbeck G, Mezzane H, et al. Pack wounds of donkeys and mules in the Northern High Atlas and lowlands of Morocco. Equine Vet J 2010;42:219–26.
6. Biffa D, Woldemeskel M. Causes and factors associated with occurrence of external injuries in working equines in Ethiopia. J Appl Res Vet Med 2006;4:1–7.
7. Swann WJ. Improving the welfare of working equine animals in developing countries. Appl Anim Behav Sci 2006;100:148–51.
8. Kumar N, Fisseha KK, Shishay N, et al. Welfare assessment of working donkeys in Mekelle City, Ethiopia. Glob Vet Int 2014;12:314–9.
9. Sánchez-Casanova RE, Masri-Daba M, Alonso-Díaz MIGUEL ÁNGEL, et al. Prevalence of cutaneous pathological conditions and factors associated with the presence of skin wounds in working equids in tropical regions of Veracruz, Mexico. Trop Anim Health Prod 2014;46:555–61.
10. Pearson RA, Simalanga TE, Kreecek RC. Harnessing and hitching donkeys, mules and horses for work [Internet], 2003. Available: www.thedonkeysanctuary.org.uk/sites/uk/files/2017-11/the-good-harness-guide-october-2017.pdf [Accessed cited 2019 Jan 30].
11. Garrett C. The Good Harness Guide [Internet]. Available: https://www. thedonkeysanctuary.org.uk/sites/uk/files/2017-11/the-good-harness-guide-october-2017.pdf [Accessed cited 2019 Jan 30].
12. McLean AK, Heleski CR, Yokoyama MT, et al. Improving working donkey (Equus asinus) welfare and management in Mali, West Africa. J Vet Behav 2012;7:123–34.
13. de Aluja AS. The welfare of working equids in Mexico. Appl Anim Behav Sci 1998;59:19–29.
14. AWIN. AWIN welfare assessment protocol for donkeys, 2015.
15. Rayner EL, Anikikala-Oetre I, Susheela A, et al. Prevalence of mutilations and other skin wounds in working donkeys in Tamil Nadu, India. Vet Rec 2018;183.
16. Fielding D, Starkey P. Donkeys, people and development: a resource book of the Animal Traction Network for Eastern and Southern Africa (ATNESA) [Internet]. Technical Centre for Agricultural and Rural Cooperation (CTA), 2004. Available: https://www.lrrd. cipav.org.co/lrrd20/5/20067.htm [Accessed 28 Jan 2019].
17. Burn CC, Pritchard JC, Farajat M, et al. Risk factors for strap-related lesions in working donkeys at the world heritage site of Petra in Jordan. Vet J 2008;178:263–71.
18. Fshahye S, Kumar N, Kebede E, et al. Health and welfare assessment of working donkeys in and around RamA town, Tigray, Ethiopia. Ethip Vetr 2018;22:26–39.
19. Biswas P, Dutt T, Patel M, et al. Assessment of pack animal welfare in and around Bareilly city of India. Vet World 2013;6:332–6.
20. Wells D, Kreeck RC. Socioeconomic, health and management aspects of working donkeys in Maretete 1, North West Province, South Africa. J S Afr Vet Assoc 2001;72:37–43.
21. Genetu H, Yohannes G, Abdela N, et al. Prevalence of wounds and associated risk factors in working equines in Jimma town of Gromia region, south-western Ethiopia. Acad Anim Dis 2017;6:23–9.
22. Abdela N, Teshome E, Hassan A, et al. Prevalence and associated risk factors of equine wound in and around Asella town, South Eastern Ethiopia. J Vet Med Anim Health 2017;9:63–71.
23. Villalva Solá MVZMA, McClure JJ. Management of traumatic fistulous withers and wounds of the lumbar dorsal spinous processes of horses and donkeys used for pack animals. J Equine Vet Sci 1997;17:43–5.
24. Azani O, Molan MM, Hojabin R. Differences in second-intention wound healing of distal aspect of the limb between Caipian miniature horses and donkeys: macroscopical aspects. Comp Clin Path 2012;21:731–5.
25. Hamed MA, Abouelnasr KS, El-Adl I, et al. Effectiveness of allogeneic platelet-rich fibrin on second-intention wound healing of experimental skin defect in distal limb in donkeys (Equus asinus). J Equine Vet Sci 2019;73:131–8.
26. Semieka MA, Ali MM, Khafar SA, et al. Comparative study of the therapeutic effect of Panthenol gel and Mebo ointment on metacarpal wound healing in donkeys. J Equine Vet Sci 2019;74:21–7.
27. Ashinde A, Gashaw A, Abdela N. Health and welfare status of donkeys in and around Hawassa town, Southern Ethiopia. J Vet Med Anim Health 2017;9:300–12.