Abattoir survey of small ruminant diseases in Bauchi, Nigeria

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Key words

Goat - Sheep - Disease survey - Sex - Season - Abattoir - Nigeria.

Summary

Disease incidence and distribution between male and female small ruminant species and seasonality were investigated in Bauchi, Nigeria, from 1986-1995. The data were subjected to the chi^2 test. More goats than sheep were found to be slaughtered. Of all the diseases recorded, helminthosis was the most common followed by pneumonia and tuberculosis. Septic and pyemic conditions contributed the least to the total infections. Most of these diseases showed seasonal distribution with a higher incidence in the rainy season reflected thus by more condemnation in the rainy season than in the dry one. Disease variation between sexes and species were significant ($p < 0.01$). The menace of these diseases will continue to have an impact on the economy and be of public health significance unless suitable control measures are adopted. The authors offer some suggestions.

■ INTRODUCTION

Most animal diseases were recognized in Nigeria as far back as 1952 (12). The history, status and severity of diseases have been reviewed over time and different control measures have been employed in combatting them (8). Many of these diseases are infectious to man and animals and include tuberculosis, brucellosis, tapeworm, anthrax, salmonellosis and many others (14). Besides their public health significance (14) some of them were responsible for 30-40% economic losses through the death of sheep and goats in Nigeria.

Diseases seriously limit the production of sheep and goats throughout the humid and sub-humid zones of Africa, where they are known to supply most of the protein requirements of these populations (3, 16). Ogunsusi (16) considers reduced fertility due to these diseases as major sources of economic loss. The pattern normally varies from one season to the other with most diseases appearing during the rainy season (17). Despite control measures put in place against most of them there seems to be an increase in the incidence of diseases in Nigeria (17). Therefore, the aim of this study was to determine the incidence of sheep and goats' diseases and suggest ways of controlling them in order to enhance productivity of these species.

■ MATERIALS AND METHODS

Study area

Bauchi State occupies the center of the North Eastern region in the Sudan savannah ecological zone of Nigeria (figure 1). The state has great potentials for livestock population and has the highest livestock population (over 5 million sheep and goats) in Nigeria (1, 5). It is located at latitude 10° 17" and longitude 90° 49" with an annual rainfall of 1091 mm. There are two seasons in a year: the rainy season (between May and October) and the dry season (between November and April). The hottest month is April with a temperature reaching 41°C and the coldest months are December and January with 6 and 7°C temperatures, respectively. The abattoir is one of the major abattoirs in the state and slaughter animals are brought in from all over the state and beyond.

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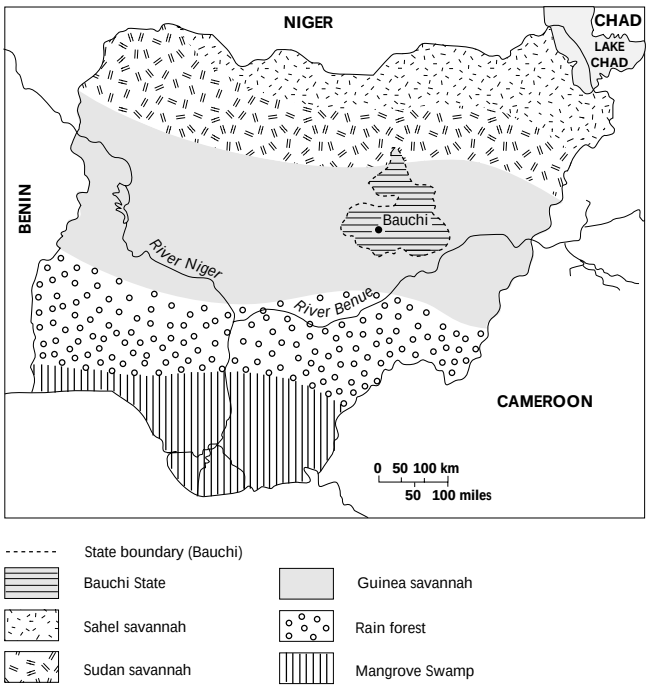

***Figure 1**: map of Nigeria showing vegetational zones and Bauchi State.*

Data source

From 1986 to 1995 records of slaughter of sheep and goats and diseases encountered during postmortem examinations were collected, arranged and analyzed statistically using the chi^2 test and simple percentages (13).

