ISSN: 2581-4311
DOI: doi.org/10.30967/IJCRSET/Elihu-A/191

URF PUBLISHERS
connect with research world

International Journal of Current Research in Science, Engineering & Technology

https://urfpublishers.com/journal/ijcrset

Vol: 8 & Iss: 2

Research Article

Prevalence Of Helminth Parasites in Dogs in Song Local Government Area, Adamawa State- Nigeria

Elihu A*, Levi RY, Mathias A and Yusuf T

Department of Zoology, Faculty of Science, Adamawa State University, Mubi, Nigeria

Citation: Elihu A, Levi RY, Mathias A, Yusuf T. Prevalence of Helminth Parasites in Dogs in Song Local Government Area, Adamawa State- Nigeria. *Int J Cur Res Sci Eng Tech* 2025; 8(3), 357-360. DOI: doi.org/10.30967/IJCRSET/Elihu-A/191

Received: 07 July, 2025; **Accepted:** 15 July, 2025; **Published:** 17 July, 2025

***Corresponding author:** Elihu A, Department of Zoology, Faculty of Science, Adamawa State University, Mubi, Nigeria, Tel: +2347065596700, Email: elihuasiyina@gmail.com

ABSTRACT

The study was carried out to determine the prevalence of helminthes parasites in dogs in Song local government area of Adamawa state. The main objectives were to identify the helminthes parasites in dogs in Song LGA and to determine the prevalence of helminthes parasites in dogs in the study area. A total of 50 dogs were randomly selected from the street of Song LGA and stool samples were collected from walking areas around human populations monthly for three months. The collected samples were kept in sterile plastic bottles and 10% formalin was added just enough to dip the faeces. All the samples were transported to the Department of Zoology, Adamawa State University, Mubi for analysis. The result of the study revealed the existence of helminthes parasites in apparently healthy dogs in Song LGA of Adamawa state. Out of the 50 dogs examined, 10 were positive (20.00%). All the positive dogs had mixed infections comprising of *Dipylidium canimum, Schistosoma intercalatum Dirafilaria immitis, strongyloide stercoralis, Echinococcus sp*. The prevalence rate was high in the month of July with 25.00% and the lowest was in August with 16.67% prevalence. *Dipylidium caninum* and *Strongyloides stercoralis* was the common parasites appearing the month of July and August.

Keywords: Helminthe parasites; Dogs; Prevalence; Song LGA

Introduction

Free-roaming (or stray) dogs are dogs which live unrestricted in the streets with no owner and are highly exposed to parasites. Helminthes of dogs belong to nematodes, cestodes and trematodes. Dogs usually act as definitive hosts contribute to the transmission of parasites by disseminating strobili, eggs or larvae in soil, water and food (e.g. *Dipylidium canimum*, Toxocara, Echinococcus, Ancylostoma and *Strongyloides stercoralis*)[1]. Eggs excreted by infected dogs hatch and larvae can infect intermediate hosts that may be further consumed by humans, as is the case of nematodes and trematodes in fish (e.g. Capillaria, Diphyllobothrium, *Clonorchis sinensis*, Opisthorchis and Amphemerus). Other gastrointestinal helminthes are the trematode Dicrocoelium spp and the tapeworm *Dipylidium caninum*, where humans can be infected after accidentally ingesting infested ants or the dog flea Ctenocephalides spp respectively. Dogs are also definitive hosts of *Heterobilhazia Americana*, infected animasls pass worm eggs out in their faeces which contaminate water, hatch and then release larvae that can infect humans causing cercarial dermatitis ("swimmer's itch") (CDC, 2022). Larvae of *Ancylostoma braziliense* and *Strongyloides stercoralis* eliminated in faeces can penetrate and migrate through human skin, causing cutaneous larva migrans(CLM) and creeping eruptions[2,3]. This migration causes

progressive linear eruption, and sometimes intense pruritis that may subside over a few weeks. In massive infections, however, the larvae may penetrate deeper tissues, causing pulmonary and intestinal symptoms. Enteric infections may also lead to a disease of the small intestine that causes abdominal pain, diarrhea, abdominal distention, weight loss, rectal bleeding, anorexia and nausea[4].

Dogs are the most common pet animals worldwide, providing companionship, security and a source of dietary protein. Zoonotic helminthes of dogs is a global problem and these dogs, regardless of their benefits, pose a public health risk as they are potential carries of some pathogens, so this study is attempted to bridge the dearth of information on the prevalence of helminthes of dogs in Song Local Government area.

