GASTROINTESTINAL PARASITES IN HUNTING DOGS IN ZARIA

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ABSTRACT
Hunting has been a practice in many parts of the country and mostly dogs have been use because of their close relationship with man. These dogs are usually at risk in the wild where they are exposed to wild animals, infections and ectoparasites. Among these parasites are haemoparasites that transmit different diseases to the dogs and also to humans. These diseases cause major economic losses and eventually death. There is a dearth of information about hunting dogs. The aim of this study was to investigate the prevalence of gastrointestinal parasites among hunting dogs within Zaria based on age, sex and breed. Sixty one hunting dogs comprising of males (39) and females (22) were grouped into 3 based on their ages; less than a year, 1-3-year-old and above 3-year-old. Dogs aged 1-3-year-old had the highest prevalence of 30%, <1 year-old (19.5%) and >3-year-old (10%). Male dogs have a higher prevalence of 23.08% and females 13.64%. Nigerian indigenous dogs had a prevalence of 22.92% while cross breed 7.69%. There were no significant association of age, sex, breed and the prevalence of haemoparasites among hunting dogs in Zaria. Further investigation should be conducted among hunting dogs in the Zaria, so as to put appropriate control and preventive measures in place.
Keywords: Dog, hunting, gastrointestinal parasites.

INTRODUCTION
Wildlife hunting is presumed to have dated back to the time of human evolution (Lawal *et al.*, 2013). Hunting was a crucial component of hunter-gatherer societies before the domestication of livestock and the dawn of agriculture, beginning about 11,000 years ago. By the Mesolithic, hunting strategies had diversified with the development of the bow 18,000 years ago and the domestication of dog about 15,000 years ago (Zenin *et al.*, 2003). Like other mammalian hosts, dogs are susceptible to infection with a range of intestinal parasitic helminths and protozoa, including species of epidemiological significance that can also be a source of severe disease for humans (Bajer *et al.*, 2010). Similarly, dogs can be infected with pathogenic haemoparasites including *Babesia* species (Nalubamba *et al.*, 2011) and *Trypanosoma* species (Keck *et al.*, 2009). Gastrointestinal helminthiasis is the most commonly encountered disease in dogs and also acts as a major constraint in dog keeping across the globe (Traub *et al.*, 2007). The distribution and intensity of the diseases are mainly influenced by geographical, climatic, cultural and economic factors (Robertson *et al.*, 2000). The level of hygienic conditions, lack of Veterinary supervision and less awareness concerning zoonotic diseases exacerbate the transmission of these diseases (Panigrahi *et al.*, 2014).

MATERIALS AND METHODS
A total of 61 hunting dogs were sampled using convenient sampling technique. The study was carried out in three villages in Zaria Samaru, Hayin-dogo and Bomo. Faecal samples were collected from the rectum of dogs using well labeled and lubricated sterile polythene bags. The faeces were stored in the refrigerator at 4°c until processing (within 48 hours of collection). Faecal samples were processed by simple floatation methods, using sucrose/zinc sulphate mixture solution (specific gravity 1.28). A dog was categorized as positive if at least one egg was seen by microscopy. The helminth eggs were identified based on their morphology and characteristic identification key described by Bowman (2009). The prevalence was calculated for all data as number of infected individual divided by the number of individuals examined and multiplied by 100 and expressed in percentage. Chi-square was used to determine association between age, sex and breed, and the prevalence of gastrointestinal (GI) parasites in hunting dogs.

