Socio-economic characteristics of camel – keepers and some common major ailments of camels (*Camelus dromedarius*) in semi-arid Northern Nigeria

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Abstract

The study was conducted to determine the socio-economic background of camel keepers and some common major ailments of camels (camelus dromedarius) in semi-arid Northern Nigeria. A structured questionnaires was administered to fifty camel farmers each at Mashi, Maigatari and Geidam in Katsina, Jigawa and Yobe States, respectively. Data obtained from the survey were analyzed using descriptive statistics. The result shows that camel keepers in the study area were aged between 31 and 50years (51.7%), literate (85.0%) and had over 20 years of experience (53.7%). A total of 3,848 camels were kept by the respondents in 120 mix-herds and had annual mortality rate of less than 6.0 %. Major ailments recorded by the respondents were skin diseases (54%) while dermatophilosis, cutaneous ulcers and camel pox had occurrence rate of 20.0%, 8.3% and 8.3%, respectively. It was concluded that camel keepers were well informed and experienced in husbandry and commonest cause of camel slaughter was skin disease which was severe during wet season.

Keywords: Socio-economics, camel keepers, ailments and semi-arid

Introduction

The dromedary camel is a multipurpose animal adapted to the harsh environmental condition of semi-arid and arid zones, essentially kept for meat, milk and transportation (Wardeh, 2004). It also serves as an asset and security for pastoralist and plays an important role in the determination of their social prestige and wealth (Woubit *et al.*, 2001). The increase desertification and recurrence of drought and famine in sub-Saharan Africa, particularly the West African sub-region made increased expectation on camel to play a very significant role as a source of meat, milk and draft power. The camel possesses unique features which make it superior to other domesticated animals in the hot and arid desert ecosystems. Camel can tolerate water loss of up to 25% of their body weight, and excrete concentrated urine (Pesce, 1984). Dromedaries use water

economically in most of its metabolic functions. The body temperature of the animal can fluctuate between 33.8°C and 40.5°C; thereby reducing sweat (Raziq *et al.*, 2008). In Nigeria, with an estimated population of 19,000 camels (FAO, 2010); Disease is a major factor affecting animal production in most developing countries of tropics and is responsible for the high cost of production, low productivity and in most cases lead to high mortality (Anthony *et al.*, 1988).

In their natural habitat, camels are subjected to severe stress conditions which render them susceptible to many diseases and ailments (Abbas *et al.*, 1993; Agab, 1993). Although camels were considered in the past, and for a fairly long time, as resistant to many disease causing factors (Dalling *et al.*, 1988), it has been proved that camels are susceptible, with the same intensity as other livestock or even more, to the common

disease causing pathogens affecting other animal species (Wilson *et al.*, 1984; Abbas and Tilley, 1990; Saint-Martin *et al.*, 1992; Abbas and Agab, 2002).

Despite the significant contribution of the camel to the livelihood of the under developed societies and its use as a means of sustainable production; the camel is among the less investigated livestock species in Nigeria with very little reports about their productivity and health (Kallah *et al.*, 2008).

Therefore, the study was designed to evaluate on the socio-economic characteristics of camel keepers and some common camel diseases in the area.

Materials and methods

The study was conducted in three states located in the semi-arid Northern Nigeria, namely; Mashi in Katsina state, Maigatari in Jigawa state and Geidam in Yobe state. The Study area lies within the Sudano-sahelian ecological zone, characterized by few trees and vast grassland, the grasses are seasonal disappearing during the dry season. The weather condition of the area for most part of the year is hot and dry with short rainy season in the month of June to September. The annual rainfall of the zone varies from 450mm to 1000mm. The length of the wet season varies from 4 to 5 months. The minimum and maximum are 13^o C and 45^o C. High temperatures were recorded during the month of March to May and lowest temperature between December and January. A structured questionnaire was administered to fifty randomly selected camel-keepers in each of the three selected

areas namely: Mashi in Katsina State, Maigatari in Jigawa State and Geidam in Yobe State. The questionnaires were administered by trained enumerators based in the (3) selected areas, and who in most cases were also well-known to the camel keepers. The questionnaire information was supplemented with recorded interviews with the enumerators serving as guide/interpreters. Interviews were conducted to cross-check the responses to the questionnaire as well as a forum to provide for free-discussion on area that were salient. In compiling the results, questionnaires with inconsistent information were rejected. Data obtained were analyzed using descriptive statistics and the results were presented in percentages.

Results and discussion

Table 1 showed socio economic backgrounds of camel-keepers in the study area were aged between 31 to 50 years (51.7%). Maigatari had the highest number of camel-keepers and were aged over 50 years (14.1%). In Mani Local Government has the least number (7.5%) of camel-keepers. 5% of the camel-keepers in the study area were less than 20 years of age. The majority of the respondents in the study area were literate (85.0%). The result shows that 54.7% of the camel-keepers had over 20 years of experience.