Materials and Methods

Study area

Song LGA is a town and Local Government Area in Adamawa State, Nigeria. It is one of the 21 Local Government Area in the state. It consists of districts such as Song, Dumne, Dirma, Kilange, Funa, Gudu, Mboi, Hirna, Gari, Waje, Suktu, Zumo, Waltandi and Ditera. The LGA is situated within the North-West Zone II. Song LGA is bordered by Cameroon to the east and South-East. It has an area of approximately 4,206 km^2 and is situated between latitudes 9º 30' to 10º10'. Song LGA has an average temperature of 31ºC **(Figure 1)**. The LGA has some slopes with the region having a typical breeze speed of 11km/h. The LGA likewise has a couple of streams and waterways moving through its domain[5].

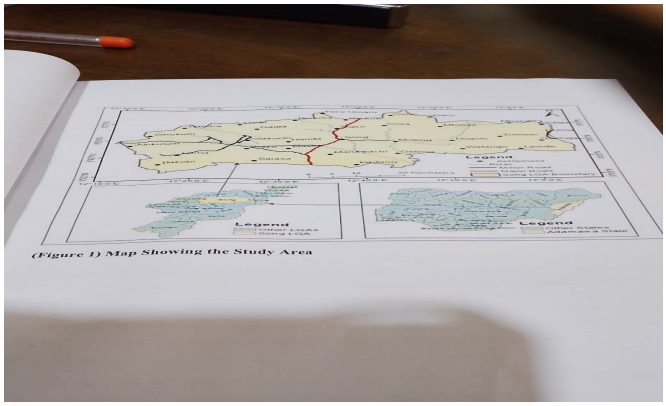

Figure 1: Map Showing the Study Area.

Sample size

Thrusfield[6] formula for calculating the total sample size was used to arrive at 50 dogs. 1% level of confidence (CI), 5% desired level of precision and a prevalence (0.40%) of helminthes parasites in dogs in the study area.

$$N = Z^2 \times P \times Q/L^2$$

Simple random sampling techniques was used to sample the dogs.

Stool collection

A total of 50 dogs were randomly selected from the street of Song LGA and stool samples were collected from walking areas around human populations monthly for three months using spatula. The collected samples were kept in sterile plastic bottles and 10% formalin was added just enough to dip the faeces. All the samples were transported to the Department of Zoology, Adamawa State University, Mubi for analysis.

Stool processing

Stool was processed within one day of collection, processed individually based on the formalin -either concentration techniques. 3g of stools was homogenized with 10ml of 10% formalin in a beaker and then filtered using a sieve with the intention of discarding the debris. Then, the sample was manually stirred anc centrifuged at 3000 rpm for 10min. Then supernatant was discarded, and the sample was re-suspended in 6ml of 10% formalin plus 4ml of ethyl ether, stirred manually, and left to stand for 5 min to centrifuge again under the same conditions. This method allowed the formation of three layers inside the 15ml plastic tubes. The first two layers was carefully discarded and finally 100µL of 10% formalin was added.

Microscopy

20µL of the sediment was examined under the microscope at 10^x and 40^x using lugol iodine stain. Presence of helminthes eggs or larvae was recorded and compared with a canine parasitology atlas.

Data analysis

Data obtained was entered into Microsoft excel sheet. Prevalence of the parasites found was determined using inferential statistics.

Results

The results of the study showed that a total of five (5) different species of helminthes were identified in the 50 dogs assessed within the months of June- August in the study. In the month of June, the parasites identified are *Schistosoma intercalatum* and *Dipylidium caninum* in 3 (18.75%) out of the 16 dogs examined. Also, in July, 4 (25.00%) out of 16 assessed, showed positive for the presence of *Dirafilaria immitis* and *Strongyloides stercoralis*. However, in the month of August, 18 dogs were examined, 3 (16.67%) showed positive with the presence of 3 parasites that includes *Strongyloides stercoralis*, *Dipylidium caninum* and *Echinococcus* sp area **(Table 1)**. The results of the study also showed differences in the distribution of helminthes parasites in dogs based on months. In the months of July, there was high percentage of parasites (25.00%) followed by the month of June with the prevalence of 18.75%, while the least was recorded in the month of August (16.67%) **(Figure 2)**.

Table 1: Helminth Parasites Identified in Dogs at Different Months.

