

**PREVALENCE OF GASTROINTESTINAL ZONOTIC PARASITES OF DOGS IN JOS METROPOLIS****<sup>1</sup>Ogbu K. I., <sup>4</sup>Olaolu O. S., <sup>2\*</sup>Ochai S. O., <sup>1</sup>Maimadu A. A., <sup>3</sup>Olabode M. P. and <sup>1</sup>Poyi N. L.**<sup>1</sup>Department of Animal Health, Federal College of Animal Health and Production Technology.<sup>2</sup>Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Borno State Nigeria.<sup>3</sup>National Veterinary Research Institute, Vom, Plateau State, Nigeria.<sup>4</sup>Ahmadu Bello University Zaria, Kaduna State, Nigeria.**\*Corresponding Author: Ochai S. O.**

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**ABSTRACT**

Prevalence of Gastrointestinal Zoonotic Parasites of Dogs was conducted in Jos metropolis of Plateau state. The species of gastrointestinal zoonotic parasites of dogs were evaluated in relations to sex, age and breed of each dog presented in veterinary clinics within the metropolis. The samples were analyzed using faecal floatation Technique. The result showed that *T. canis* and *A. caninum* were high, 45% and 44% respectively while *Teania spp* and *D. latum* were low; 8% and 3% respectively, this result was further subjected to chi-square analysis and showed significant difference in the percentage prevalence in the metropolis. The percentage prevalence was most in young dogs than in adult and puppies but when subjected to Chi-square, there was no significant difference in the prevalence; ( $P>0.05$ ) and also in relation to sex; most prevalent in females than in males, statistically, there was no significant difference ( $P>0.05$ ). Whereas, most prevalent with local breed compared with cross and exotic breeds; 23.19%, 13.05% and 17.99% respectively; statistically, there was no significant difference ( $P>0.05$ ). Based on these findings, it is hereby concluded that the risk of the prevalence of gastrointestinal zoonotic parasites of dogs in Jos metropolis is at the minimal level. The local dogs should be restricted and provided with chain or kennel as well as clean/sanitary environment is required in keeping of local dogs and the cross and exotic breed are dewormed routinely. More veterinary clinics should be created by Governments and private agencies in strategic areas within the metropolis.

**KEYWORDS:** Zoonotic, Gastrointestinal parasites, Dog, Jos, Prevalence.**INTRODUCTION**

Dogs perform a range of cultural, social, and economic functions in society. Dogs are kept as pets and companions, for hunting, as guards, draught animals, for food, or for commercial purposes. Some studies also suggest that keeping pets is associated with a higher level of self-esteem in children (Paul and Serpell, 1996; Knobel *et al.*, 2008). Companion animals, such as dogs, frequently harbor intestinal parasites that can cause human infection. Although *zoonotic* parasites can cause significant morbidity in all groups of the human population, they are of particular importance in vulnerable groups, such as children, the elderly, and the immunocompromised (Robertson *et al.*, 2000; Irwin, 2002).

Dogs are important animals in many urban and rural households, contributing as house guards in the majority of the cases and pet animals. In spite of pet benefits to their owners, there are well documented health hazards associated with humans association with dogs. A number

of infections, in particular parasitic diseases, capable of being transmitted from pets to human, had been reported and summarized by many authors (Schantz, 1994; Geffray, 1999; Plant *et al.*, 1996; Robertson *et al.*, 2000; Paul *et al.*, 2009). Among the zoonotic parasites that have been widely studied and recognized as a significant public health problem world wide are the following helminth zoonotic parasites: *Taenia spp.*, *Echinococcus spp.*, *Toxocara canis*, *Dipylidium caninum* and *Ancylostoma spp.* These and others are important in developing countries; due to the presence of uncontrolled population of dogs exist in close proximity to increasing density of human population in both rural and urban environment (Dutta, 2002). Furthermore the level of hygienic conditions and the lack of veterinary attention and zoonotic disease awareness in those countries, exacerbate the transmission of these diseases (Traub *et al.*, 2002). To minimize the transmission of zoonotic parasite diseases, data must be collected on the prevalence of parasites and habits of dog owners.

