PREVALENCE OF *HAEMONCHUS CONTORTUS* INFECTION OF SHEEP AND GOATS IN MINNA METROPOLIS, NIGER STATE, NIGERIA.

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ABSTRACT
The study was carried to record the prevalence of *Haemonchus contortus* (*H. contortus*) egg shedding in randomly selected sheep and goats in Minna metropolis from June to September 2020. A total of 96 faecal samples from small ruminants comprising of 48 sheep and 48 goats were collected and examined using Floatation and sedimentary techniques. Overall prevalence of *Haemonchus* egg count in the study area was 62.5% with (75.0%) and (50.0%) prevalence in sheep and goats respectively. Female animals were found to shed more eggs (66.7%) than male animals (58.3%). Similarly, younger animals recorded higher prevalence (68.8%) than adult animals (56.3%). Hence, further study is suggested on epidemiology of *Haemouchus contortus* infection in the study area.

Key words: Nematode, Infection, *Haemonnchus contortus*, Prevalence, Minna metropolis.

INTRODUCTION
Haemonchus contortus (*H. contortus*) also known as wire worm is one of the greatest pathogenic nematodes of small ruminants. It is a blood sucking gastric parasite which is found in the abomasum of the small ruminants that causes anaemia and reduced productivity (Githigia *et al*., 2001). In addition, the parasite is responsible for economic detriment in small ruminant due to susceptibility to other infections, morbidity as well as life threatening problem in a severe infection (Jaja, *et al.*, 2017).The frequency and severity of *H. contortus* epidemic associated with small ruminants are rifer during wet season than dry season (Abdo *et al*., 2017). High rainfall and temperature promote rapid hatching of egg on pasture and hence increased contamination.
Apart from direct effects of *H. contotus* infection on animals' production and efficiency, it could also increase the cost of medication as well as management (El-Ashram, *et al*., 2017; Jaja, *et al*., 2017). Therefore, this study was designed to record the prevalence of *Haemonchus contortus* egg shedding in sheep and goats' in Minna metropolis, Niger State, Nigeria with the view to suggest preventive and control measures with the aim of improving the productivity of sheep and goats farming.

MATERIALS AND METHODS
Study area
Minna metropolis is the capital of Niger State, situated in the North-Central, Nigeria. It lies within latitude $9^{o}35'50"$N and longitude $6^{o}33'25"$E with an area of 73.4 km^2 and a population of 201,429 at the 2006 census. The average annual temperature is 27^{o}C and average annual rainfall of about 1229mm (Niger State Bureau of Statistics 2010).
Animals were selected through random sampling described by Thrusfield (2005). Faecal samples were collected per rectum from June to September 2020 from young and adult sheep and goats of all sexes raised on natural pasture in the study area. A total of 96 small ruminants comprising of 48(sheep) and 48(goats) were examined for the present of *Haemonchus contortus* egg in their faeces. Feaces were swooped from the rectum of the animals using gloved index finger, with the animals restrained in a standing position. Species, sex and approximation age of all animal were recorded before collection (Rick *et al*., 2000). Collected faecal materials were subjected to flotation and sedimentary technique in accordance with technique described by Rick *et al*. (2000). All data obtained were analyzed using statistical software package for social science (SPSS) version 20.0.
Results
Overall 62.5% (60/96×100) of the small ruminants under study in Minna metropolis had *H. contortus* egg in faeces (Table 1). There was no statistically significant association ($P> 0.05$) between the prevalence of *Haemonchus* egg count in sheep 75.0% (36/96×100) than in goat 50.0% (24/96×100).

The prevalence of faecal egg count in the small ruminants in Minna metropolis based on gender is shown in Table 2. Females were found to have higher rate of egg shedding 66.7% (32/48×100) than in males' 58.3% (28/48×100). There was no statistical difference (P> 0.05) in the faecal egg count based on sex in the small ruminants sampled. There was no statistical difference (P> 0.05) in the prevalence of egg count when age was considered in the small ruminants (Table 3). Younger animals had a higher prevalence of faecal egg count 68.8% (33/48×100) than adult ones 56.3% (27/48×100).

