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Knowledge, Attitude, and Practices of Camel Stakeholders on Tuberculosis in Camels in Katsina, Kano, and Jigawa States, Nigeria

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Abstract

The study investigated the knowledge, attitudes, and practices (KAPs) of camel stakeholders (herdsmen, owners, abattoir staff, and consumers of camel milk and meat). Structured, open-ended, pretested questionnaires were administered to assess KAPs on tuberculosis in camels and its potential risks. A total of 267 questionnaires were administered. Results revealed that 53.18% had good knowledge of Tuberculosis as a disease in general while only 20.22% were aware of tuberculosis as a disease in camels. Also, 24.72% and 55.07% had fair and poor knowledge of camels coming down with TB and statistical difference ($P \leq 0.05$) was observed? Respondents with tertiary level of education showed the highest (42.11%) awareness of tuberculosis a disease in camels when compared with those having secondary, primary, religious education, and a statistical significance ($P \leq 0.05$) was observed. It was also determined that 40.45% of respondents had a good attitude toward tuberculosis and respondents in Kano had the best attitude, and practices toward TB while those in Jigawa had the poorest attitude towards TB with a statistically significant ($P \leq 0.05$) difference between them. It was concluded that there is poor knowledge of tuberculosis in camels amongst stakeholders and as a result poor attitudes and practices in the study areas. It was recommended that there is a need for the enlightenment of stakeholders leading to improved KAPs and thus improve the prevention and eradication of TB as well as control of zoonotic transmission especially bearing in mind the nature of intake of camel products and by-products for medicinal purposes in the study area.

Keywords: Knowledge, attitude, practices, camel stakeholders

Introduction

Reports of tuberculosis in Nigeria indicate that the disease exists in all the six geopolitical zones of the country (Ibrahim et al., 2021). Animals reported to be infected with the disease in Nigeria include cattle, sheep, goats, camels, and a host of others (Igbokwe et al., 2001; Cadmus, 2003; Cadmus et al., 2016; Danbirni, 2016). The husbandry and management practices of the livestock owners and even the general public seem to facilitate the seeming increasing infections with many of the members of the Mycobacterium tuberculosis complex (MTC) among animals and humans in Nigeria (Saidu, 1990; Abubakar et al., 2012; Ibrahim et al., 2021). The actions of butchers at slaughter facilities seem also to encourage the acquisition and spread of the disease between animals and humans (Ibrahim et al., 2021; Nwanta et al., 2008). The knowledge, attitude, and practices of livestock owners and even the general public in Nigeria on diseases, especially zoonotic ones to say the least low as there are reports of people consuming poorly cooked meat and drinking unpasteurized milk (Kaltungo, 2013; Danbirni, 2016; Salisu, 2016). Some people drink camel and goat milk for traditional medicine along with children of pastoralists in herds drinking milk directly from the udder of their animals (Kaltungo, 2013). It is for this reason that this study was aimed at determining

the knowledge, attitude, and practices of camel herdsmen about tuberculosis (TB) in animals, especially camels and humans.

Materials and Methods

Study Area

Camel herdsmen in Katsina, Kano, and Jigawa states were the subjects of the Study. These states are among the seven states that form the North Western Zone of Nigeria (Fig. 1). These states have been reported to have substantial camel holding with other states like Sokoto, Kebbi, and Zamfara also known to have camel holdings (RIM, 1992). The study was designed as cross-sectional as there are no camel herds distributed in every Local Government Area (LGA) of each of these states. Convenience was also used as the camel herds were distributed in remote areas of each of these states.

A structured, open-ended, pretested questionnaire was administered to camel herdsmen, traders, and owners to obtain information on their knowledge, attitude, and practices (KAP) as regards tuberculosis in camels and its potential risks. All stakeholders encountered in the course of sampling were administered questionnaires. The questions were translated into Hausa language for the herdsmen and then the answers were filled accordingly.