Among a number of *zoonotic* parasites that infect dogs, *Toxocara canis* and *Ancylostoma* species are of particular importance to humans (Macpherson, 2005). *Ancylostoma caninum* had been reported as a parasite of humans causing a disease called eosinophilic enteritis (Prociv & Croece, 1990; Croece *et al.*, 1994).

The role of dogs as companion animals and the close relationship between humans and dogs, although offering significant benefits to many people, also represent a potential public health risk, since natural transmission of parasitic infections from dogs to humans may occur, directly or indirectly via environmental factors. All kinds of dogs (owned and stray dogs) are involved in transmission, even if the particular implication of each population is not clearly established (Eguia-Aguilar *et al.*, 2005). Several studies of canine intestinal parasites have been reported in Nigeria and many other parts of the world (Ugochukwu & Ejimadu, 1985; Ramirez-Barrios *et al.*, 2004; Martinez-Moreno *et al.*, 2007). However, current information on prevalence and intensity is essential for development and modification of control measures in animal and public health.

Gastrointestinal helminths of dogs pose serious impact both on the host and human beings. They impede the successful rearing of dogs and result in losses that are manifested by lowered resistance to infectious diseases, retarded growth, reduced work and feed efficiency and general ill health (Soulsby, 1982). Parasitized animals show a variety of symptoms, depending on the parasite species and density. These signs are attributed to intestinal obstruction, irritation, mal digestion, mal-absorption, and protein losing gastro-entropathy induced by the parasites (Dunn, 1978). Severe cases could be fatal (Barutzki and Schaper, 2003).

Moreover, since dogs live in close proximity with humans, there are zoonotic parasites that can be transmitted to humans and cause serious consequences. The transmission of zoonotic parasites could be through indirect contact with animal secretions and excretions, infected water and food, and through direct contact with the animal (Lappin, 2002). Some of the parasites like *Echinococcus granulosus* also involve food animals as an intermediate host and cause great economic loss through organ condemnation at the level of slaughter house (Gracey, 1986).

The prevalence of parasites considerably varies from one region to another and among the different diagnostic techniques employed (Robertson *et al.*, 2000). Considering aspects related to public and animal health, study of the prevalence of parasitic infections in dogs should, therefore, be a continuous task, with the most relevant aim being establishment of control measures (Oliveira- Sequeira *et al.*, 2002).

Zoonotic infectious agents are among the most prevalent on earth and are thought to be responsible for >60 per cent of all human infections and 75 per cent of emerging human infectious diseases (Mark and John, 2009). The success and widespread epidemiology of these infections can be attributed to a range of human factors including social and dietary changes as well as an increased mobility of the human population (Mark and John, 2009).

The baseline epidemiological data collected would facilitate the development of effective interventions for controlling such infections and so also provide or indicate future research areas for those who would like to conduct research on zoonotic helminthes.

