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WELFARE ASSESSMENT OF PACK DONKEYS IN AMARU, ZARIA ANCIENT CITY, KADUNA STATE, NIGERIA

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ABSTRACT

Donkey welfare is becoming a subject of much interest; for decades, people around the world have voiced rising worry about it. There are no studies on donkey welfare in Nigeria. This study aimed to assess the welfare state of donkeys in Amaru, Zaria Ancient City, Kaduna State, Nigeria. A cross-sectional study was done to purposefully select 38 pack donkeys for welfare assessment based on the first level of the Animal Welfare Indicators (AWIN) for donkeys, which covered behaviour, health, feeding, and environment and housing. Information regarding age and sex was collected. The analysed data were reported in terms of frequencies and percentages. The prevalence of donkeys with no social contact, avoidance behaviour, and walking downside was 2.6 %, 5.36 %, and 40.56 %, respectively. The most common health problems are integumentary alterations, which include an unhealthy hair coat (86.8 %), skin lesions (86.6 %), alopecia (60.5 %), and deep wounds (47.4 %). Only 5.3 % of the donkeys were lame. Around 42 % had a body condition score of 2 (moderate), while the remaining 57.9 % had a body condition score of 3 (ideal). The donkeys were poorly kept and housed, as evidenced by the high prevalence of unsatisfactory shelter dimensions (100 %), dirty bedding (89.5 %), and insufficient bedding (89.5 %). The current study found that welfare issues are serious challenges for donkeys in Amaru, Zaria Ancient City, Kaduna State, Nigeria. As a consequence of the current findings, it is recommended that donkey welfare, policies and legislative frameworks that support animal welfare and inspect animal facilities in Nigeria should to be reviewed and enforced.

Key words: pack donkey; skin lesions; welfare assessment

INTRODUCTION

Donkeys (*Equus asinus*), the first member of the Equidae family to be domesticated [27], are a cornerstone of human existence and have played a significant part in many economic activities throughout history. The global donkey population is estimated to be over 44 million, with half found in Asia, slightly more than a quarter in Africa, and the remainder primarily in Latin America [13].

Nigeria has a sizable donkey population (800,000) [18]. The cross-border movement of pastoral Fulani from Niger, Chad, Mali, Burkina Faso, and Cameroon has resulted in an increase in the donkey population in Nigeria [4]. There are

more donkeys in Nigeria's northern states. This is due to the savannah vegetation and the scarcity of disease vectors such as tsetse flies. Every year, around 16,000 donkeys are transported from the country's northern states to the southern states for meat production [4, 28].

Despite global mechanisation, working donkeys are still well deserving of the moniker "beasts of burden" in many developing countries, including Nigeria. They serve a crucial role in the transportation of people and commodities in arid and semi-arid areas where roads are inadequate or non-existent [15]. Approximately 95% of the world's donkey population is used for domestic labour in developing countries, as well as responsibilities related to transportation, agriculture, and various industries (e. g. construction) [12].

Animal welfare protection in Nigeria is faced with the following challenges: (1) the absence of laws to reflect true animal welfare; (2) outdated and low sanctions for those that violate the laws; and (3) lack of enforcement of these sanctions. These challenges have affected the welfare of animals, including donkeys. Despite donkeys' important contributions, they are assigned poor status in Nigeria and are hence the most neglected animals. Even some professionals, according to Dr. Philip Mshelia of Nigeria, do not treat donkeys ethically [11]. This resulted in a slew of welfare issues, including inaccessible water, feed, and shelter at work sites, as well as multiple skin lesions. Some methods of bobbling to restrain donkeys cause discomfort and inflict wounds [1]. Long-distance hauling without adequate padding and overloading causes donkeys to sustain external traumatic injuries. This abuse, mistreatment, and lack of veterinary care for donkeys have greatly contributed to their premature deaths, with the majority of them today having a working life expectancy of 4 to 6 years. However, in nations where animal welfare is practised, donkeys can live for up to 30 years [14].

According to research, working donkeys suffer from animal welfare issues such as gait abnormalities, joint swelling, broken skin, deep lesions, and dental difficulties [7, 16]. When their health deteriorates to the point where they are unable to work, they are frequently abandoned and left to die [28]. Donkey welfare is now a trending topic; for centuries, nations all over the world, including Nigeria, have expressed growing concern about it. The welfare status of donkeys in Nigeria has not been investigated.