The sample size for the study was obtained through the cooperation of the targeted respondents to accept to participate in the study and at the same time to supply the necessary information required in the questionnaire.

Results

Knowledge of Tuberculosis

A total of 267 respondents participated in the study. Of these 76 were from Katsina while 83 and 108 were from Kano and Jigawa states respectively (Table 1). Among them, 142(53.18%) demonstrated good knowledge of TB generally while 82(30.71%) and 43(16.10%) showed fair and poor knowledge of TB respectively. There was however no statistical difference (P≤0.05) observed for this finding. Furthermore, only 54(20.22%) indicated knowledge that camels could acquire Tb with 66 (24.72%) and 147 (55.07%) having fair and poor knowledge of camels coming down with TB (Table 2) and statistical difference (P≤0.05) was observed in favor of poor knowledge of tuberculosis as a disease in camels amongst stakeholders. Regarding their educational level and awareness of TB, those with tertiary education showed the highest (42.11%) awareness of tuberculosis a disease in camels when compared with those having secondary, primary, and religious education, and a statistical significance (P≤0.05) was observed (Table 3).

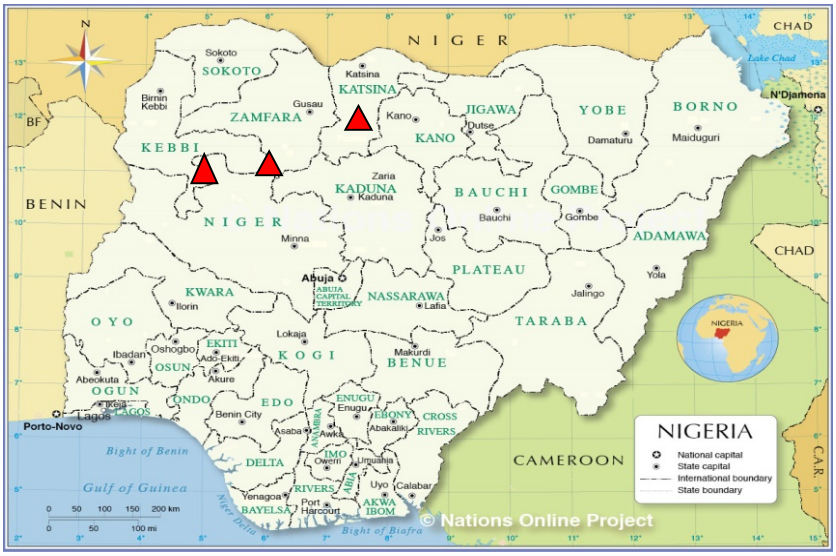

Figure 1: Map of Nigeria showing Sampling States (Source: nationsonline.org, 2021)

Table 1: Awareness/Knowledge of tuberculosis of respondents in Katsina, Kano, and Jigawa States

State	No of Respondents	Good (%)	Fair (%)	Poor (%)	X^2	Df	P value
Katsina	76	41 (53.95)	25 (32.89)	10 (13.16)	4.095	4	0.397
Kano	108	63 (58.33)	27 (25.0)	18 (16.67)			
Jigawa	83	38 (45.78)	30 (36.14)	15 (18.07)			
Total	**267**	**142 (53.18)**	**82 (30.71)**	**43 (16.10)**			

