

Prevalence and of *Paramphistomiasis* in Ruminants Slaughtered at Sokoto Central Abattoir, Sokoto



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ABSTRACT: A Survey of prevalence and fluke burden of *Paramphistomum* sp. was conducted among the major ruminants slaughtered in Sokoto Central Abattoir between May and October, 2007. One hundred (100) of goats, sheep and cattle each were examined for the presence of *Paramphistomum* species (stomach flukes). Flukes were counted to determine the average fluke burden and prevalence. Out of the 300 animals, a total of 100 (33.3%) were infected with an average fluke burden of 4794. Out of these, 56 (56%) were cattle, with fluke burden of 2517(52.5%}, 32 (32%) were sheep with fluke burden of 1907 (39.8%) and 12 (12%} with fluke burden of 370 (6.7%) were goats. Out of the 100 cattle, 20 (20%) males and 36 (36%) females were infected with flukes. Also, out of the 100 sheep, 4 (4%) were males and 28 (28%} were females and in goats, 4 (4%) were males while 8 (8%) were females. On the basis of age the result showed that 4(7.1%) out of the 56 infected animals were those of 1-2 yrs, 40 (71.4%} were 3-4 yrs old and 12 (21.4%) were animals >4 yrs in respect of cattle. Of the 32 infected sheep, 6 (18.7%) were 1-2 yrs, 18(56.2%) were 3-4 yrs and 8(25%) were >4yrs. Similarly, 2(16%) out of the 12 goats infected were 1-2 yrs, 8 (66.6%) were 3-4 yrs old and 2 (16%) were >4 yrs. *Paramphistomiasis* is prevalent in the area, with female cattle having higher prevalence. Measures for control of these parasites should be prioritized in the study area.

Keywords; Prevalence, Paramphistomiasis, Fluke, Burden

INTRODUCTION

Ruminants are herbivorous mammals that possess a four-chambered stomach. The major ruminants reared in Sokoto include cattle, sheep, goats and camels. Such animals are reared for various reasons; material gains, cultural and recreational needs of the farmers (Davendra and Mcleroy, 1982). The main advantages of rearing these animals include their being source of income, employment, sources of investment, stability and security, farm power, food, by-product utilization, social values and recreational benefits (Davendra and Mcleroy, 1982).

One of the problems of rearing these important animals is their susceptibility to diseases including; viral, bacterial, fungal and helminthic diseases. One of the major helminth that interferes with successful production of ruminants is *Paramphi-stomum*. The major species that cause the disease include *Paramphistomum cervi* and *P. microbothrium*, which are predominantly found in Africa (Smyth, 1996) . Adult paramphistomes, which are the major parasites of rumen and reticulum of

ruminants cause localized loss of rumen papillae, while the juvenile flukes penetrate the mucosa of the duodenum and upper ileum to plug feed, causing necrosis and haemorrhagic ulcerations called duodenitis leading to severe pathological changes (Soulsby, 1982; Bui and Abbagana, 2007).

Many reports indicate that cattle and sheep are commonly affected in which heavy infections with immature flukes in the upper and small intestine can cause ill health and death (Primefact, 2007). In some areas e.g. India, South Africa and Australia, mortality may reach 80-90%. In cattle and sheep, 30-40% mortality occurs (Soulsby, 1982). The disease show a definite seasonal pattern with higher prevalence during the rainy season (Chaudhri, 2000).

Numerous snail species have been reported as intermediate hosts of paramphistomes, but most common are *Lymnaea*, *Planorbis*, *Bulinus* and *Fussaria* sp.(Soulsby, 1982). Paramphistomes are the main cause of anaemia and ulcerations that

lead to destruction of delicate organs. It is characterized by high morbidity and mortality in young calves, lambs and young camels and goats, whereas less severe infections result in indigestion and retarded growth after weaning (Hussein, 1994; Chaudhri, 2000). Paramphistomiasis causes poor growth of animals, low meat and milk value, thus, causing high economic loss to the farmers. In view of the socio-economic implication and paucity of data on prevalence and burden of this study was conducted.