Month	No. Examined	Number positive	Parasite Identified
June	16	3 (18.75%)	*Schistosoma intercalatum, Dipylidium caninum*
July	16	4 (25.00%)	*Dirafilaria immitis, Strongyloides stercoralis*
August	18	3 (16.67%)	*Strongyloides stercoralis, Dipylidium caninum, Echinococcus sp*

Discussion

The result of the study revealed the existence of gastrointestinal helminth parasites in apparently healthy dogs in Song L.G.A of Adamawa State. This agrees with other researchers in that helminthosis is one of the main problems in dogs worldwide[7,8]. Out of the 50 dogs examined within Song L.G.A, 10 were positive for gastrointestinal parasites. This agrees with Swai, et al.[12] who recorded high prevalence of

gastrointestinal parasites in their work. This could be due to lack of improvement in the animal health management programme or even due to non-adaptation of the modern animal health care program by dog owners.

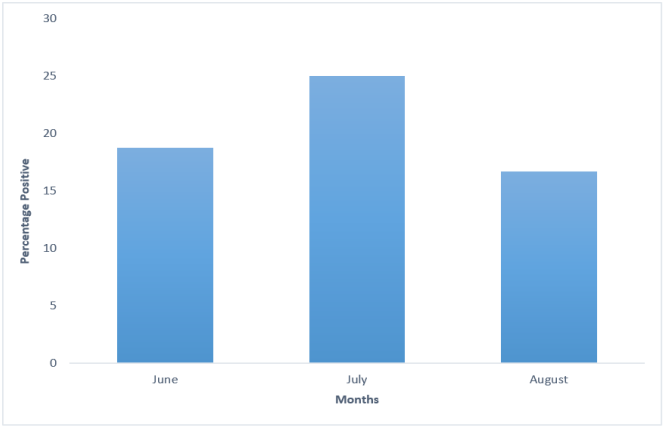

Figure 2: Distribution of Helminth Parasites in Dogs According to Month.

All positive dogs had mixed infections comprising of *Schistosoma intercalatum, Dipylidium caninum, Dirafilaria immitis, Strongyloides stercoralis* and Echinococcus sp. This is in line with the reports of Akao[8]; Aleksandra, et al.[9]; Katagiri and Oliveira-Sequeira[10]; Sowemimo and Asaolu[11]; Swai[12] who recorded mixed infections in their prevalence of helminthes studies. The parasites isolated from this work had been isolated elsewhere in Nigeria, and the difference lies in the prevalence and population density between regions[13,11]. *Dipylidium caninum* from the study had occurred in the month of June and August which is also reported by Overgaauw[14] and Papazahariadou, et al.[15]. The repeated infections by Dipylidium caninum could have helped them build up adequate immunity against it, thereby contributing to environmental contamination and spread of infections[16]. This finding is very important because these infected dogs are living in close association with man, although there was no existing epidemiological data on the infection rate of *Dipylidium caninum* in man, there was a record of 35.5% *D. caninum* in children with eosinophilia[17]. *D. caninum* is currently the leading cause of visceral larva migrans in man and could lead to blindness when it migrates into the eye[18]. *Strongyloides stercoralis* also occurs in the two months, July and August which showed a high prevalence in both months. The dogs may be very susceptible to ancylostomosis because of low immunity and possibly due to infection or the raining season (collostral route)[19]. *Dirafilaria immitis* is a respiratory parasite only seen in stray dogs and had only occur in one month, in July[20]. This parasite is not common isolate in most of the prevalence of gastrointestinal parasite studies worldwide. However, Kenya recorded a frequency of 10%[21] and 43% in street dogs in Bangladesh[22]. From our findings, higher percentage of parasites distribution was recorded in the month of July (25.00%) which is in agreement with the report of Minnaar, et al.[7] while the least was in August (16.67%) which is in contrast with the report of Schacher, et al.[23]. The infection seen in the months may have been gotten through scavenging and consumption of contaminated goat and sheep liver and lungs in the streets. The parasite is of great public health importance which can cause visceral organ damage and nasopharyngeal pentastomiasis resembling hypersensitivity reacton on ingestion of its eggs and nymph. The presence of the nymph in the nasopharynx and its associated hypersensitivity reaction is known as halzoun syndrome[21]. Infection in man can also cause a disease known as marara in Sudan[24].

Conclusion and Recommendation

We conclude that there are helminth parasites of dogs in Song L.G.A which are of public health importance. This work calls for an existing law governing dogs keeping in Song L.G.A, creation of awareness programme to educate people on the existence of zoonotic parasites in their dogs and strict demand for monthly veterinary assistance in deworming of dogs. We also recommend more sensitive diagnostic techniques such as serological tests and molecular techniques to better identify and quantify the parasites.

