# ASSESSMENT OF GASTROINTESTINAL PARASITIC INFECTION OF CATTLE AND GOAT SLAUGHTERED AT AKWANGA ABATTOIR NASARAWA STATE, NIGERIA

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## ABSTRACT

Gastrointestinal parasitic diseases remain a constraint to cattle and goat production industries in developing countries. An abattoir survey was carried out to determine the prevalence of gastrointestinal helminths in slaughtered cattle and goat in Akwanga abattoir in Nasarawa State Nigeria. A total of 120 feacal samples of 60 cattle's and 60 goats. Formal ether concentration technique was used for sample analysis and examined microscopically. The data obtained were statistically analysed using simple percentages to determine the prevalence rate in both the cattle and goat. The result showed that 31 (25.83%) cattle and 28(23.33% of goats were infected with gastrointestinal helminths. The prevalence rate were higher in cattle than the goats. There was no significant different at ($P<0.05$). Among the cattle, the helminths identified were *Faciola gigantica* (9.35%), *Schistosoma bovis* (13%), *Taenia saginata* (16.12%), *Hymenolepis dimunuta* (9.67%), *Haemonchus spp* (13%), *Taxocara spp* (3.21%), *Trichuris spp* (3.22%) and *Ascaris spp* (3.22%). The most prevalent helminth was *Faciola gigantica* (19.35%), followed by *Taenia saginata* (16.12%) respectively. The helminths identified from goat on the other hand are *Entamoeba spp* (7.14%), *Schistosoma spp* (3.57%) *Monezia spp* (3.57%), *Hymenolepis spp* (7.14%), *Schistosoma spp* (3.57%) *Monezia spp* (3.57%), *Hymenolepis spp* (7.14%), *Trichuris spp* (17.85%) *Stronglyloide spp* (10.21%) and *Toxocara spp* (3.57%). The most prevalent helminth was *Trichuris spp* and *Fasciola spp* (17.85%) followed by *Taenia spp* (14.28%), while *Toxocara spp, Schistosoma spp, Monezia spp* with (3.57%) was the least dorminant.

The result showed a moderately high prevalence of gastrointestinal helminths during the study. This findings reflect a growing burden of gastrointestinal helminths infections at abottior level. Therefore, good management and strategic deworming proper feeding and good sanitation need to be applied to reduce the prevalence of gastrointestinal parasites and their risk factor to lessen economic loss caused by the parasites.

**Keyword**: Lafia, Abattoir, Prevalence, Gastrointestinal Cattle and Goat

## INTRODUCTION

Livestock farming is among the major sectors representing a valuable asset in both traditional and modern agriculture in Sub- Saharan Africa, as well as in other tropical and sub-tropical regions of the world providing animal protein, milk, and beef during festivities around the world, flexible income for family units, employment, farm energy and manure (Yahava, and Tyav, 2014). However, this sector is hampered by the presence of several diseases including

helminthes infection causing not only high mortality, frequently causing losses of animal, but also decrease of meat and milk production, this situation discourages investment in livestock industry (Lebel *et al.,* 1996).

In Nigeria, the livestock sector contributes 5.2%of the gross domestic products (GDP) while cattle production solely contributes 50% of the total meat Adedipe, *et al.* (1996). Meat is one of the most important livestock products, although there could be losses due to various diseases including helminth infections. The quantity of meat and revenue obtained from domestic livestock is far below the national demand due to factors such as death and ill health with associated reduced productivity and increased cost of treatment Hossain, (2011).