The aim of the present study was to assess the pack donkey welfare state in Amaru, Zaria Ancient City, Kaduna State, Nigeria.

MATERIALS AND METHODS

Study area

The study was carried out in Amaru, Zaria Ancient City, Kaduna State, Nigeria. Zaria is a major city and a local government area in Kaduna State, Nigeria. It was once known as Zazzau and is one of the original seven Hausa city-states (Hausa Bakwai). Zaria is known to have a high number of local horses due to the presence of an emirate council located in the ancient city of Zaria, as well as donkeys for work. Zaria Local Government Ares (LGA) has a population of 736,000 people (according to the 2006 census). It is situated at 11°3' north latitude and 7°42' east longitude of the Greenwich meridian. It has a wet season lasting from April to September and a dry season from October to March.

Study design and sampling procedure

A cross sectional study was conducted. The places selected were based on donkey accessibility and population. A total of 38 pack donkeys were purposefully selected for this study.

Data collection

All of the pack donkeys sampled were stallions, ranging in age from 2 to 13 years. Donkeys were housed in groups in various families and worked up to six days a week, with working hours ranging from five to more than seven hours. For each pack donkey, a welfare assessment was made based on the first level of the Animal Welfare Indicators (AWIN) for donkeys [22]. The protocol included various questions, covering all aspects of feeding, health, behaviour, and environment and housing. Three (3) experienced veterinarians conducted the welfare assessment after the researchers developed a procedure to prevent inter-observer variance.

Welfare assessment based on behaviour

Donkey social interaction was assessed by observing the donkey's habitual environment and noting whether the donkey is housed with other donkeys or on its own. Access to other donkeys was noted while they were kept

alone. Donkeys that were segregated from other donkeys and had no physical contact with any other donkeys were considered to have no social contact; however, donkeys that were housed with other donkeys or that could have physical contact with other donkeys if housed alone were considered to have social contact.

Three tests were used to evaluate the human-animal relationship [22]:

a) The avoidance distance was measured by stepping three metres away from the donkey with the arm slightly lifted. When approaching the animal, if he attempted to move away, this was labelled avoidance behaviour.
b) Walking down side was the test in which the assessor was on the side of the donkey and softly placed his hand in the withers before calmly walking down the side of the animal. If the donkey tried to flee or kick, it was deemed a negative reaction.
c) Tail tuck was evaluated alongside the previous test; if the animal tucked its tail, it was considered present.

Welfare assessment based on health

The presence of skin alterations was noted and classified into four types: alopecia, skin lesions, deep wounds, and swelling. Donkeys were examined for swollen joints. Lameness was investigated: (1) by observing the animal's resting posture; (2) by watching the animal walk straight ahead. The assessment also included questioning the owners about whether the animals showed signs of lameness while working or afterward. Prolapses were assessed visually by examining the anus and vulva/penis. Nose, ocular, and vulva/penis discharges were graded as absent or present. The condition of the hair coat was checked across the body, taking extra care not to confuse a changing coat due to the changing season with a bad coat. Faecal soiling was assessed by observation of the hindlimbs. Hoof neglect was also examined by checking for signs such as severely overgrown hooves, toes backed up, and severe hoof cracks.

Welfare assessment based on feeding

The body condition score was evaluated by both observation and palpation, as described by The Donkey Sanctuary [33]. It was scored from 1 to 5. Body sites like the neck, ribs, rump, and hindquarters were carefully evaluated. Prominent bones were considered a sign of low BCS, being highly noticeable in animals with a score of 1, unlike an animal with a score of 5, in which no bone protuberances were felt and many fat deposits could be found. Donkeys with BCS of 1, 2, 3, 4, and 5 were regarded as poor, moderate, ideal, fat, and obese, respectively. The availability of drinking water was assessed based on the following: type of water points and cleanliness of water points. The types of water points were classified into no water point, trough, and automatic drinkers. The cleanliness of water points was classified into three categories: dirty, partially dirty, and clean.