MATERIALS AND METHODS

Sample Isolation and Preparation

A total of 300 animals consisting of 100 cattle, sheep and goats each slaughtered at Sokoto Central Abattoir were examined between the months of May and October 2007. Contents of stomach chambers were poured off and washed thoroughly. Flukes attached to stomach surfaces were counted, average fluke burden per animal was determined. Samples of flukes were taken by means of a pair of forceps from cattle, goats and sheep in separate specimen bottles containing 10% formalin. Sexes and ages of the animals were recorded. Ages were determined by teething arrangement of the animals as described by Gatenby (1991).

The samples were fixed, stained, viewed microscopically for identification using fixation and staining procedures adopted by Getchen (1979).

RESULTS

Out of the 300 animals examined 100(33.3%) were infected with fluke burden of 4794. Of the 100 cattle examined, the prevalence was 56 (56%) with flukes burden of 2517 (52.5%). Out of the 100 sheep 32 (32%) were infected with flukes burden of 1907 (39.8%) and 12 (12%) in respect of goats with flukes burden of 370 (6.7%). Fig. 1. Out of the one hundred cattle 20(20%) males and 36(36%) females were infected. Out of the 100 sheep, 4(4%) males and 28(28%) females were infected. Similarly, out of the 100 goats, only 4 (4%) males and 8 (8%) were found infected (Fig. 2).

On the basis of age groups, 4 (7.1%) of the 56 infected were animals of 1-2yrs, 40 (71.4%) were

3-4 yrs and 12 (21.4%) were >4yrs in respect of cattle. Out of the 32 infected sheep, 6 (18.7%) were animals of 1-2yrs, 18(56.2%) were 3-4 yrs and 8 (25%) were >4 yrs. In goats 2(16%) out of the 12 infected were 1-2yrs, 8 (66.6%) were 3-4 yrs and only 2 (16%) were >4 yrs (Fig.3).

DISCUSSION

Presence of paramphistomiasis in this area may be due to the marshy lands of Sokoto/Rima river valley which may be a good breeding site for snail hosts hence, transmitting site of paramphistomiasis. Higher prevalence in cattle may be as a result of their usual grazing and watering sites; the streams, rivers and lakes where *Fasciola* and *Paramphistomum* transmission is easy as against sheep (particularly rams and goats) which were usually reared intensively and semi-intensively respectively. Similar reports in line with this finding include those from Noble and Noble (1982), Soulsby (1982) and Smyth (1996). Another probable explanation to low infection in sheep and goats may be the fact that sudden death due to acute infection as a result of tissue migration by the juvenile flukes in small ruminants (Loosli *et al.* 1999). The disease might have caused sudden death to such animals even before they were slaughtered, thus, reducing the chances of sheep and goats being positive during examination. Yet another hypothetical explanation may be the fact that stomach surface of cattle is ordinarily larger, thus, provides larger surface area for flukes attachment. Higher prevalence among females may be due to loss of immunity during pregnancy, birth and lactation (O'Sullivan and Donald 1973; Barger (1993).

The lower prevalence observed among animals of 1-2yrs old might be due to the fact that only healthy young animals were brought for slaughter and those affected by acute paramphistomiasis died even before they were brought for slaughter (Loosli *et al.*, 1999). Animals with higher prevalence may be due to the fact that they form the bulk of the animals brought to abattoir for slaughter, thus, higher probability of being found positive to infection.

Older animals, ie, >4 yrs, found with low prevalence may be due to increase in their

immunity. Hussein (1994) and Horak (2003) reported previous infections and higher age as factors that boost the immunity of animals against re-infection.

The result of the study has revealed the endemicity of this area, with cattle showing

higher prevalence followed by sheep and goats in that order. There is therefore the need for control by treating all animals with appropriate anthelmintics before and after rainy season as recommended by earlier workers (Schillhorn van Veen, 1980; Soulsby, 1982; Smyth, 1996).