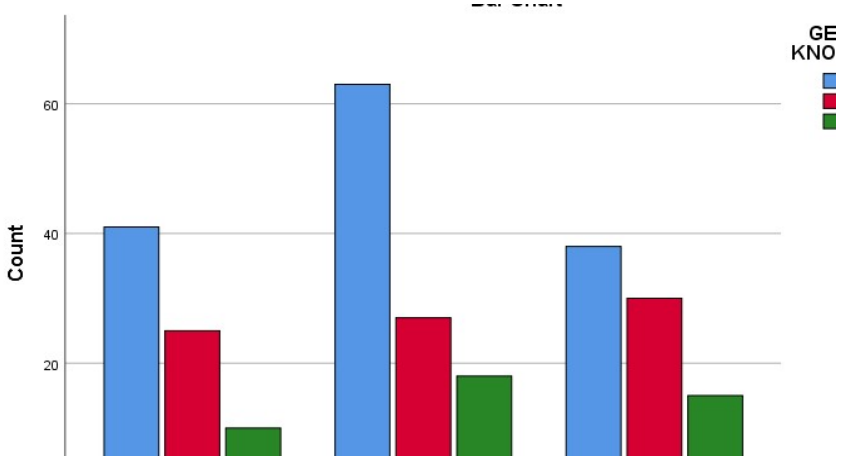

Figure 1: Knowledge of tuberculosis as a disease in humans and animals amongst respondents in the study area

Table 2: Awareness/Knowledge of tuberculosis in Camels of respondents in Katsina, Kano and Jigawa States

State	No of Respondents	Good (%)	Fair (%)	Poor (%)	X^2	Df	P value
Katsina	76	10 (13.16)	14 (18.42)	52 (68.42)	41.550	4	0.000
Kano	108	35 (32.41)	39 (36.11)	34 (31.48)			
Jigawa	83	9 (10.84)	13 (15.66)	61 (73.49)			
Total	**267**	**54 (20.22)**	**66 (24.72)**	**147 (55.07)**			

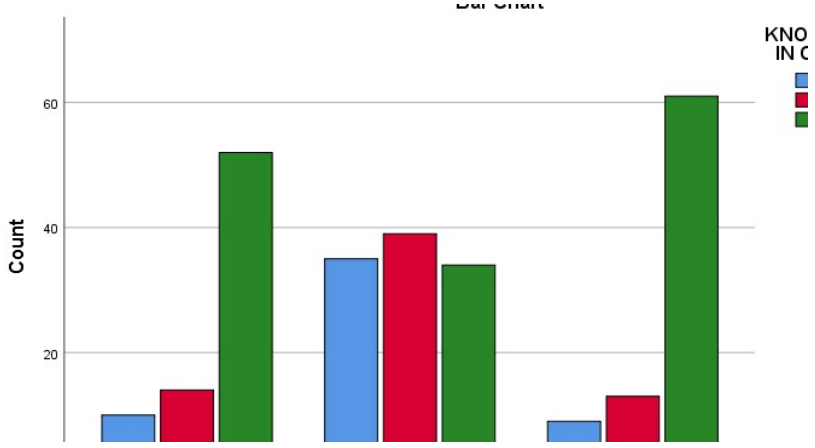

Figure 2: Knowledge of tuberculosis as a disease in camels amongst respondents in the study area

Table 3: Association of educational level with awareness of Tuberculosis among camel herdsmen

Educational Level	No. Respondents.	No. Good (%)	No. Fair (%)	No. Poor (%)	χ^2	Df	P value
Tertiary	114 (42.70)	48 (42.11)	52 (45.61)	14 (12.28)	178.321	30	0.000
Secondary	64 (23.97)	2 (3.13)	12 (18.75)	50 (78.13)			
Primary	36 (13.48)	2 (5.56)	2 (5.56)	32 (88.89)			
Religious	53 (19.85)	2 (3.77)	0 (0.00)	51 (96.23)			
Total	**267**	**54 (20.22)**	**66 (24.72)**	**147 (55.07)**			

Table 4: Attitudes of respondents towards tuberculosis in Katsina, Kano, and Jigawa States

State	No of Respondents	Good (%)	Fair (%)	Poor (%)	X^2	Df	P value
Katsina	76	28 (36.84)	19 (25.0)	29 (38.16)	41.392	4	0.000
Kano	108	60 (55.56)	38 (35.19)	10 (9.26)			
Jigawa	83	20 (24.10)	22 (26.51)	41 (43.40)			
Total	**267**	**108 (40.45)**	**79 (29.59)**	**80 (29.96)**			