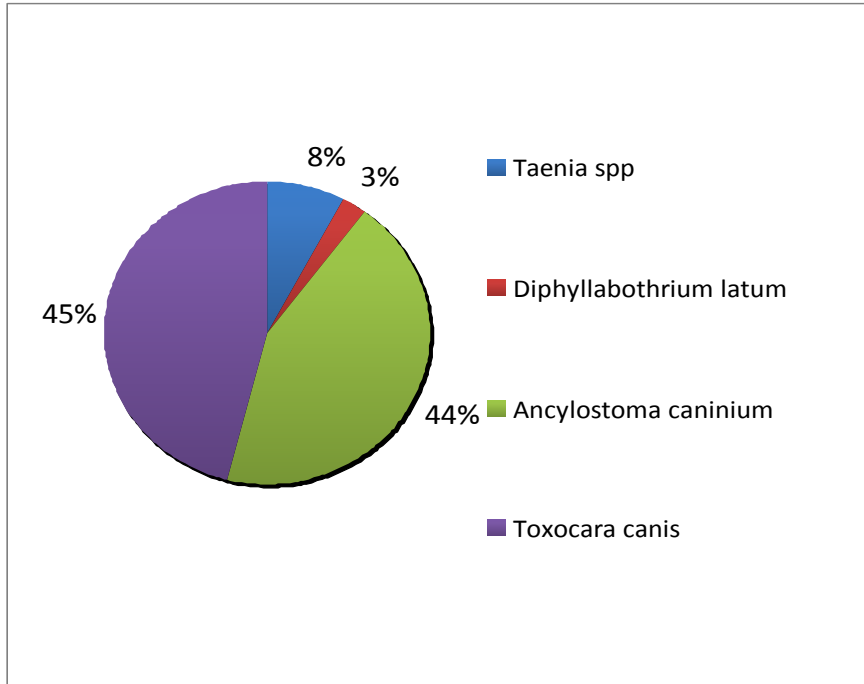
### SAMPLE COLLECTION

Faecal samples were collected from the dog used for the study, the animal were of different age sex breed and color. The fecal samples were collected directly from the rectum of each animal with the used of disposable hand gloves. Prior to stool collection, animals were identified, restraint and the perineum thoroughly prepared by cleaning with water to prevent contamination. The samples were transported to the parasitology laboratory, National Veterinary Research Institute Vom for analysis. Faecal samples were processed and screened using two methods: the formol ether concentration and the sodium chloride flotation techniques as describe by WHO (1991).

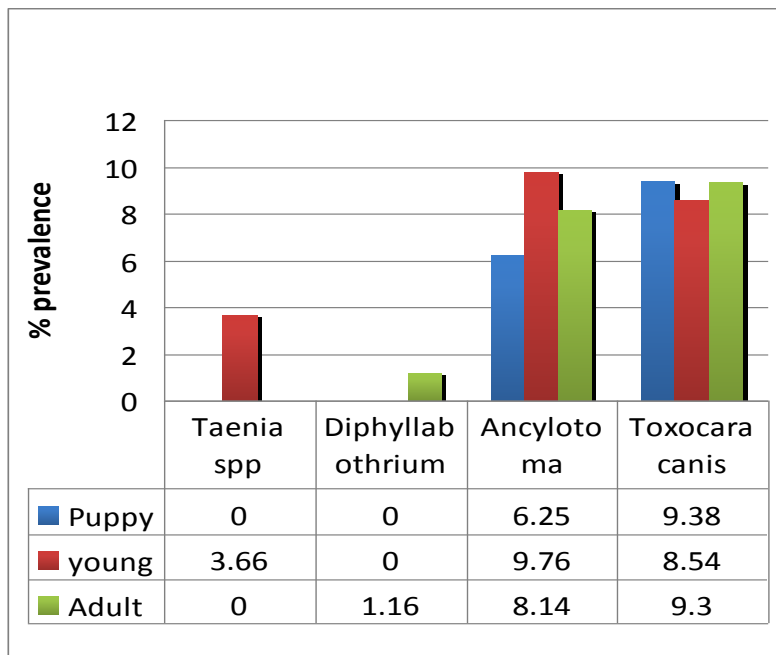
### DATA ANALYSIS

Data obtained were analyzed using simple percentage and Chi-square [ $X^2$ ] test to determine associations between presence of ova of Gastro-intestinal *zoonotic* parasites in relation to sex, breed, and age. Results were presented in tables and charts.