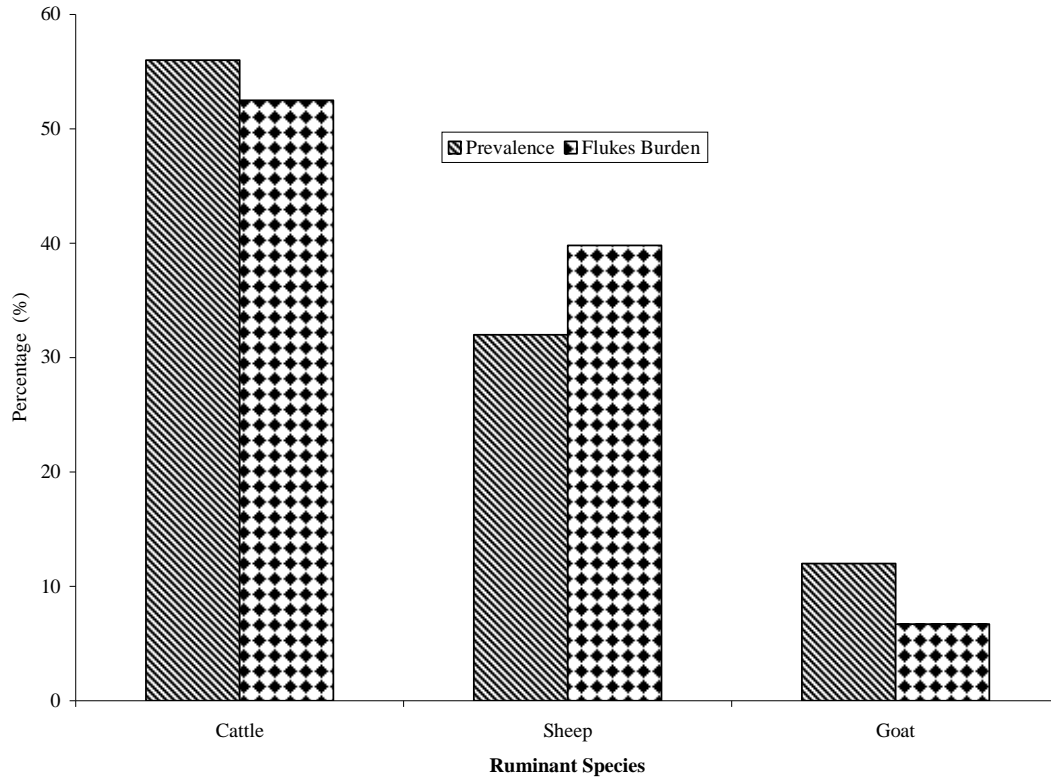


Figure 1: Prevalence of Paramphistomiasis and Flukes Burden in Animals Slaughtered at Sokoto Central Abattoirs, Sokoto State, Nigeria

