

Prevalence Of Gastrointestinal Parasitic Infections Among Ruminants Animals Slaughtered In Katagum Abattoir Of Bauchi State, Nigeria

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Abstract: An epidemiological study of gastrointestinal parasitic infections of animals slaughtered in Katagum Local Government Abattoir of Bauchi state, Nigeria was carried out between May to September, 2016. The objective of this study was to determine the prevalence of gastrointestinal parasite and their types found in the area in relation to sex and species of the animal slaughter in the area. A total of 400 faecal sample were examined using formol ether concentration technique, 247 (61.8%) were infected with different gastrointestinal parasites. The parasite encountered during the study included Nematode (*Ascaris spp*, *Haemonchus spp*, *Strongyloides sp* and *Trichuris spp*), Cestoda (*Taenia spp* and *Avitellina spp*) and trematode (*Fasciola spp*, *Schistosoma spp* *Dicrocoelium spp* and *Gastrotylax spp*). The prevalence of the infection between species was 95 (71.6%), 53 (60.4%) and 252 (58.4%) for the sheep, cattle and goat respectively. Among the sheep and goat examined females were more infected than males while in the cattle males were more infected than their female counterparts. The result of the study revealed a high prevalence of gastrointestinal parasites among animals slaughtered in the area. Therefore, there is need for educating the farmers on proper animal health care, feeding, sanitary conditions and routine deworming of their animal towards maximum productivity.

Keywords: Gastrointestinal Parasite, Abattoir, Slaughtered Animal, Bauchi State.

I. INTRODUCTION

Gastrointestinal parasites (helminthes) caused a major public health problem for farmers in many rural communities including the study area. The direct losses caused by these parasites are attributed to acute illness and death, premature slaughter and rejection of some parts at meat inspection and the indirect losses due to diminution of productive potential such as decreased growth rate, weight loss in young growing animals and late maturity of slaughter stock (Hansen and Perry, 1994). These animals (Cattle, Goats and sheep) represent an important source of animal protein in many countries of the world, supplying a good percentage of the

daily meat and dairy products in cities and villages in such countries including Nigeria (Nwosu *et al.*, 2007). Apart from being the source of animal protein, their wastes are also very important in agriculture (Nawathe *et al.*, 1985 and Nwosu *et al.*, 2007). In some traditional settings including the study area, they play an essential role in the socioeconomic system, representing family wealth or survival kit especially in the rural areas. However, these animals serve as sources of income earning to major ruminant's dealers/sellers of live animals and butchers (meat sellers). It generates employments and creates markets for larger number of people who explore the animal's products and byproducts for economic gain (Lawal-Adebowale, 2012). Meat as one of the most important

livestock products is lost due to various diseases including helminthic infections. The disease causes a gradual deterioration of animal performance and has been known to be a major cause of economic loss in livestock in the tropics and Nigeria in particular (Kudi and Kalla, 2001).

Urquhart *et al.* (1996) reported the most important cestode parasites of small ruminant both in terms of public health and veterinary medicine to belong to the family Taeniidae. These include cystic or larval stages of *Echinococcus granulosus*, *Taenia hydatigena*, *T. ovis* and *T. multiceps*. Anon (1994) reported all trematode species that are parasitic in small ruminants belong to the sub class Digenea and the most important species in Africa are Liver flukes, *Fasciola hepatica*, *F. gigantica* and *Dicrocoelium* species and rumen flukes *Paramphistomum* species. However, Githigia *et al.* (2001), Anon (1994) and Hansen and Perry, (1994) reported the Nematelminthes (nematodes) include several super families of veterinary importance which are Trichostrongyloidea, Strongyloidea, metastrongyloidea, Ancylostomatoidea, Rhabditoidea, Trichuroidea, Filarioidea, Oxyruoidea, Anscaridoidea and spiruroide. Therefore, the main objective of this study was to determine the prevalence of gastrointestinal parasite and the types found in the area in relation to sex and species of the animal slaughtered in the study area. As far as to the best of our knowledge this may be first of this kind of study reported from this part of Nigeria.

II. MATERIALS AND METHODS

STUDY AREA

The study was conducted in Katagum Local Government Area, Bauchi State, Nigeria. The town is located on the northern bank of the Jama'are River, which is a tributary of the Hadejia. Most of the inhabitants are Hausas others include Fulani, Gudurawa, Kanuri, Mangawa, Bede, Karekare, Ngizim, Shirawa, or Teshenawa tribes. Chief agricultural crops includes; peanuts (groundnuts), sorghum, millet, rice (especially in the riverine fadamas, or "floodplains"), cowpeas, cotton, indigo, and gum arabic. Livestock reared in are horses, cattle, goats, sheep, and donkeys Wikipedia, (2016).

The animal slaughtered (cattle, sheep and goat) in abattoir of Katagum Local Government Area. Bauchi State, Nigeria formed the study animals. These are rear in the area and some were transported from the North- eastern parts of the country mainly Borno, Yobe and Adamawa States as well as neighboring countries such as Niger, Chad and Cameroon. The study animals were 252 goat, 95 sheep and 53 cattle.

SAMPLE COLLECTION

The animals employed in this study are those reared around Katagum as well as those brought from Borno, Yobe and Adamawa States or Niger Chad/ Cameron. Visits were done to the abattoir on each day of the sample collection during the study period May-September, 2016 as early as possible between 6:00am-7:30am when the animals are usually prepared for slaughter. The animals were identified and labeled as male or female. A total of 400 samples of fresh

fecal material were collected in a clean open screw capped transparent dry and sterile containers directly from the rectum of slaughtered animal. The samples collected were immediately transported to the College of Education Azare Clinic for laboratory analysis.