**RESULT**



**Figure 1: Prevalence of gastrointestinal zoonotic parasites of Dogs.**



**Figure 2: Prevalence of gastrointestinal zoonotic parasites of dogs based on Age.**

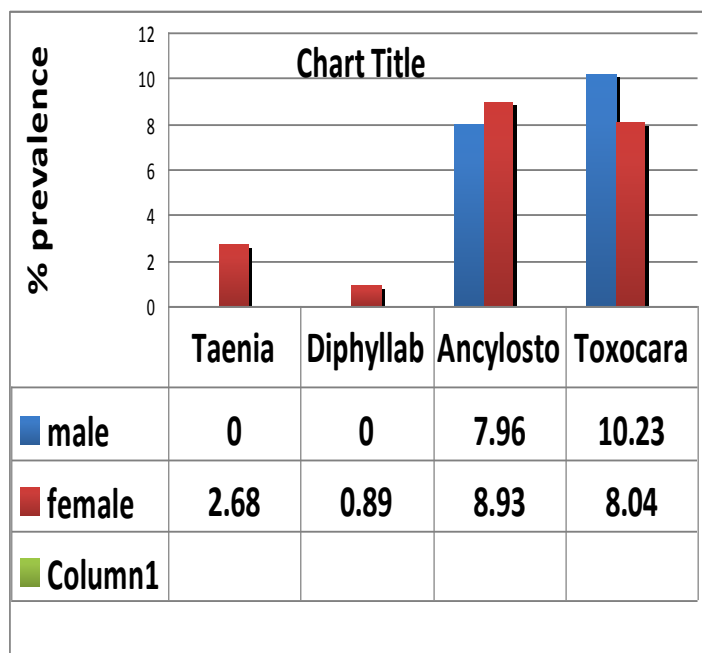


Figure 3: The prevalence of gastrointestinal zoonotic parasites of dogs based on sex.

Table 1: The prevalence of gastrointestinal zoonotic parasites of dog base on breed.

Parasites /Breed	Total sampled	Taenia spp	D. latum	A. caninium	T. canis	Total Positive
Local	69	0	0	7(43.8%)	9(56.2%)	16(41%)
Cross	23	0	0	2(66.7%)	1(33.3%)	3(7.7%)
Exotic	108	3(15%)	1(5%)	8(40%)	8(40%)	20(51.3%)
<b>Total</b>	<b>200</b>	<b>3(7.7%)</b>	<b>1(2.6%)</b>	<b>17(43.6%)</b>	<b>18(46.2%)</b>	<b>39 (100%)</b>

**DISCUSSION**

The study showed that *Toxocara canis* and *Ancylostoma caninium* are the most prevalent parasite species and this is similar to finding of Minaar *et al.*, (1999) (Figure 1). The species of *Toxocara canis* and *Ancylostoma caninium* are the most pathogenic in dogs and are also involved in human infection as the cause of ocular larva migrans and cutaneous larva migrans, (Katagiri *et al.*, 2008). The high prevalence suggests that the environmental conditions in Jos are conducive for the survival and transmission of the parasite, but reports on human infection are nonexistent. There is a possibility that *Ancylostoma caninium* might have developed resistance to the common anthelmintics, (Minaar *et al.*, 1999) or improper de-worming of the dogs. The distribution based on age of the dogs examined showed that young dogs had higher prevalence of the zoonotic parasites compared to puppies and adults (Figure 2). This may be due to roaming nature of young dogs which exposes them to some infections (Reinecke, 1983) compare to adult or puppy. The infection was most prevalent in females compared males (Figure 3). This might be as the result of their physiological difference that may lower the immune system especially in females (Irwin, 2002). It was also showed that the parasites are more prevalent in local dogs compare to cross and exotic breed. This might be due to their managerial and hygienic condition of these different groups of dogs as

local breeds are mostly allowed to roam about with no/low medical care compare to cross and exotic breeds.

**CONCLUSION**

This study has shown that the prevalence of *T. canis* *A. caninium* in dogs in Jos is high but relatively low when compared with results from other studies. The study also indicated that prevalence is higher in growing/young dogs than puppies and adults. More so infection is more common in Local breeds than cross/mixed and exotic. The study also highlights the public health implication of the prevalence of gastrointestinal zoonotic parasites in dogs in Jos. Interventions therefore should focus on health education provided to dog owners and the establishment of a program based on zoonotic diseases. Perhaps, intensive management of dogs and routine veterinary attention may be important in the control of the transmission to humans.

**RECOMMENDATION**

Dogs should be prevented from getting access to rodents, earthworms, cockroaches, rabbits and contaminated environment. Routine changed of anthelmintic for deworming.

Proper hygiene and sanitation; by disinfecting the environment were our animals are kept. A good deworming strategy should be followed e.g. puppies

should be dewormed after 2 weeks and young/growing dogs should be dewormed after 2-3 months. We recommend that more extensive and intensive work be carried out on the prevalence of gastrointestinal zoonotic parasites in fecal samples while considering different weather and methods of isolation of the parasite.

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