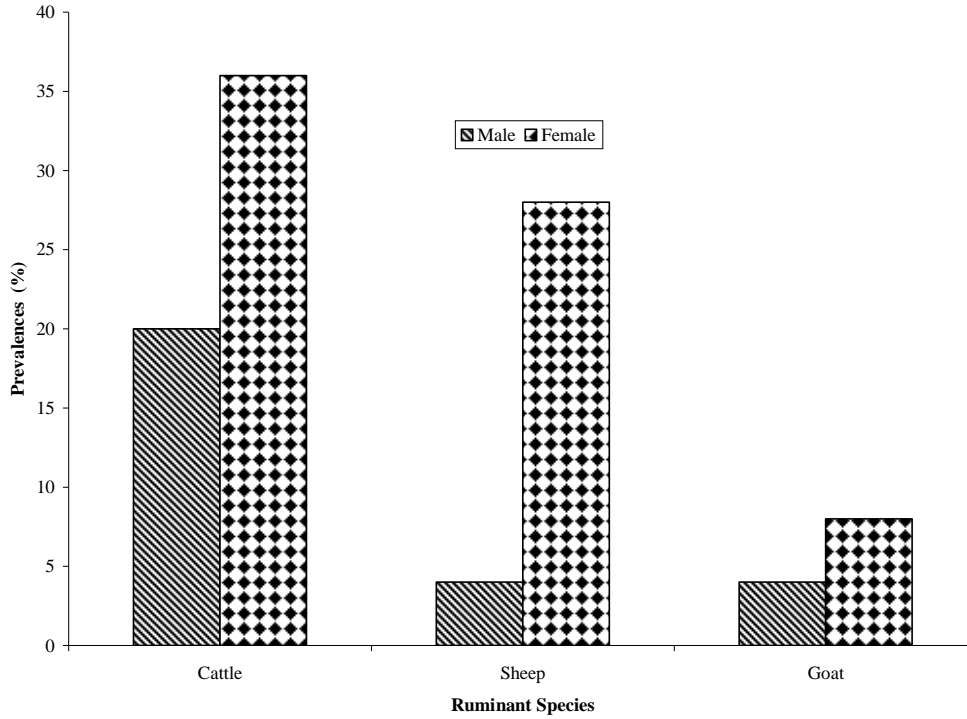


Figure 2: Sex Specific Prevalence of Parmphistomiasis in Animals Slaughtered at Sokoto Central Abattoir, Sokoto State, Nigeria

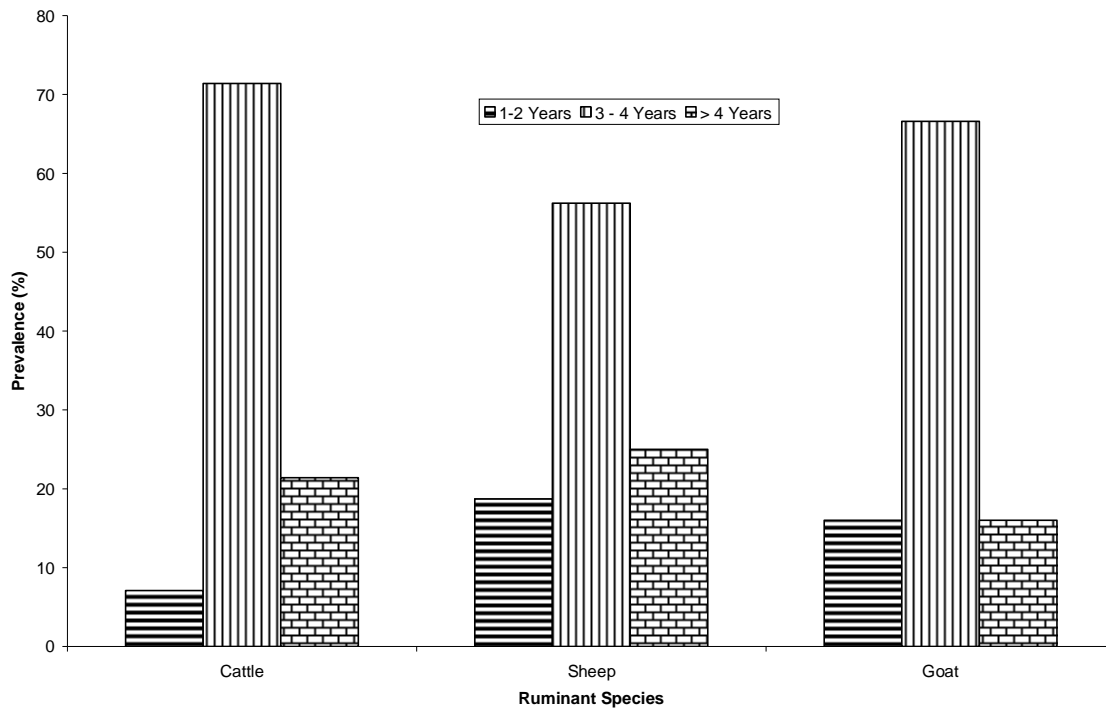


Figure 3: Age Specific Prevalence of Paramphistomiasis in Animals Slaughtered at Sokoto Central Abattoir, Sokoto State, Nigeria



Plate 1: Adult Paramphistomes in the rumen of Cattle at Sokoto Central Abattoir, Sokoto State, Nigeria.

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