Welfare assessment based on environment and housing

The environment and housing were assessed by taking into consideration bedding cleanliness, bedding quantity, shelter dimension, and signs of thermal stress. Bedding quantity was classified into no bedding, insufficient bedding (floor area not covered by the bedding is visible), and sufficient bedding. Bedding cleanliness was classified into dirty (wet and with the presence of overstayed faeces) and clean. Shelter was classified as satisfactory or not satisfactory, as described by M i n e r o et al. [22]. Regarding signs of thermal stress, donkeys were examined for a minute for the following signs: increased respiratory rate, flared nostrils, increased respiratory depth with head movement, sweating, apathy, and sunburn. Donkeys with more than three (3) of these signs were regarded as having signs of thermal stress [22].

Data analysis

All the data were entered in a Microsoft Excel spreadsheet (2019), and analysis was done using the Statistical Package for Social Sciences (SPSS®, version 26). The analysed data was reported in terms of percentages and frequencies.

Ethical approval

Ethical approval for the research was obtained from the Ahmadu Bello University Committee on Animal Use and Care (ABUCAUC) with the approval number ABUCAUC/2022/043.

RESULTS

Age summary of pack donkeys assessed

A welfare assessment was carried out on 38 donkeys, with the youngest donkey being 2 years old (5.3%) and the oldest being 13 years old (2.6%). Most of the donkeys were between 5 and 9 years old (18.4%) (Table 1).

Welfare assessment based on behaviour

In terms of social interaction, 97.4% (37/38) had social contact, while only 2.6% (1/38) had no social contact (Fig. 1). Regarding avoidance distance, 94.7% (36/38) had no avoidance, while 5.3% (2/38) had avoidance behaviour. Out of the 38 donkeys, 15 (40.5%) were walking downside while 22 (59.5%) were not. The tail tuck was absent in all the donkeys in this study (Table 2).

Welfare assessment based on health

Out of the 38 pack donkeys assessed, none had swollen joints, discharge from the penis, or rectal prolapse. Ten (26.3%) of the 38 pack donkeys assessed had their hooves neglected by the owners, while the remaining 28 (73.7%) did not have their hooves neglected. Out of the 38 packed donkeys, 86.8% (33/38) had unhealthy hair coat conditions (the coat was extremely dirty, lacklustre, and had small hairless spots), while the remaining 13.2% (5/38) had healthy hair coat conditions. Regarding alopecia, 60.5% (23/38) had alopecia, while the remaining 39.5% (15/38) did not have alopecia. Regarding skin lesions, 86.8% (33/38) had skin lesions, while the remaining

Table 1. Age summary of pack donkeys assessed in Amaru, Zaria Ancient City, Kaduna State, Nigeria (n = 38)

Age [Years]	Frequency	Percentage [%]
2	2	5.30
3	1	2.60
4	3	7.90
5	7	18.40
5.50	1	2.60
6	2	5.30
7	3	7.90
7	1	2.60
7.50	1	2.60
8	2	5.30
9	7	18.40
10	4	10.50
11	2	5.30
12	1	2.60
13	1	2.60
Total	**38**	**100**

Table 2. Pack donkeys' social interaction and human-animal relationships in Amaru, Zaria Ancient City, Kaduna State, Nigeria (n = 38)

Welfare indicators	No	Yes
Social interaction		
Social contact	1 (2.6 %)	37 (97.4 %)
Human-animal relation		
Avoidance distance	36 (94.7 %)	2 (5.3 %)
Walking downside	22 (59.5 %)	15 (40.5 %)
Tail tuck	38 (100 %)	0

Table 3. Assessment of pack donkeys' health problems in Amaru, Zaria Ancient City, Kaduna State, Nigeria (N = 38)

Welfare indicators	No. of donkeys positive	Prevalence [%]
Hoof neglect	10	26.3
Unhealthy hair coat	33	86.8
Alopecia	23	60.5
Skin lesion	33	86.8
Deep wound	18	47.4
Swelling	8	21.1
Nasal discharge	2	5.3
Ocular discharge	7	18.4
Faecal soiling	3	7.9
Lameness	2	5.3
Swollen joint	0	0
Discharge from penis	0	0
Rectal prolapse	0	0