■ RESULTS

A total of 456,126 sheep and goats were slaughtered in Bauchi abattoir from 1986 to 1995. Tables I and II show disease variation between sexes due to infections and condemnation in both species. Sheep infections differed significantly from goats' ($P < 0.01$). Females of both species were more susceptible to disease infections compared to their male counterparts, therefore more parts were condemned in females than in males.

Helminthosis was found to be the most prevalent condition in both species studied (tables I and II) and accounted for the greater part of total condemnation. It was followed by pneumonia with a similar pattern. Tuberculosis was found to infect more sheep than goats. The results also show that disease variation between sexes was significant ($P < 0.01$ and $P < 0.05$) in both species (tables I and II). Most of the diseases were encountered during the rainy season, therefore more condemnation was performed in the rainy season than in the dry one.

■ DISCUSSION

Small ruminants play a very significant role in the socioeconomic and nutritional requirements of Nigerians and contribute to the majority of slaughtered animals in Nigeria. Farmers prefer to raise them (4, 11) because cattle production is comparatively very expensive. More goats than sheep were slaughtered during the study period because the demand for sheep and mutton is affected by religious and cultural festivities such as Christmas and Islamic celebrations. Most sheep are kept for slaughter during these times (2, 16). In addition, raising goats is relatively cheaper. They are very prolific animals with a fast growing rate. Furthermore, most farmers prefer to keep them rather than sheep because they are also known to be more resistant to diseases (3).

Of all the diseases seen during the study period, helminthosis was the most common (tables I and II). It was found to be the most responsible disease for losses in small ruminant production (15) and to always bring about serious setbacks in growth and production of all livestock in Nigeria (12). In a similar study, David and Baker (8) reported heavy parasite burden as a cause of death in native sheep of North Ronaldsay. Gastrointestinal parasites in small ruminants in mix livestock systems of Africa have a great impact on socioeconomic development of the continent. Most smallholding farmers raise their small ruminants at least partly on communal grazing lands. Consequently, when climate and management conditions permit, endoparasite infestations abound. This leads to large production losses. Therefore, farmers resort to the use of anthelmintics for treatment and prophylaxis. However, the effectiveness of this measure is limited by uncertain availability, anthelmintics high cost and restricted opportunity for controlled grazing, hence using endoparasite resistant species appears to be the last option (11).

Pneumonia was the second commonest disease encountered (tables I and II). Lung diseases of small ruminants are also of serious economic importance in sub-Saharan Africa and are mostly due to mycoplasmosis, pasteurellosis, streptococcus, staphylococcus, mycobacteriosis and pox virus (9). Previous studies revealed that these organisms are responsible for 54 and 28% cases in sheep and goats, respectively, in the pastoral zone, and 7.4 and 23% cases in sheep and goats, respectively, in the agropastoral zones. Lung diseases accounted for 30.4 and 58% deaths in sheep and goats, respectively (9, 10). The tuberculosis rate was higher in sheep than in goats, in agreement with Beropubo and Wekhe's findings (6). On the whole, goats were found in this study to be more resistant to diseases than sheep.

Also this study showed that disease incidence and rates of part condemnation were significantly higher in females than in males (tables I and II). This could probably be due to hormonal influence, pregnancy, parturition and lactation that weaken the female immune status and increase susceptibility to diseases. In addition, more females were slaughtered than males. The chi^2 test showed a clear variation between sexes and species ($p < 0.01$ and $p < 0.05$). There are also significant differences both in infections and parts condemned (tables I and II). A seasonality of infections was also found, with a more frequent occurrence during the rainy season for both species. This may be due to the high moisture, temperature and humidity that favor the propagation of these infectious agents and stress on animals. Similar results were recorded by Cannon (7) and Ogunsusi (16).

To improve small ruminant production and human health among other things, a proper control and preventive program are necessary. There is a need for proper diagnosis to identify the various infections and to control them, not only in small ruminants but also in other livestock. Since most diseases appeared in the rainy season, a herd health approach for all diseases should be adopted rather than treating individual cases. Hygiene and proper housing need to be emphasized to farmers.

