WELFARE ASSESSMENT OF WORKING DONKEYS: ASSESSMENT OF THE IMPACT OF AN ANIMAL HEALTHCARE PROJECT IN WEST KENYA

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Development agencies and animal welfare charities try to improve the health and welfare of livestock in the developing world by educating owners and providing healthcare. The impact assessment of these projects relies mainly upon input-related parameters (eg number of animals treated or educational lectures delivered). The aim of this study was to investigate whether animal-based parameters, such as scores for skin lesions, body condition and lameness, could be used to assess the impact of interventions by development agencies on working donkeys. A general checklist for integument assessment of livestock, developed and then tested on two British farms, was redefined for assessment of equine animals in West Kenya. In total, 346 donkeys were assessed over four days with a mobile clinic of the Kenyan Society for the Protection and Care of Animals, using 25 animal-based parameters. The checklist was easy to use: the parameters could be scored using visual assessment or palpation, and the procedure was completed in approximately 5 min per animal. The method was found to be acceptable for owners and animal health technicians, and no special equipment was required. Significant observations included a reduced frequency of leg lesions when head-tethering (as opposed to leg-tethering) was used, and a reduced frequency of foot lesions in regions previously visited by the charity. This animal-based method proved that the charity had made a positive impact on donkey welfare through owner education.

Keywords: *animal welfare, development intervention, donkey, impact assessment*

Introduction

Animal welfare assessment using animal-based parameters is based on the statement of Ekesbo (1984), that: "the integument is the border line between the animal and its environment and that the extent of lesions and alterations on the skin reflects the quality of the animal's physical and social environment" (Gloor & Dolf 1985; Koning 1985). Several clinical parameters widely used by veterinarians to assess the health status of animals were included in this study. These 'outputs' can reflect the quality and quantity of the following 'inputs' (Troxler 1998): behaviour (eg fighting causes lesions on the skin); environment (eg dehydration causes loss of skin elasticity, intense sun causes sunburn, ill-fitting or poor quality harness causes skin lesions); owner/stockmanship (eg provision of inadequate quality or quantity of food or resting time causes poor body condition); and infectious diseases and ectoparasites (eg cause pale mucous membranes or hair loss).

A literature review carried out for the Department for International Development (DFID) (Bazeley *et al* 2001) showed that in most animal healthcare interventions, input-based parameters are used for assessment of the impact of the interventions; such parameters include the numbers of treated animals, delivered vaccines or educational sessions. However, it was concluded that changes of the health status of animals are more appropriately identified by animal-based assessment of welfare outcomes (Gloor & Dolf 1985; Leeb *et al* 2001; Whay *et al* 2003). Such an animal-based assessment method could be used to monitor disease for epidemiological studies or to ensure certain welfare standards for export into Europe. It could also be used to assess the impact of a development intervention in order to justify the program or to adapt the program to changing situations. The assessment method should be easy to use for non-veterinarians, useful under field conditions and require no expensive equipment. It must be acceptable to the animals' owners and to the animal health workers, and therefore should not involve invasive methods such as blood sampling.

Animals and methods

Donkeys were used as an example of a development agency's animal health and welfare intervention project. In Kenya, a mobile clinic team of the Kenyan Society for the Protection and Care of Animals (KSPCA) was accompanied for four days to seven different locations in Uyoma, a peninsula in Lake Victoria (220 km^2, 60 000 people). Animal health technicians visit various locations twice per year to educate donkey owners about the use of adequate harnesses and to demonstrate good practice with regard to hoof care and trimming. They have introduced head tethers to replace the traditional leg tethers, and they treat skin lesions caused by inadequate harness or tethering. Ivermectin is given to all donkeys to treat endoparasites and ectoparasites, and teeth are rasped if necessary. Donkey owners arrive with two or three donkeys.

In the current study, welfare assessments were made of 346 animals during the normal treatment of more than 600 animals. The same two people carried out all of the assessments, and animals were chosen randomly. Some animal details were recorded to enable the comparison of particular diseases, welfare problems, or owners' attitudes in different types of animal. The animals then underwent a brief examination from head to foot. Most parameters were assessed by visual assessment only, but handling was essential to examine the mucous membranes. If sufficient time was available, the teeth were inspected and palpated for dental abnormalities. Each animal was assessed for overall coat condition, lameness, leg and foot lesions, hoof overgrowth, hair loss and soiling, faecal soiling under the tail and the presence of ticks under the mane. Body condition scoring (BCS) was carried out using a five-point scale. The tethering method (head or leg) was recorded. The decision to assess frequency of leg lesions and to use a five-point scale to assess body condition was made after Day 1, when it was concluded that these were not adequately addressed in the draft method. Data analysis was carried out using SPSS 4.0 for Windows. Non-parametric methods (Kruskall-Wallis) were used to compare animals in different locations, and $P < 0.05$ was chosen as the level for significance.