RESULTS AND DISCUSSION

Out of the total 61 hunting dogs sampled, 19 were found to be infested with gastrointestinal parasites with overall prevalence of 31.15% (19/61). The parasites identified were *Tania spp.*, *Toxocara canis*, *isospora spp.*, *Dipylidium caninum* and *Ancyclostoma caninum. Tania spp* was found to have the highest prevalence, with prevalence of 19.67% (12/61) and *Toxocara canis* was found to have the second highest prevalence with prevalence of 8.20% (5/61) while *isospora spp*, *Dipylidium caninum, Ancyclosyoma caninum* each have prevalence of 1.64% (1/61). Mixed infection was also found to have a prevalence of 1.64%. The age distribution of the prevalence of GI parasites among the sampled hunting dogs shows that dogs above 3 years old had the highest prevalence with 60%(6/10), while those less than 1 year had prevalence of 26.83% (11/41) and those between 1-3 years had prevalence of 20% (2/10). Female dogs showed a slightly higher overall prevalence of GI helminthes than male dogs, 40.91% (9/22) versus 25.64% (10/39). However, the difference was not statistically significant ($P > 0.05$). Statistical analysis indicated Cross breed dogs showed higher overall prevalence of GI helminthes than the local/indigenous breed dogs, 46.15%(6/13) versus 27.08% (13/48). However, the difference was not significantly associated ($P > 0.05$). Overall 31.15% prevalence of GI parasites was observed in this study. Similar results were obtained by Edosomwan and Chinweba (2012) where they obtained prevalence of 28.0% in Benin City, Edo state while working on normal housed hold dogs. Also 37.3% prevalence was observed by Anosike *et al.* (2006) in central Nigerian rural community, 34.8% by Ramirez-Barrios *et al.* (2004) in Venezuela. However this is lower than the 62.7% obtained by Ogunkoya *et al.* (2006) in Zaria, 93.8% observed by Umar (2009) in Kaduna metropolis, 59.3% by Ayodele *et al.* (2014) in Ilorin, 52.6% by Okoye *et al.*, (2011) in South-Easthern Nigeria and 59.3% by Swai *et al.* (2010) in Tanzania. The variations in the result obtained in this study and that obtained by Ogunkoya *et al.* (2006) in Zaria between January 1978 to December 2008, may be due to sampling size of study, and in this survey the dogs sampled were apparently healthy hunting dogs while Ogunkoya *et al.* (2006) focused on clinically sick dogs presented to the Veterinary Teaching Hospital, Ahmadu Bello University, Zaria. The result obtained in this study indicated the faeces of dogs examined contained eggs of different parasites. The GI parasites observed in this study were *Taenia spp, Toxocara canis, Isospora spp, Dipylidium caninum* and *Ancyclostoma caninum* with similar species observed by Ajanusi and Gunya (1998), Ogunkoya *et al.* (2006), Umar (2009) in Kaduna metropolis and Paniraghi *et al.* (2014) in India. In the present study we found *Taenia spp.* to have the highest frequency of occurrence in the dogs sampled, with prevalence of 19.67 %(12/61), followed by *Toxocara canis*; 8.20% (5/61), while *isospora spp., Ancyclostoma caninum* and *Dipylidium caninum* each have prevalence of 1.644%. Dogs with mixed parasitism are found to have prevalence of 1.64%.

CONCLUSION

This study reported prevalence of gastrointestinal parasites for the first time in hunting dogs in Zaria. Further investigation should be conducted in order to render more detail information about parasitism of dogs in the study area, so as to put appropriate control and preventive measures in place.

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Table 1: Prevalence of gastrointestinal (GI) helminthes infection by species in dogs in Zaria from faecal examination by faecal simple flotation

Helminthes specie	Dogs infected	Prevalence (%)
Tania spp	12	19
Toxocara canis	5	8.20
Isospora spp	1	1.64
Dipylidium caninum	1	1.64
Ancyclostoma caninum	1	1.64
Mixed parasitism	1	1.64

Table 2: Age, sex and breed distribution of the prevalence of GI helminthes in hunting dogs in Zaria.

Group	No. sampled	Dogs infected	prevalence (%)	P value	X^2
1. Age					
<1year	41	11	26.83	0.0899	4.816
1-3 years	10	2	20.0		
> 3years	10	6	60.0		
Total	61	19	31.15		
2. Sex					
Male	39	10	25.64	0.2163	1.529
Female	22	9	40.91		
Total	61	19	31.15		
3. Breed					
Local	48	13	27.08	0.1878	1.735
Cross	13	6	46.15		
Total	61	19	31.15		