The numbers of gastrointestinal tract (GIT) parasite species are known to infect cattle and goats worldwide. The most important ones include nematodes like *Strongyleiodes* species (*Haemonchus, Ostartagia, Trichostrongylus, Cooperia*) and trematodes of economic importance *Fasciola* species (*Fasciola hepatica* and *Fasciola gigantica*) and *Paramphistomum species* (*Paramphistomum* cervei), while cestodes like *Monezia* species (*Monezia benideni* and *Monezia expanza*) could also be important constraints in animal production Rafiullah *et al*. (2011). There are many associated risk factors influencing the prevalence and severity of GI helminths. These include age, sex, and weather condition and husbandry or management practices Ijaz (2009)**.**

Helminths are known to be a major constraint to ruminant's well-being and productive performance Hesterberg (2008). Infections with helminthes parasites especially those of gastrointestinal tract (GIT) can and in some circumstance do cause substantial losses to cattle and goat owners. The disease causes a gradual deterioration of animal performance and has been known to be major economic losses in the tropics and in Nigeria Maina (1986) and Kudi *et al.*

(2009). The present study was undertaken to investigate the gastrointestinal parasites among the frequently slaughtered animal-cattle and goat in Akwanga abattoir in Nasarawa State.

## MATERIAL AND METHODS

This study was carried out in Akwanga of Nasarawa State, Nigeria. It is located in the North Central of Nigeria. The climate of the area is tropical and the vegetation is predominantly guinea savannah with an annual rainfall of 1,090mm. There are two distinct seasons the rainy season and the dry season; the former last from April to October and latter from November to March. The minimum temperature range of $27^{o}C$ – $28^{o}C$ and maximum of $32^{o}C$ – $36^{o}C$. The population of Akwanga is estimated to be 250, 683 Census (2006) Akwanga, being in the guinea savanna is typified by very high temperature and low rainfall. The inhabitants are predominantly Mada, Eggon and Hausa/Fulani groups. These groups are engaged business, farming, rearing animals and a few civil servants.

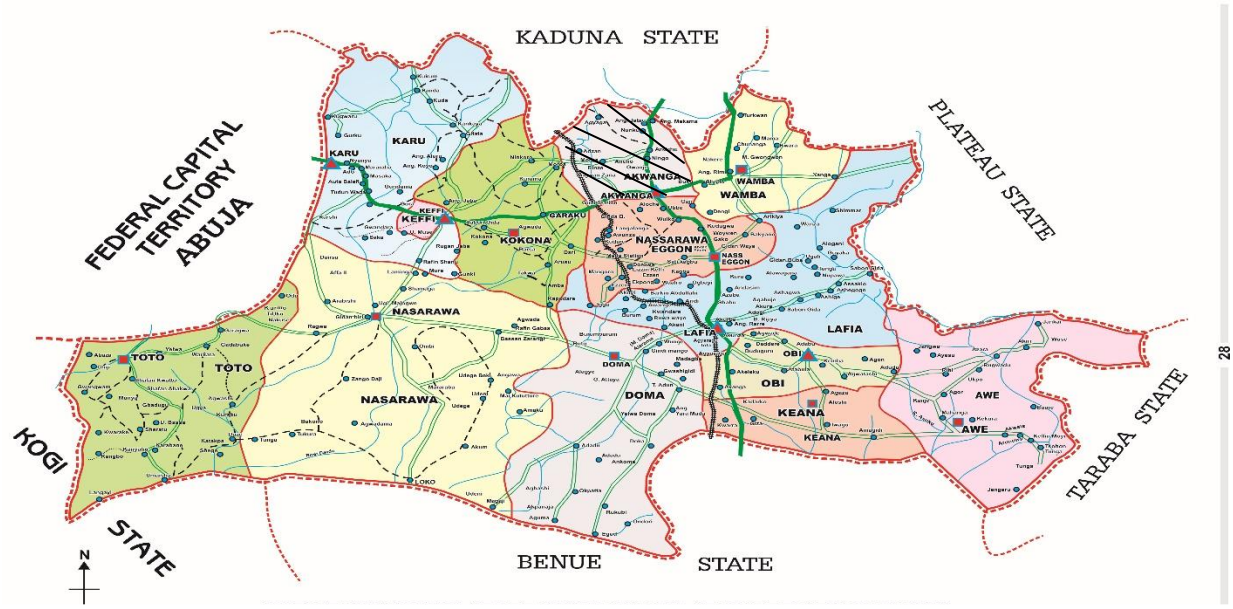


**Fig 1. Map of Nasarawa State showing the selected study town**

## Ethical Clearance

Ethical clearance was obtained from the veterinary clinic of Akwanga LGA, Nasarawa State, Nigeria.