PROCESSING OF SAMPLE AND EXAMINATION

Each faecal sample was processed by formol ether technique as described by Cheesbrough, (1999) and Ballweber, (2001). 1 g of stool sample was emulsified with 4 ml of 10% formol saline in a test tube. The mixture was filtered into another test tube using a cloth gauge and 3-4 ml of diethyl ether was added and shaken vigorously and allowed to stand for two minutes. The mixture was then centrifuged at 1000 revolutions per minutes (1000 rpm) for 3 minutes. Using a glass rod, the faecal debris from the side of the tube was loosened and the tube inverted to pour off the supernatants. The tube was returned to its original upright position and the fluid from the side of the tube was allowed to drain to the bottom. The deposit was mixed by tapping the tube with the finger and using a Pasteur pipette. A drop of the sediment was applied on a microscope slide; covered with a cover slip and examined under the microscope using $\times 10$ and $\times 40$ objectives (Cheesbrough, 1999 and Ballweber, 2001). Eggs were identified on the basis of their morphological features as described by Soulsby (1982).

STATISTICAL ANALYSIS

Simple percentage was used to determine the prevalence of the parasite based on sex and species of the animal, while χ^2 was used to test for significance at 0.05%.

III. RESULT

A total of four hundred stool samples were screened for this study; 53 cattle, 95 sheep and 252 goats. The prevalence rate among the cattle, sheep and goats was 60.4%, 71.6% and 61.8% respectively (Table 1).

Table 2 shows the prevalence of the gastrointestinal parasite of the animals slaughtered during the study according to gender. The result revealed high prevalence in male (47.2%) than female (13.2%) for cattle while in sheep and goat is higher in the female 67.4% and 29.8% than male 4.2% and 28.8% respectively.

The species of gastrointestinal parasite found in the study area. Ten (10) different species encountered which included four (5) nematodes (*Haemonchus spp*, *Strongyloides spp*, *Trichuris spp* and *Ascaris spp*), two (2) Cestodes (*Taenia spp*, and *Avitellina spp*) and four (4) trematode (*Dicrocoelium spp*, *Fasciola spp*, *Gastrotylax spp* and *Schistosoma spp*) respectively (Table 3).

Species	Number examined	Prevalence (%)
Cattle	53	32 (60.4)
Sheep	95	68 (71.6)
Goat	252	147(58.4)
Total	400	247 (61.8)

Table 1: Prevalence of gastrointestinal parasite among animal slaughtered in Katagum local government abattoir during the study according species

Ruminant	Sex	Number Examined	Prevalence (%)
Cattle	Male	37	25 (47.2)
	Female	16	7 (13.2)
Sheep	Male	10	4 (4.2)
	Female	85	64 (67.4)
Goat	Male	149	72 (28.6)
	Female	103	75 (29.8)
Total		400	247 (61.8)

Table 2: Sex related prevalence of gastrointestinal parasite among animal slaughtered in Katagum local government abattoir

Ruminant	Nematode	Cestode	Trematode
Cattle	<i>Ascaris spp</i>	Nil	<i>Fasciola spp</i>
	<i>Haemonchus spp</i>		<i>Schistosoma spp</i>
Sheep	<i>Strongyloides spp</i>	<i>Avitellina spp</i>	<i>Dicrocoelium spp</i>
Goat	<i>Strongyloides spp</i>	<i>Taenia spp</i>	<i>Gastrotylax spp</i>
	<i>Trichuris spp</i>	<i>Avitellina spp</i>	<i>Dicrocoelium spp</i>

Table 3: Species of helminthes encountered during the study

IV. DISCUSSION

The epidemiological studies of gastrointestinal parasitic infection among animal slaughtered in Katagum local government abattoir area of Bauchi State, Nigeria reveals an overall prevalence of 61.8% in the three types of animals slaughtered (cow, sheep and goat). The high prevalence recorded in this could be attributed to the time of study (rainy season). The high moisture content and temperature favours the growth and development of larvae on pasture resulting in increased contact between the host and parasites. This finding is in agreement with Wadhwa *et al.* (2011), Ohaeri (2012) and Yahaya and Tyav (2014) who recorded high incidence of parasitic infection among animals slaughtered during rainy season in Bikaner, Rajasthan, India, Umuahia, Abia State, Nigeria and Wudil, Kano State, Nigeria respectively.

The study reveals that, the infection rate of gastrointestinal parasite was higher among males of cattle than females but in contrast to sheep and goat where females were more infected than their male counterparts. These agreed with Yahaya and Tyav (2014) who reported 24.8% in male than 10.1% in female in Bovine (cattle) slaughtered in Wudil abattoir Kano State, Odikamnor *et al.* (2015) reported 45.6% infection rate in females and 33.5% in males of goats

slaughtered in Anka abattoir, Kogi state and Ardo and Bitrus, (2015) who reported 44.4% in females and 36.7% in males sheep slaughtered in Jalingo abattoir, Taraba State.

Furthermore, the study revealed that, the animals slaughtered in the study area were infected with various species of gastrointestinal parasites. The parasites encountered during the study were ten different species which included *Haemoncus spp*, *Strongyloides spp*, *Trichuris spp*, *Ascaris*, *Taenia spp*, *Avitellina spp*, *Dicrocoelium spp*, *Fasciola spp*, *Gastrotylax, spp* and *Schistosoma spp*). *Taenia* and *Strongyloides* species had the highest prevalence rate during the study. The different helminthes species encountered in the study had been reported by different researchers in other parts of the country (Yahaya and Tyav, 2014; Yaro *et al.*, 2015; Odikamnor *et al.*, 2015).

In conclusion, the high prevalence rate of gastrointestinal parasite in animals slaughtered in the area bring to the fore concerted effort for educating the farmers proper animal health care, feeding, good sanitary conditions and deworming exercise towards maximizing their productivity.

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