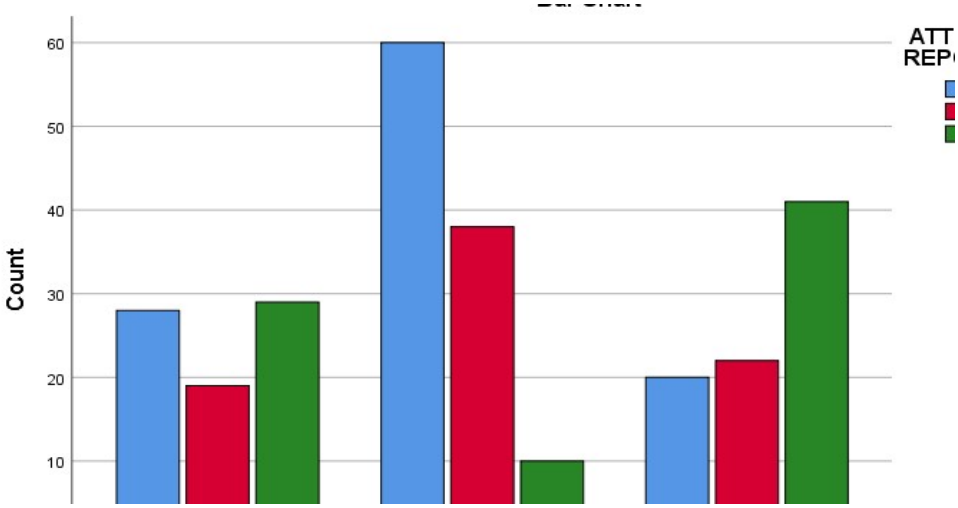

Figure 3: Attitudes of respondents towards tuberculosis in the study area

Table 5: Practices of respondents towards tuberculosis in Katsina, Kano, and Jigawa States

State	No of Respondents	Good (%)	Fair (%)	Poor (%)	X^2	df	P value
Katsina	76	32 (42.11)	16 (21.05)	28 (36.84)	20.151	4	0.000
Kano	108	57 (52.78)	32 (29.63)	19 (17.59)			
Jigawa	83	24 (28.92)	21 (25.30)	38 (45.78)			
Total	**267**	**113 (42.32)**	**69 (25.84)**	**85 (31.84)**			

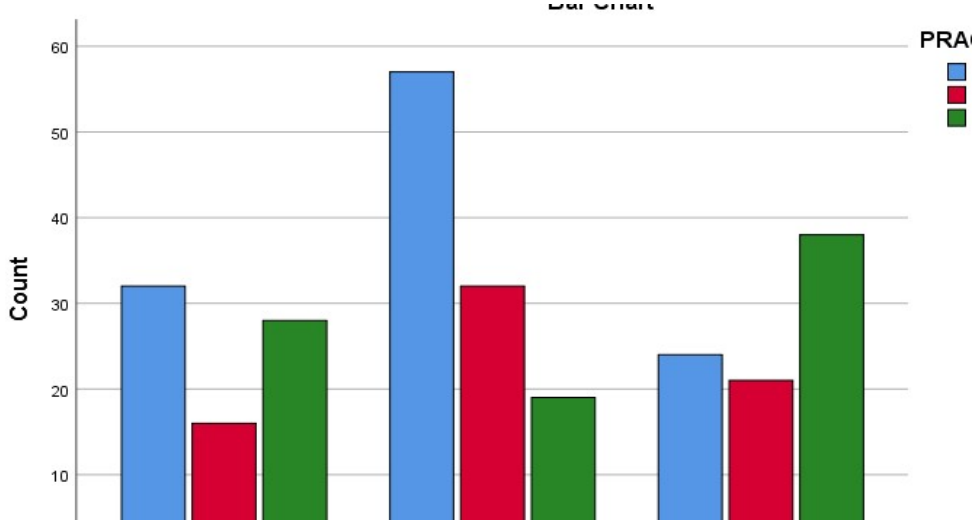

Figure 4: Practices of respondents towards tuberculosis in the study area

Attitude on Tuberculosis

Of the 267 respondents, 108 (40.45%) had a good attitude towards tuberculosis while 79 (29.59 %) and 80 (29.96 %) had fair and poor attitudes towards TB. Among the states, the respondents in Kano had the best attitude towards TB with those in Jigawa having the poorest attitude towards TB (Table 4). Statistical significance (P≤0.05) was observed for this finding.