## Study Design

Abattoir survey was conducted based on cross sectional study during routine meat inspection and on randomly selected cattle and goat slaughtered at Akwanga Municipal abattoir of Nasarawa State, Nigeria

## Data Analysis

Data were subjected to descriptive statistical analysis using percentages to determine the prevalence rates in the different breads.

**Parasitological Examination**

The faecal samples examined macroscopically for their (water content) as watery, loose and soft or famed. Collected faecal materials were subjected to form of ether concentrated techniques (Cheesbrough (1999) and Bailweber (2001).

**Formal ether concentration technique**

A gram of stool sample was emulsified with 4ml of 10% formal saline in a test tube. The mixture was filtered into a test tube using a wire quaze and 3-4ml of diethyether was added, shake thoroughly and allowed to stand for two minutes. The mixture was then centrifuged at 100 revolutions per minutes (1000 rpm) for 3 minutes. Using a glass rod the feacal debris from the scale of the tube was worsened and the tube inverted to pour off the supernatants. The tube was returned to its original upring at position and the fluid from the side of tube allowed drain to the bottom. The deposit was mixed by tapping the tub with the finger and using a pasture pipette. A drop of sediment was applied on microscope slide, cover with a cover slip and examined under the microscope using x10 and x40 objective (Cheesbrough 1999) and Ballweber (2001).

**Identification Egg**

Parasite eggs were identified based on morphological features, while the data obtained from the microscopic examination of the samples were recorded on a sheet for both cattle and goat for easy interpretation.

**Table 1: Prevalence of Gastrointestinal Parasites in Cattle and Goats in Akwanga Abattoir**

| Animals | No. Exam | No. Infected | Prevalence % |
|---|---|---|---|
| Cattle | 60 | 31 | 25.83 |
| Goat | 60 | 28 | 23.33 |
| **Total** | **120** | **59** | **49.15** |

(P<0.05) indicates statistically difference

**Table 2: Prevalence of gastro intestinal parasites in cattle at Akwanga Abattoir**

| Gastrointestinal parasites | No of cattle infected | Prevalence % |
|---|---|---|
| **Trematode** | | |
| *Faciola gigantica* | 5 | 9.35 |
| *Schistosoma bovis* | 4 | 13 |
| *Dicorocilium* | 1 | 3.22 |
| **Cestodes** | | |
| *Taenia saginata* | 5 | 16.12 |
| *Monezia expansa* | 2 | 6.45 |
| *Hymenolepis dimunuta* | 3 | 9.67 |
| **Nematodes** | | |
| *Haemonchus spp* | 4 | 13 |
| *Nematodions spp* | 2 | 6.45 |
| *Toxocara spp* | 1 | 3.22 |
| *Ascaris spp* | 1 | 3.22 |
| *Trichuris spp* | 1 | 3.22 |
| *Strongybides spp* | 1 | 3.22 |
| **Total** | **31** | **95.32** |

60 samples were examined

**Table 3: Prevalence of Gastrointestinal Parasite in Goat at Akwanga abattoir**

| Gastrointestinal parasite | No of Goat Infected | Prevalence % |
|---|---|---|
| **Trematode** | | |
| *Faciola spp* | 5 | 17.85 |
| *Schistosoma spp* | 1 | 3.57 |
| *Entomeoba spp* | 2 | 7.14 |
| **Cestode** | | |
| *Monezias spp* | 1 | 3.57 |
| *Taenia spp* | 4 | 14.28 |
| *Hymenalepis spp* | 2 | 7.14 |
| **Nematode** | | |
| *Trichuris spp* | 5 | 17.85 |
| *Ascaris spp* | 4 | 14.28 |
| *Strongyloides spp* | 3 | 10.21 |
| *Toxocara spp* | 1 | 3.57 |
| **Total** | **28** | **59.05** |