Results

In the category of age class, 2.9% of the donkeys were recorded as neonatal (less than four weeks old), 30.6% as young (not at mature body size) and 66.5% as adult (mature body size). The proportion of stallions was 15%, geldings 19.7%, mares 41.6% and pregnant mares 23.4%. The colour was always grey. Tables 1 and 2 show the findings for donkeys in locations that had been visited previously by KSPCA and for donkeys in locations that had not been visited previously.

Table 1   **Prevalence (%) of animal-based conditions in locations visited previously (n = 173) and not visited previously (n = 89). *P < 0.05, significant difference between animals in locations visited previously and not visited previously.**

Location	Visited previously	Not visited previously
Obviously sick	1.7	3.4
Hair loss	2.3	2.2
Dung/mud soiling	9.8	7.9
Diarrhoea under tail	1.2	0.0
Hoof lesions	1.2	0.0
Hooves overgrown	25.6*	38.2*
Respiration abnormal	0.6	0.0
Eyes discharge	1.7	2.2
Nose discharge	0.6	0.0
Pale mucous membranes	26.5	26.4
Teeth abnormal	3.0	5.7

Table 2   **Prevalence (%) of animal-based conditions with various levels of severity in locations visited previously (V; n = 173) and not visited previously (NV; n = 89). *P < 0.05, significant difference between animals in locations visited previously and not visited previously.**

Severity score	0		1		2		3		4	
Location	V	NV	V	NV	V	NV	V	NV	V	NV
Body condition score *(1, 2, 3, 4 or 5)*	—	—	1.2	3.4	36.4	43.8	54.3	46.1	8.1	6.7
Coat condition *(0=glossy, 1=average, 2=dull)*	13.3	9.0	59.0	61.8	27.7	29.2	—	—	—	—
Ectoparasites *(0=none, 1=moderate, 2=severe)*	24.0*	37.1*	59.1*	49.4*	17.0*	13.5*	—	—	—	—
Lameness *(0=none, 1=mild, 2=severe)*	98.8	97.8	0.6	2.2	0.6	0.0	—	—	—	—
Body sores *(0=none, 1=moderate, 2=severe)*	59.4	48.3	35.9	43.8	4.7	7.9	—	—	—	—
Injuries *(0=none, 1=moderate, 2=severe)*	84.4	89.7	12.6	9.2	3.0	1.1	—	—	—	—
Head/foot tether *(0=head, 1=foot, 2=no tether)*	30.6*	3.4*	48.0*	80.9*	21.4*	15.7*	—	—	—	—
Leg lesions *(0=none, 1=moderate, 2=severe)*	30.1*	14.5*	67.5*	72.3*	2.4*	13.3*	—	—	—	—

Adult donkeys showed a wide distribution of BCS, and young animals were below the average (Figure 1), the difference between age classes being significant ($P = 0.002$). There was no significant difference of BCS between locations visited previously and not visited previously ($P = 0.1$).