Table 1: Prevalence of *Haemonchus* egg shedding in small ruminants by species in the study area.

Category	No. Examined	No. Positive (%)	Significance
Sheep	48	36 (75.0)	χ^2= 1.49
Goats	48	24 (50.0)	P= 0.223
Total	**96**	**60 (62.5)**	

Table 2: Prevalence of *Haemonchus* egg shedding in small ruminants by sex in the study area.

Category	No. Examined	No. Positive (%)	Significance
Female	48	32 (66.7)	χ^2= 0.16
Male	48	28 (58.3)	P= 0.685
Total	**96**	**60 (62.5)**	

Table 3: Prevalence of *Haemonchus* egg shedding in small ruminants by age in the study area.

Category	No. Examined	No. Positive (%)	Significance
Young	48	33 (68.8)	χ^2= 0.37
Adult	48	27 (56.3)	P= 0.543
Total	**96**	**60 (62.5)**	

Discussion

The results of the faecal egg count revealed that *Haemonchus contortus* are presence in the study area. The prevalence of 62.5% recorded in the study area is similar to the range of 50-100% reported from other geographical zones of Nigeria (Oyeduntan *et al*., 2015; Josiah *et al*., 2015). Although the result is higher than the finding of other survey in sheep and goats carried out in northern Nigeria (Attah and Galamaji, 2019). The prevalence of Haemonchus egg shedding is influenced by multifactorial system, which comprises hosts, parasite and environmental effect (Muhammad *et al*., 2009).

In this study, species play a significant role in the prevalence and faecal egg count in the small ruminants. Higher prevalence was observed in sheep than in goats and this agreed with other work in Nigeria (Noha *et al*., 2017; Attah and Galamaji, 2019) and elsewhere in the word (Borden *et al*., 2018). The higher egg count recorded in sheep arises from the fact that sheep grazes closer to the ground where the infected nematode larvae abound, while goats are browsers and feed on shrubs above the ground where infective larvae are few or absent (Borden, et al., 2018). However, this finding is not in agreement to the report of Hossain *et al*. (2015) who reported higher prevalence in goats than in sheep.

It was observed that the female animals had higher prevalence of faecal egg count than male animals. Result of this study is in agreement with another study (Olorunfemi, et al., 2015; Gana, et al., 2015). This result support the general fact that female animals are susceptible to helminth infection which is attributed to differences in sex hormones especially during the lactation period due to a decrease in immune status (Urquhart *et al*., 1996). Despite that, this outcome is in contrary to the report of Olorunfemi *et al*. (2015) who reported males are more susceptible to gastrointestinal parasites.

The proportion of faecal egg count was more frequently recorded in younger animals than older ones and this is in comparison to the findings of (Adamu *et al*., 2017; Attah and Galamaji, 2019). It was recognized that younger animals are more susceptible to parasitic infection than adult animals. This may be attributed to the fact that with the advancement of age, active strength of the animal body become better and develops resistance against the parasitic diseases (Colditz *et al*., 1996; Lateef *et al*., 2005). Never the less, this development is in contrary to the report of Gana *et al*. (2015) who reported higher prevalence in adult animals than young ones and also work of Olorunfemi *et al*. (2015) who stated in their work that resistance to infections was same across all age and there was no difference in rate of infection in relation to age.

CONCLUSION **AND RECOMMENDATION**

In CONCLUSION, the present study indicated that species, sex and age are the important factors which influence the prevalence of *Haemonchus* egg shedding in sheep and goats in Minna metropolis, Niger state, Nigeria. Hence, further study is suggested on the epidemiology of *Haemonchus contortus* infection of sheep and goats; as these may help in the development of appropriate preventive and control measures of *Haemonchus contortus* infection in the study area.

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