Fig. 1. Donkey with no social contact

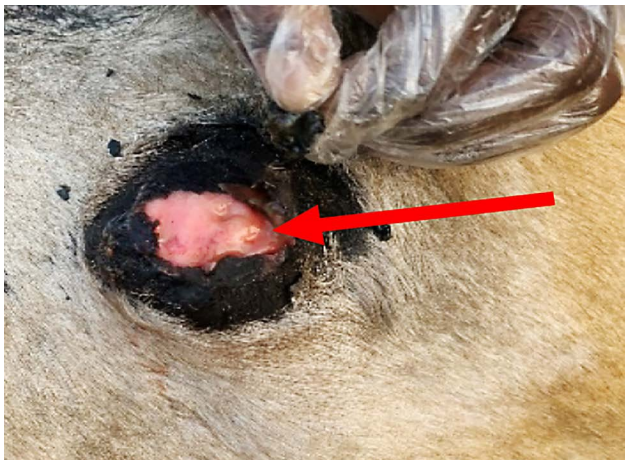

Fig. 2. Wound at the point of the hip (red arrow)

Fig. 3. Back wound (black arrow)

Fig. 4. Wound at the base of the tail (black arrow)

Fig. 5. Swelling on the neck region (black arrow)

Fig. 6. Unsatisfactory shelter dimension for 7 donkeys with insufficient bedding (red arrow)

13.2% (5/38) did not have skin lesions. Regarding deep wounds, 47.4% (18/38) had a deep wound (Figs. 2, 3, and 4), while the remaining 52.6% (20/38) did not have a deep wound. Regarding swellings, 21.1% (8/38) had swelling (Fig. 5), while the remaining 78.9% (30/38) did not have swelling. Out of the 38 packed donkeys, 2 (5.3%) had nasal discharge, while the remaining 36 (94.7%) did not. Out of the 38 packed donkeys, 7 (18.4%) had ocular discharge, and the remaining 31 (81.6%) did not have ocular discharge. Faecal soiling was absent in 92.1% (35/38) of the donkeys, while faecal soiling was present in the remaining 7.9% (3/38). Out of the 38 pack donkeys, 2 (5.3%) were lame, and the remaining 36 (94.7 %) were not lame (Table 3).

Welfare assessment based on feeding

Of the 38 pack donkeys assessed, 16 (42.1%) had a body condition score of 2 (moderate), while the remaining 22 (57.9%) had a body condition score of 3 (ideal). Out of the 38 pack donkeys assessed, 25 (65.8%) had no access to water points, and 13 (34.2%) had access to a water trough. Non had access to automatic drinkers. Regarding the cleanliness of water points, all had partially dirty water points.

Welfare assessment based on environment and housing

The shelter dimensions of all the donkeys (38; 100%) were not satisfactory (Fig. 6). Regarding bedding cleanliness, 89.5% (34/38) were dirty, while 10.5% (4/38) were clean. In terms of bedding quantity, out of the 38 packed donkeys assessed, 4 (10.5%) were housed with no bedding, while the remaining 34 (89.5%) were housed with insufficient bedding (Fig. 6). Signs of thermal stress were present in 94.7% (36/38) of the donkeys and absent in the remaining 5.3% (2/38).

DISCUSSION

The 38 pack donkeys evaluated were all stallions. Similar findings were reported in studies conducted in other developing countries, where the bulk of the donkeys used for work were stallions [15, 16, 31]. This clear-cut 100% of stallions might be connected to their purpose as working animals, as aggression and strength are more likely to be found in stallions. However, contradictory results were discovered in other studies conducted in Europe, where there was likewise a clear preponderance of females, followed by geldings [10, 26].

The donkeys in the present study ranged in age from 2 to 13 years. This shows that the donkeys are mature and capable of working and reproducing [16]. Several more studies have reported ages ranging from 3 to 13 years [15, 20, 32]. The most common ages of donkeys assessed in this study were 5 and 9 years old, which is similar to M o h a m e d et al. [23].

Because how an animal is handled has a direct impact on its welfare, assessing human-animal interactions is critical [17]. There was a low prevalence of avoidance behaviour in the present study. This is comparable to study by K u m a r et al. [16] work but different from that by C r u z [9]. Various authors described this behaviour as a result of the owner's improper handling [29]. However, it is also crucial to note that the tests were carried out by someone unfamiliar with the donkeys, which may result in a negative reaction. The low prevalence of donkeys with no social contact is similar to what C r u z [9] reported. Social contact is an important part of welfare evaluation, especially since donkeys are by nature social beings [5].