The result of this study showed that the majority of the respondents in the study area were literate and well experienced in camel management, hence the low mortality rate recorded.

Table 1: Socio-economic background of the respondents in the study area

Parameters	Herd location			Total
	Maigatari	Mani	Geidem	
Age (Yrs)				
<20	1.7(2)	2.5(3)	0.8(1)	5.0(6)
21-30	5.0(6)	4.7(5)	1.7(2)	10.8(13)
31-40	8.3(10)	10.0(12)	9.1(11)	27.5(33)
41-50	9.1(11)	9.1(11)	5.8(7)	24.2(29)
>50	14.1(17)	7.5(9)	10.8(13)	24.2(29)
				32.59(39)
Main Occupation				
Livestock keeper	30.8(37)	30.8(37)	27.5(33)	59.2(107)
Farmer	6.67(8)	3.33(4)	0.8(1)	10.8(13)
Education				
Quranic school	33.33(40)	29.17(35)	25.83(31)	88.33(106)
Primary school	4.17(5)	4.17(5)	3.33(4)	11.67(14)
Literacy level				
Literate	30.8(37)	28.17(35)	25.0(30)	85.0(102)
Illiterate	6.67(8)	4.17(5)	4.17(5)	15.0(18)
Level of Experience (Yrs)				
<5				
6-10	6.67(8)	5.8(7)	5.0(6)	17.43(21)
11-15	6.67(8)	3.33(4)	(0)	10.0(12)
16-20	3.33(4)	8.8(10)	5.0(6)	16.6(20)
21-25	3.33(4)	6.67(8)	4.2(5)	14.11(7)
26-30	7.5(9)	5.0(6)	6.67(8)	19.09(23)
31-35	1.7(2)	1.7(2)	2.5(3)	5.8(7)
36-40	4.17(5)	2.5(3)	2.5(3)	9.1(11)
>40	3.33(4)	0.83(1)	2.5(3)	6.67(8)

Camel herd structure

Data from Table 2 showed that, a total of 3,848 camels were kept by the respondents in 120 mix herd. Of the three locations in the study area Maigatari had the highest number of camels kept 1,390 (36.12%) with Mani having the least number 1,218 (31.65%) and the annual mortality rate of the 120 herd was 4.7% which is relatively low.

The mean number of camels kept in the study area (32.06%) was higher compared to 26.3% reported by Chafe *et al.* (2004).

The result of this study shows that majority of the respondents in the study area were literate and well experienced in camel management, hence, the low mortality recorded. The mean number of camels kept in the study area (32.06%) was higher compared to those reported by Chafe *et al.* (2004) (26.3%). The result of this study shows that the majority of the respondents in the study area was literate and well experienced in camel management, hence the low mortality rate recorded.

Table 2: Camel herd structure of the respondents in the study area

Parameters	Herd Location			Total
	Maigatari	Mani	Geidam	
No of herds	45(37.51)	41(34.16)	34(28.33)	120
No of camels kept				
Male	438(32.13)	428 (31.40)	497 (36.46)	1363
Female	727 (43.98)	459(27.76)	467(28.25)	1653
No of young calves <1yr				
Male	98(29.08)	106(31.45)	133(39.46)	337
Female	127(25.65)	225 (45.45)	143 (28.88)	495
Total no of camels kept	1390(36.12)	1218(31.65)	1240(32.23)	3848
Mean no of camels kept	30.8	29.7	36.5	32.06
Mortality over 1yr	61	56	64	181
Mortality rate (%)	4.4	4.6	5.2	4.7

Figures in parentheses are in percentage

Common diseases of camels mentioned by the respondent in the study area

Table 3 below, shows the common disease of camels in the study area. Among the 120 respondents in the study area, skin diseases was the most mentioned (54.1%) as a problem of camels, followed by Gastro intestinal disorders, (18.3%). Of the total 65 camels keepers that reported skin diseases (table3/ figure1) Maigatari had the highest

number of 25 (20.7%) followed by Geidam (17.6%); and Mani (14.4%) which was the least. Similarly, among 22 keepers that reported Gastro-Intestinal disorders, the highest number was 10 (8.3%) from Maigatari while Mani 5 (4.2%) was the least. Respiratory disorders was mentioned by (10%) of the respondents in the study area.

Table 3: Common diseases of camel mentioned by the herders in the study area

Parameters	Herd location			Total
	Maigatari	Mani	Geidam	
Gastro-intestinal disorders	10 (8.3)	5 (4.2)	7 (5.6)	22 (17.6)
Respiratory disorders	3 (2.5)	4 (3.33)	5 (4.2)	12 (10.0)
Skin diseases	25 (20.7)	18 (14.4)	22 (17.6)	65 (54.1)
Others diseases	7 (5.6)	9 (7.2)	5 (4.2)	21 (16.8)
Total	45 (36.1)	36 (29.9)	39 (32.47)	120

Figures in parentheses are in percentage

From the result of this study, skin disease seems to be the most common disease of camels in the study area of these disease dermatophilosis has the highest frequency of mention. Dermatophilosis is a specific disease of animals and man caused by the higher bacteria *Dermatophilus congolensis*, in which the lesions are almost always restricted to the skin in the form raised cuplike tuft of hair (matted hair) which when removed leave a raw ulcerated surface. Some of the ulcers reported by the keepers may be the manifestation of this

disease.