References

1. Otranto D, Dantas-Torres F, Mihalca AD, Traub RJ, Lappin M, Baneth G. Zoonotic parasites of sheltered and stray dogs in the era of the global economic and political crisis. Trends Parasitol 2017;33(10):813-825.
2. Coello RD, Pazmino BJ, Reyes EO, et al. A case of cutaneous larv in a child from Vinces, Ecuador. American J Case Rep 2019;20:1402.
3. Montgomery SP. Cutaneous Larva Migrans. In: Hunter's Tropical Medicine and Emerging Infectious Diseases 2020:898-900.
4. Paul P, Croese J. Human enteric infection with Ancylostoma caninum: hookworms reappraised in the light of a new zoonosis. Acta Tropica 2016;62:23-44.
5. Wikipedia. Song LGA. Nigeria 2020.
6. Thrusfield MV. Veterinary epidemiology. 3rd edition. Blackwell Science Oxford, London 2015:234-238.
7. Minnaar WN, Krecek RC, Fourie LJ. Helminths in dogs from a peri-urban resource limited community in Free State Province, South Africa. Veterinary Parasitology 2012;107:343-349.
8. Akao N, Tomoda M, Hayashi E, et al. Cerebellar ataxia due to toxocara infection in meningo gerbils, meriones unguculatus. Veterinary Parasitology 2013;113: 229-237.
9. Aleksandra N, Sanda D, Sofija KR, Ivana K, Branko B, Olgica DD. High prevalence of intestinal zoonotic parasites in dogs from Belgrade, Serbia. Parasitology 2018;10:335-340
10. Katagiri S, Oliveira-sequeira TCG. Prevalence of dog intestinal parasites and risk perception of zoonotic infection by dog owners in Sao Paulo state. Braz zoo pub hlth 2018:1-8.
11. Sowemimo OA, Asaoulu SO. Epidemiology of intestinal helminth parasites of dogs in Ibadan. Nigerian J Hilminthology 2018;82:89-93.
12. Swai ES, Kaanya EJ, Mshanga DA, Mbise EN. A survey on gastrointestinal parasites of non- descript dogs in and around Arusha Municipality, Tanzania. Int J Animal Veterinary Advance 2010;3(2):63-67.
13. Anene BM, Nnaji TO. Chime AB. Intestinal Parasitic infections of dogs in the Nsukka area of Enugu, Nigeria. Prev Vet Med 2016;27:89-94.
14. Overgaauw PA. Aspects of Toxocara epidemiology: Toxocarosis in dogs and cats. Crit Rev Microbiol 2017;23:233-251.
15. Papazahariadou M, Founta A, Papadopoulos S, Chiliounakis K, Antoniadousotiriadou, Theodorides Y. Gastrointestinal parasites of shepherd and hunting dogs in the serres prefecture, borthern Greece. Veterinary Parasitology 2017;148(2):170-173.
16. Maizels RM, Meghi M. Repeated patent infection of adult dogs with Toxocara canis. J Helminthology 2014;58:327-333.

17. Matos MF, Militao DN, Brum MAR, et al (2017). Presence of anti- Toxocara antibodies in children selected at Hospital Universitario, Campo Grande, MS, Brazil. Rev Inst Med Trop Sao Paulo 2017;39:49-50.

18. Taylor MR. The epidemiology of ocular toxocariasis. J Helminthology 2011;75:109-118.

19. Kalkofen UP. Hookworms in dogs and cats. Vet. Clin North Am 2017;17:1342-1354.

20. Meshgi B, Asgarian O. Prevalence of Linguatula serrata infestation in stray dogs of Shahrekord, Iran. J Veterinary Med 2013;50:466-467.

21. Aydenizoz M, Gudu F. The prevalence of Linguatula serrate in Kenya province. Turkiye parazitol dergisi 2017;21:75-78.

22. Rahman H, Soliman KN. A preliminary study on the occurrence of Linguatula serrata in street dogs of Bangladesh. Bangladesh Veterinary J 2017;5:6567.

23. Schacher JF, Saab S, Germanos R, Boustary N. The aetiology of halzoun in Lebanoni; recovery of Linguatula serrata nymph from two patients. Trans R Soc Trop Med Hyg 2019;63:854-858.

24. Elbadawi EKS, Gezuli FLAY, Eisa MA, Slepnev NK. Linguatula serrata nymph n a goat in the Sudan. Vet Rec 2018;102:171.