Over 25% of animals showed pale mucous membranes, an indication of anaemia. There was no difference between donkeys in locations previously visited and not previously visited. Only five animals were mildly lame and one severely lame. Hoof lesions visible without picking up the foot were seen on only two donkeys. On average, 25% had overgrown hooves and 77.7% had moderate or severe lesions on the legs. In previously visited locations, significantly fewer animals had overgrown hooves (Table 1). Figure 2 shows the significant reduction of severe leg lesions in locations previously visited by the KSPCA, reflecting the increased use of head tethers ($P < 0.000$).
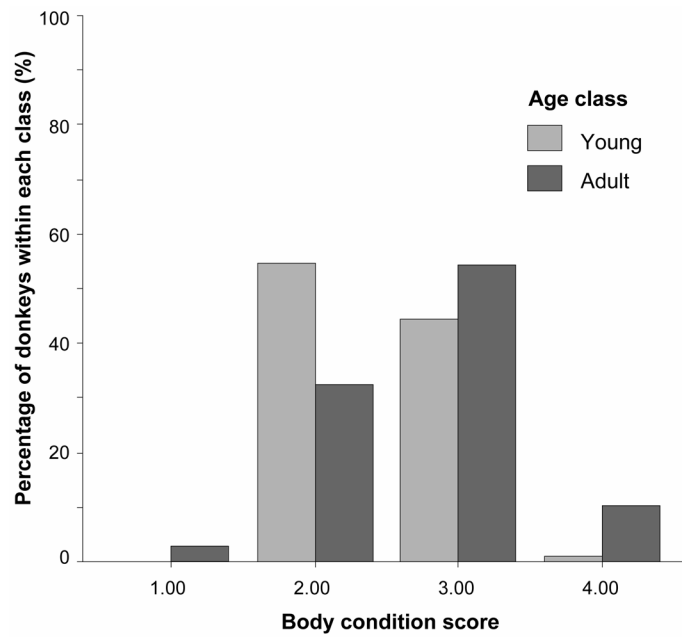
Figure 1 **Body condition scores of donkeys in different age classes (young, n = 88; adult, n = 166).**
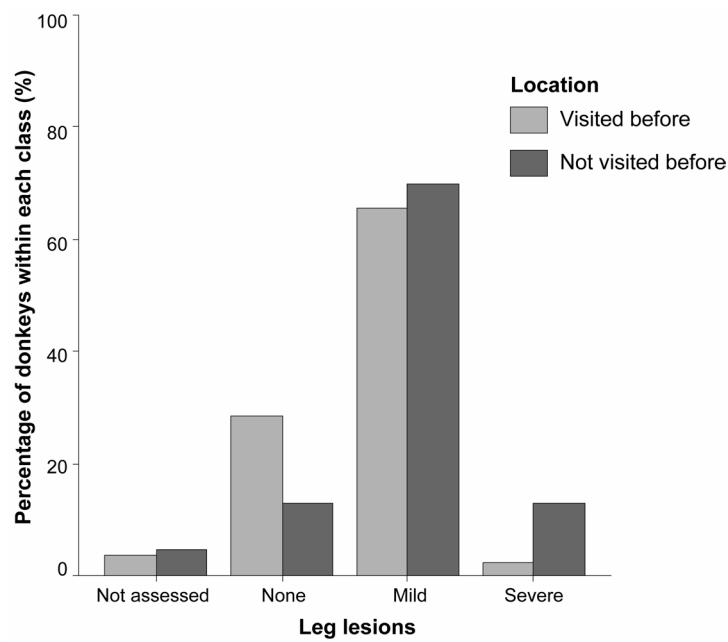

Figure 2 **Leg lesions of donkeys in locations previously visited (n = 162) and not previously visited (n = 82).**

To ensure practicability in the field, all 22 animal-based parameters used were assessed for:

1) Duration of assessment

< 5 s: age, colour, obviously sick, BCS, coat condition, soiling, diarrhoea, overgrown hooves, respiration, ocular discharge, nasal discharge, type of tether;
5–10 s: gender, hair loss, ectoparasites, lameness, hoof lesions, body sores, mucous membranes, injuries, leg lesions;
> 10 s: teeth.

2) Ease of assessment

Easy (assessed visually from a distance of 1 m): age, colour, obviously sick, BCS, coat condition, soiling, diarrhoea, overgrown hooves, respiration, ocular discharge, nasal discharge, hair loss, lameness, hoof lesions, injuries, leg lesions, type of tether;
Moderate (requires palpation or questioning of owner): ectoparasites, body sores, mucous membranes, gender;
Difficult (more than simple palpation, requiring prolonged physical contact): teeth.

3) Acceptability to owner and technicians (acceptable/not acceptable)

All assessments were acceptable.

Discussion

The BCS of most adult animals was average or above average, indicating that internal parasites are not causing severe problems in this age group. Young donkeys' BCS was lower, on average, and a proportion of adults were in poor body condition. There are a variety of possible reasons for this. Although owners believed that worming had made a difference to the BCS of their animals, there was no significant difference between animals in locations previously visited by the KSPCA and in locations not previously visited. Assessment of a greater number of animals and at different seasons would be necessary to draw significant conclusions. The clinical significance of pale mucous membranes is difficult to interpret, since this did not appear to be linked with other signs of disease.

The reduction in leg lesions and increased use of head collars suggests a successful strategy of owner education and promotion of head tethers but a requirement for further work. The future monitoring of skin lesions on the head is necessary to ensure adequate use of head tethers. The reduction in overgrown hoofs in previously visited locations also reveals the impact of the KSPCA. On the other hand, the frequency of ectoparasites was higher in previously visited locations. This may be because animals have been re-infested soon after treatment, and it may also reflect differences in vegetation in different areas.

The selected parameters were practical under field conditions, although inspection of the teeth took more time and handling. Some parameters were used in a very simple way because of the time constraints, but these could also be carried out in more detail in order to assess particular health aspects such as lameness or skin lesions.

Conclusions and animal welfare implications

The checklist was very useful and worked well under these conditions. The KSPCA had made a difference to the donkeys and their owners in Uyoma regarding method of tethering, leg lesions and overgrown hooves. There were no significant improvements in BCS or ectoparasite burdens as a result of treatment with Ivermectin. Further investigations are underway to ensure repeatability of the checklist, and to assess more donkeys and other

equines at the same location and in different locations, and in locations where the animals are used in different ways. Future use of a participatory rural appraisal technique to collect information about inputs (eg food, housing) and human attitudes toward their animals will be investigated.

Acknowledgements

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