Table I

Disease variation between sexes in sheep in Bauchi abattoir, 1986-1995

Condition	Infected males	Infected females	χ^2 1 df	Condemned male parts	Condemned female parts	χ^2 1 df
Tapeworm	460	602	18.98**	482	750	58.29**
Pneumonia	264	360	14.76**	529	702	24.31**
Tuberculosis	90	186	33.38**	170	281	27.32**
Abscess	35	37	0.07NS	35	56	4.86*
Nephritis	20	22	0.12NS	40	25	3.48*
Mastitis	0	46	46.02**	0	46	46.02**
Splenomegaly	15	30	5.02*	15	30	5.02*
Pustular dermatitis	11	6	1.53NS	21	10	3.93*

* Significant at $P < 0.05$
** Significant at $P < 0.01$
NS: not significant

Table II

Disease variation between sexes in goats in Bauchi abattoir, 1986-1995

Condition	Infected males	Infected females	χ^2 1 df	Condemned male parts	Condemned female parts	χ^2 1 df
Tapeworm	316	427	16.58**	293	319	1.10NS
Fasciolosis	314	524	52.62**	447	640	42.26**
Nematode	419	436	0.34NS	396	576	33.33**
Pneumonia	354	435	8.31**	708	870	16.63**
Abscess	37	49	1.68NS	82	114	5.22*
Mastitis	0	88	88.00**	0	88	88.00**
Cirrhosis	150	69	29.96**	150	69	29.96**
Splenomegaly	6	20	7.57**	6	20	7.57**
Mange	19	3	11.67**	38	5	25.34**
Pericarditis	36	60	6.01*	36	60	6.01*
Orchitis	12	0	12.08**	12	0	12.08**

* Significant at $P < 0.05$
** Significant at $P < 0.01$
NS: not significant

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Résumé

Kudi A.C., Kalla D.J.U., Alkali Y., Ladan S.M., Kudi M.C., Mai H. Enquête à l'abattoir sur les maladies des petits ruminants à Bauchi, Nigeria

L'incidence et la distribution de maladies chez différentes espèces de petits ruminants mâles et femelles, ainsi que l'influence des saisons, ont été analysées entre 1986 et 1995 à Bauchi au Nigeria. Les données ont été soumises au test du chi^2. Plus de chèvres que de moutons avaient été abattues. Parmi les maladies rencontrées, l'helminthose était la plus courante, suivie de la pneumonie et de la tuberculose. Les affections septiques et pyémiques étaient les moins présentes dans l'ensemble des infections. La plupart des maladies ont montré une distribution saisonnière avec une incidence plus importante pendant la saison des pluies, se traduisant ainsi par plus de viandes saisies pendant la saison humide que pendant la saison sèche. La variation des maladies entre le sexe de l'animal et les différentes espèces était significative ($p < 0,01$). A moins que des mesures de lutte adaptées soient prises, la menace de ces maladies continuera à avoir des répercussions sur l'économie et la santé publique. Quelques suggestions sont proposées.

Mots-clés : Caprin - Ovin - Enquête pathologique - Sexe - Saison - Abattoir - Nigeria.

Resumen

Kudi A.C., Kalla D.J.U., Alkali Y., Ladan S.M., Kudi M.C., Mai H. Encuesta en matadero de las enfermedades de los pequeños rumiantes en Bauchi, Nigeria

Se investigó la incidencia y la distribución de enfermedades entre especies, sexos y estaciones en los pequeños rumiantes, en Bauchi, Nigeria, entre 1986 y 1995. Los datos fueron sometidos al test de chi^2. Se encontraron más cabras que ovejas sacrificadas. De todas las enfermedades registradas, la más común fue la helmintiosis, seguida por neumonía y tuberculosis. Las condiciones piémicas y sépticas no contribuyeron grandemente a la infección total. Muchas de estas enfermedades mostraron una distribución estacional, con mayor incidencia durante la estación lluviosa que durante la seca, reflejando más sacrificios durante la estación lluviosa que la seca. La variación de enfermedades entre los sexos y especies fue significativa ($p < 0,01$). La amenaza de estas enfermedades continuará teniendo un impacto sobre la economía y tendrá importancia para la salud pública, a menos que se adopten medidas de control adecuadas. Los autores ofrecen algunas sugerencias.

Palabras clave: Caprino - Ovino - Encuesta sanitaria - Sexo - Estación del año - Matadero - Nigeria.