Only 5.0% of the respondent in this study reported scabies as a problem even though mange is widely regarded to be the most feared and widespread disease affecting the Arabian camel after trypanosomiasis (Chanhan *et al.*, 1986; Radostits *et al.*, 1997).

Tick infestations were mentioned by 5% of the respondent in the study area. Tick infestations were observed during the raining season. *Hyaloma dromedarii*, a camel specific tick is apparently associated

with out breaks of camel pasteurellosis (Wilson, 1998). Camels however do not suffer greatly from tick borne diseases but the physical irritation and the wounds caused by ticks may allow entry of other disease organisms (secondary bacterial infection) and blood loss from heavy infestations can cause anemia, especially in young calves (Higgins, 1985; Zeleke and Bekele, 2004). 8.3% of the respondents reported camel fox as their problem. This disease is of considerable economic importance in all camel raising areas of the world (Chandra et al 1998) with up to 30% mortality, particularly in young camels.

Parasitic worms (Wardel, 1989), plant poisoning, functional disorders to the gastrointestinal track as well as certain entotoxin, bacteria might be responsible for the observed cases of diarrhea seen in some camels, as evidence that certain pathogenic bacteria causes disease in Nigerian camels is well documented (Kwaga *et al.*, 1987.)

The general signs of respiratory disease (cough, pneumonia and catarrh) observed by some camel-keepers in some of the study

area might have been caused by infection of certain viruses (Kwaga *et al.*, 1987)

The lameness reported in the study may be due to the traumatic injuries of the foot pads caused by thorns and joint lesions. While conjunctivitis reported may have resulted from traumatic injuries by thorns, trees and from ticks attached to the eye lids.

Table 4 shows specific common that, the most important specific skin disease was dermatophilosis with occurrence rate of (20.0%), followed by Coetaneous ulcers (8.3%), Camel pox (8.3%), Scabies (5.0%), Mange (5.0%), Ticks (5.0%) among others. While the most important Gastro-Intestinal disorders, mentioned by the respondents were, Diarrhea (6.6%), Bloat (6.6%) and Colic (5.0%).

Specific important respiratory disorders mentioned by the respondents in the study area were cough, catarrh and pneumonia with occurrence rate of (4.2%), (3.3%) and (2.5%), respectively. Some other general ailments that could not be classified under any of the above categories are placed under other diseases: These include Lameness (6.6%), Paralysis (3.3%), Mastitis (3.3%), Abortion (3.3%) and Conjunctivitis (0.8%).

Table 4: Specific common diseases of camels mentioned by the respondents in the study area

Diseases	Frequency	Percentage (%)
Respiratory disorders	12	10.0
Cough	5	4.2
Catarrh	4	3.3
Pneumonia	3	2.5
Skin diseases	65	54.1
Dermatophilosis	24	20.0
Cutaneous Ulcers	10	8.3
Camel Pox	10	8.3
Scabies	6	5.0
Pappilomatosis	3	2.5
Mange	6	5.0
Ticks	6	5.0
Gastro Intestinal disorders	22	18.3
Diarrhea	8	6.6
Bloat	8	6.6
Others		
Paralysis	4	3.3
Lameness	8	6.6
Mastitis	4	3.3
Abortion	4	3.3
Conjunctivitis	1	0.8

Figure 1 shows the methods of treatment of camels in the study area. The camel-keepers in the study area use traditional remedies in treating various camel diseases more frequently than modern method of treatment (veterinary services). Fig. 1 Geidam have the highest number of camel-keepers using traditional remedies (91.2 %) compared to Mani (82.9 %) and Maigatari (80 %). The highest camel-keepers that use veterinary services were recorded in Maigatari (20%).

From the present study, 67.5% of the camels-keepers in the study area use traditional remedies against disease and 32.5% patronize modern veterinary services. The high percentage of those using traditional remedies can be attributed to absence of veterinary clinic and the camel keepers have to travel a long distance seeking veterinary services as reported by El Bendary *et al.* (1987) and Hafez *et al.* (1991).

Method of treatment of camel diseases in the study area

Figure 1: Methods of treatment

Conclusion

From this study conducted, it was concluded that camel-keepers were well informed and experienced in camel husbandry and the commonest disease condition of camel was dermatophilosis which was severe during wet season.

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Received: 12th May, 2018

Accepted: 31st August, 2018