The most common health problems in the present study are integumentary alterations, which include an unhealthy hair coat, alopecia, deep wounds, and skin lesions. This is comparable to the work of F s a h a y e et al. [15] in Ethiopia. These integumentary alterations are frequently produced by a combination of multifactorial reasons. Environmental conditions, the type of harness material used (synthetic or natural), the fit of the harness, the owner's behaviour, the frequency of labour, and the load are among the risk factors that lead to the development of various types of wounds in pack donkeys [21].

The present study shows that the health problems with the lowest prevalence were ocular (18.4%) and nasal discharge (5.3%). The prevalence of ocular discharge is similar to studies in Chile (10%) and Ethiopia (17%) [15, 31]. Ocular or nasal discharges are not pathognomonic symptoms of any disease because they can occur in a variety of ailments, both local and generalised. This discharge can be present in ocular disease, respiratory issues, and dental problems [30, 34]; if it is observed, further investigation, including ophthalmic examination, respiratory auscultation, and dental examination, is required.

The current study discovered that 26.3 % of the donkeys assessed had some level of hoof neglect, which is similar to the results seen in the United Kingdom and Northeast Portugal [8, 9]. Hoof care is essential for optimal wellness since they bear all of the body's weight. Overgrown hooves were one of the most prevalent hoof alterations discovered in this study. This problem can result in lameness. The prevalence of lameness in our study was 5.3%, which was similar to the results obtained in Ethiopia [2]. Lameness percentages vary across several studies. In the same year, but in a different Ethiopian city, A m a n t e et al. [2] discovered that 12 % of working donkeys were lame. K u m a r et al. [16] discovered that 10 % of the donkeys were lame. Later, T e s f a y e et al. [32] reported a drop in lameness prevalence in 2016, and even better findings were discovered in 2018, with just 4.4 % of the donkeys being lame [15]. These findings are similar to those obtained in Europe; C o x et al. [8] discovered that 10 % of British donkeys were lame. Surprisingly, D a i et al. [10] reported the same findings as Mexico, with 2 % lameness detected [6]. Although the prevalence of lameness was not exceptionally high in any of the studies discussed, when lameness is diagnosed, it is critical to identify the source of the problem. Laminitis, tendonitis, and incorrect hoof trimming are some of the most common causes.

Healthy living and proper welfare require proper feeding. Without evaluating whether nutritional requirements are fulfilled or exceeded [3], the body condition score is an essential animal-based indicator in assessing the health state and welfare of working equids [25]. The current study found that donkeys' body condition ranged from moderate (BCS of 2) to ideal (BCS of 3). The prevalence of the ideal body condition (57.9 %) is comparable to M o l t u m o et al. [24] in Ethiopia, who reported a prevalence of 54.1 %. The absence of donkeys with BCS 4 (fat) contrasts with the report by C r u z [9] of a considerable number of donkeys with BCS 4 (fat). The difference may be attributed to a difference in management practises, working and environmental conditions, type of work, and working load.

The donkeys were poorly housed, as evidenced by the high prevalence of unsatisfactory shelter dimensions (100 %), dirty bedding (89.5 %), and insufficient bedding (89.5 %). Insufficient bedding results in poor faeces absorption, mechanical insults, and a lack of cushioning for the donkey's legs from trauma. These factors might have contributed to the integumentary alterations seen in this study.

The prevalence of donkeys showing indications of thermal stress was found to be low (5.3 %) in the present study. This is consistent with assertion by C r u z [9]. Thermal stress is a severe issue that is often underestimated in donkeys. According to studies, signs of heat stress generated by hot temperatures are more evident than those caused by cold temperatures [19]. Although heat stress is not always seen as significant as other abnormalities, it is crucial to note that aside from its implications for welfare, it can cause major health issues such as dehydration, organ dysfunction, and behavioural changes if left untreated. As a result, it is critical to train owners how to recognise thermal stress signs so that they may take action and prevent future suffering.

The present study discovered that welfare issues are significant problems for pack donkeys in Amaru, Zaria Ancient City, Kaduna State, Nigeria. As a result of the current findings, it is advised that the government and other non-governmental organisations (NGOs) promote comprehensive awareness creation on donkey welfare issues through training and extension services. To ensure donkey welfare, policies and legislative frameworks that support animal welfare and inspect animal facilities in Nigeria needs to be reviewed and enforced.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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