Practices towards Tuberculosis

The study also looked into the practices of the camel herdsmen with regards to TB of which 113 (42.32 %) of them indicated having good practices while 69 (25.84 %) and 85 (31.84 %) had fair and poor practices respectively (Table 5). Respondents in Kano reported the best practices towards tuberculosis in camels while those in Jigawa had the poorest practices and a statistical significance (P≤0.05) was observed for this finding.

Discussion

The stakeholders interviewed for the study included camel owners, camel herdsmen, camel traders, butchers, abattoir staff, and animal health workers. The distribution of these stakeholders varied amongst the three states studied as the stakeholders in Kano State were mainly comprised of camel traders, butchers, and abattoir staff with few camel herdsmen while there were more camel herdsmen and owners to be found in Katsina and Jigawa States. This is a result of the fact that unlike Katsina and Jigawa States which have camel herds, Kano state has virtually no camel herds despite it having the largest number of slaughtered camels per day in Northern Nigeria with over 100 camels slaughtered on most days. The possible reason for the lack of camel herds in Kano State could be a result of the State not sharing a border with the Niger Republic as most of the camel herds found in Katsina and Jigawa States are located in areas bordering the Niger Republic. It could also be a result of the difference in vegetation, the vegetation of the areas bordering Niger Republic is Sahel savannah while Kano is guinea savannah and so may not support the growth of the natural plants that camels browse on.

The stakeholders from Kano State being more of abattoir staff, butchers and businessmen rather than camel herders could also explain why Kano State had a higher number of respondents that had tertiary education than Katsina and Jigawa States. The camel rearing business is a hereditary full-time lifestyle much like cattle rearing by the Fulani and the nomadic and non-stationary lifestyle makes it difficult to come across a camel herdsman with tertiary or even secondary education. As such it was no surprise that respondents from Kano State recorded the best knowledge of tuberculosis as a disease in general and as a disease affecting camels since most respondents from the location are not herdsmen. The poor knowledge of tuberculosis as a disease affecting camels could also be attributed to the unavailability of radio programmes on camel issues such as those affecting cattle and small ruminants. There are

also inadequate livestock extension services for camels compared with other livestock. This finding is in tandem with that of Beyi et al. (2014) who reported poor knowledge of the zoonotic nature of the disease in respondents.

Incidentally, the respondents with only primary or quranic education in Jigawa had the poorest practices as regards tuberculosis in camels with most having the belief that camels are medicinal animals and as such rarely exhibited signs of disease since the urine, milk and meat all serve as cures for various diseases including cough. These beliefs arose from the Islamic traditions and sayings attributed to Prophet Muhammad (SAW) on camels and their healing abilities. Some respondents argued that camels are immune to cough and diseases stating that diseased camels are mostly a result of metaphysical attacks rather than as a result of disease-causing agents. As a result, these respondents did not believe it is possible to contract a disease from a camel but only cures could be gotten from them and did not see the need for consulting a Veterinary professional for herd health and preventive purposes or treatment but rather preferred methods passed down their lineages for treatment and prevention of diseases such as the burning of various herbs, roots and other substances with coal so the smoke generated is either inhaled by the animals or touches various aspects of the animal. Beyi et al. 2014 reported that only 18.4% of interviewed camel owners usually boil camel milk before consumption.

Recommendation

It was recommended that there is an urgent need for measures to increase awareness in camel herding and rearing communities as well as amongst consumers of camel products (camel milk, cikwi (local cheese made from camel milk) etc) as there is low knowledge and poor practices towards tuberculosis in camels.

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