60 samples were examined

**RESULT**

Out of the total of one hundred and twenty ruminants comprising 60 cattle and 60 goats examined, the result showed that 31(5.83%) of cattle and 28(23.33%) of the goat were infected with gastrointestinal parasites. The infections as slightly higher in cattle than the goat though the difference was no statistically significant (P>0.05) (Table 1). In the cattle, some of the organisms identified were *Faciola gigantica*, *Schistosoma bovie*, *Taenia saginala, Hymenalepis dimunata*, *Haemonchus spp, Toxocara spp, Trichuris spp* and *Ascaris spp*. The most prevalent organism was *Faciola gigantica* (19.35%) followed by *Taenia saginata* (16.12%) while Dicrocilium, *Toxocara spp, Ascaris spp, Trichuris spp* and *Strongytoides spp* (3.22%) respectively were the least prevalent (Table 2) some of the organisms identified from the goat in the other hand include; *Entamoeba spp, Schistosoma spp, Monezias spp, Hymenolopia spp, Trichnis spp, Strongyloida spp* and *Toxocara spp*. The most prevalent organism was *Trichuris spp* and *Faciola spp* with (17.85%) each, followed by *Taenia spp* and *Ascaris spp* with (14.28%) each, while *Toxocana spp, Monezias* and *Schistosoma spp* with (3.57%) each respectively was the least dorminant (Table 3).

**DISCUSSION**

This study disclosed that cattle and goat slaughtered at Akwanga abattoir were infected with different gastrointestinal parasites, with an overall prevalence of 49.15%. From this study it was observed that more gastrointestinal parasites were found to have infected more cattle than goat. This result is similar to that conducted by Edosomwan and Shoyemi (2012) in Benincity. This could be due to the fact that the cattle are mostly raised under extensive agricultural system, where they undergo free range grazing where small dropping from the animal degenerates rapidly, thus releasing worm larval which inturns increases the rate of pasture contamination bringing about a prevalence rate when compared to that of the goat which are mostly raised

under intensive system. Another reason for the differences recorded in the prevalence of the gastrointestinal helminth parasites observed in this study and that recorded by other researchers may be because of the differences in location and management practices (Regassa *et al*, 2006) and period of investigation. The study was carried out during rainy season which is known to be the period with high infectivity rate due to high humidity and other optimal environmental conditions which enhances transmission in the tropics. This is similar to a work conducted by Belem *et al.* (2001) who recorded a high incidence of parasite in the season. This might be because of an increase in humidity content that favours the developments of eggs of these parasites. Also in this season, there is high rate of pastoral growth, which brings about an increase in contact rate between the parasite and the host.

Parasites discovered in this research study include; *Trichuris species, Moniezia spp Strongyloides spp, Faciola* and *Taenia species*. It is similar to that identified by Rehbein *et al*. (2013); Biu and Eteng (2001). Organism parasites discovered in the present study belong to the group of parasites known to cause production disease. Unfortunately, majority of the parasites were found in both cattle and goat for instance, *Haemonchus contortus* which is a blood sucking nematode have been found to result in production loses and even death in untreated animals (Marshall *et al*., 2012). Their presence confirms the fact that they are the most important pathogen of cattle and goats in the tropical and subtropical environment. Co-infection of many of these parasites has been reported with *Haemonchus contortus* and *Trichostrongyus spp* most prevalent and highly pathogenic in livestock (Tan *et al.,* 2014). Those parasites constitute a main source of health issue related to livestock. The presence of these parasites in the animal may cause anaemia, retarded growth (Rafiullah *et al*., 2011). Heavy infestation can result in weight loss, reduced productivity restlessness and even death. The control of disease caused by these

parasites is somewhat difficult because its epidemiology is complex and the prevalence rate changes drastically with environmental factors.

In Nigeria, little or no attention is given to the livestock sector and is therefore faced with many problems such as parasitic disease infestation. This study showed a moderately high rate of gastro intestinal parasite in both cattle and goat studied which posed health risks to human and therefore the need for regular de-worming of the animals, health education and proper sanitary measures including the use of personal protective equipment should be encouraged in the abattoir.

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