



Occurrence of Gastrointestinal Helminthes Parasites of Cattle Slaughtered in Some Selected Abattoirs in Gwagwalada Area Council, Abuja

U.N. Gimba^{1*}, B.A. Azare² and O.P. Airuoyuwa²

¹Department of Biology, Ibrahim Babangida University, Lapai, Niger State, Nigeria

²Department of Biological Sciences, University of Abuja, Nigeria

ABSTRACT

A study of gastrointestinal helminth parasites in cattle slaughtered in abattoirs in Gwagwalada Area Council was carried out. Four genera and four species of helminth parasites were observed and they include *Ascaris lumbricoide*, *Fasciola gigantica*, *Taenia saginata* and *Trichuris trichiura* respectively. Twenty-seven (27) of the intestinal helminth parasite were *Ascaris lumbricoide* and *Fasciola gigantica* was six (6) while three (3) *Taenia saginata* was recorded for abattoir in Agwandodo. Similarly, twenty-one (21) *Taenia saginata* was recorded, followed by twelve (12) *Ascaris lumbricoide* was also recorded while *Trichuris trichiura* and *Fasciola gigantica* were nine (9) each, for abattoir in Gwako. Furthermore, eighteen (18) *Ascaris lumbricoide* were recorded followed by fifteen (15) *Taenia saginata* and *Trichuris trichiura* recorded was twelve (12) while only three (3) *Fasciola gigantica* was recorded for abattoir in Giri. Also, *Taenia saginata* and *Ascaris lumbricoide* recorded were nine (9) each while *Trichuris trichiura* and *Fasciola gigantica* recorded were six (6) each, for samples collected from abattoir in Kutunku. From overall total of one hundred and sixty-five (165) gastrointestinal helminth parasites observed in cattle slaughtered in the abattoirs, sixty-six 66 (40) % of the total number of parasites observed which was the highest number, were *Ascaris lumbricoide* and fifty-one 51 (30.91) % were *Taenia saginata* while twenty-seven (27) 16.36% were *Trichuris trichiura* and only twenty-one 21 (12.73)% were *Fasciola gigantica* being the least parasite observed.

Keywords: Occurrence, Gastrointestinal, Helminthes, Cattle, Slaughtered, Abattoirs, Gwagwalada, Abuja

INTRODUCTION

The most prominent domesticated livestock in Nigeria, is the cattle that represent a valuable asset in both traditional and modern agriculture; in addition, they also provide meat, milk, skin, and draught power for farming (Tewe, 2017). In some traditional settings, they also play an essential role in the socio-economic system, representing family wealth or they can be regarded as a survival kit by nomadic people (Fabiya, 2011). 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.*, 2016). 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 *et al.*, 2011).

Helminths commonly called parasitic worms, are large multicellular organisms, which when mature can generally be seen with the naked eye. They are often referred to as intestinal worms even though not all helminths reside in the intestines; for example Schistosomes are not intestinal worms, but rather reside in blood vessels. Helminths are known to be a major constraint to ruminants' well-being and productive performance (Rajput *et al.*, 2016; Hesterberg *et al.*, 2017). Gastrointestinal helminths are ubiquitous parasitic agents of livestock especially ruminants and are known to

Received 3 December, 2019

Accepted 17 February, 2020

Address Correspondence to:

usnaji@gmail.com,

limit cattle production in many areas and countries (Keyyu *et al.*, 2015). Mortality of animals due to parasitic diseases may not be alarming at times but their indirect effects on livestock productivity and their zoonotic impact on human health are considerably greater (Ekong *et al.*, 2012). Indirect losses associated with helminth infections include the reduction in productive potential such as decreased growth rate, weight loss, diarrhea, anorexia, and sometimes anaemia (Swai *et al.*, 2016). The most important predisposing factors of helminth infections are grazing habits, climate, nutritional deficiency, pasture management, immunological status, vector, presence of intermediate host, and the number of infective larvae and eggs in the environment (Radostits *et al.*, 2014). The effect of helminth infections is determined by a combination of factors, of which the varying susceptibility of the host species, the pathogenicity of the parasite species, the host/parasite interaction, and the infective dose are most important (FAO, 2011).

METHODOLOGY

Study Area

This study was carried out at the Biology laboratory of the Department of Biological Sciences at the University of Abuja, Gwagwalada FCT-Abuja- Nigeria. Gwagwalada is one of the five municipal Councils of the Federal Capital Territory of Nigeria, together with Abaji, Kuje, Bwari, and Kwali. The FCT also includes the City of Abuja. Gwagwalada is the name of the main town within the Area council, which has an area of 1,043 km² and a population of 157,770 as at the 2016 census and is located between latitude 8° 55' and 8° 60' North and 7° 05' and 7° 11' East (Awowole-Browne and Francis, 2017). Gwagwalada is where the University of Abuja is located. The Gwagwalada abattoirs are located at different areas which include Agwandodo, Gwako, Giri and at new kutunku ward of the town, beside one of the tributary stream of river Usuma, which drains through the town. It has recorded annual temperature that range from 30 degree Celsius of 37 degree Celsius and total annual rainfall of about 1650 mm. Gwagwalada abattoir is located in a high density residential area which consists

of three sections; the slaughtering sections, processing section, and dumping sections.

Samples collections

The samples were collected in sterile plastic containers and taken to the parasitological laboratory of the Veterinary Medicine at the University of Abuja, Gwagwalada FCT-Abuja- Nigeria, for the study of helminthic parasites in the intestinal tract of the cattle. The samples were analysed on the day of collections. The faecal sample was spread on a dissecting board and visible worms to the naked eye were picked up using thumb forceps and then stored in 10 % formalin before identification. About one gram (1 g) of the faecal sample was dissolved in sterile test tube containing 10 ml of sterile distilled water. The mixtures was agitated for 3 mins by shaking and then centrifuged at 4000 rpm for 10 mins. The supernatant was decanted and the sediment was examined for helminthic parasites (Nwigwe *et al.*, 2013).

RESULTS

The prevalence of gastrointestinal helminth parasite in cattle slaughtered in abattoirs in Gwagwalada Area Council. Four genera and four species of helminth parasites were observed and they include *Ascaris lumbricoide*, *Fasciola gigantica*, *Taenia saginata* and *Trichuris trichiura* respectively. Twenty-seven (27) of the intestinal helminth parasite were *Ascaris lumbricoide* and *Fasciola gigantica* was six (6) while three (3) *Taenia saginata* was recorded for abattoir in Agwandodo. Similarly, twenty-one (21) *Taenia saginata* was recorded, followed by twelve (12) *Ascaris lumbricoide* was also recorded while *Trichuris trichiura* and *Fasciola gigantica* were nine (9) each, for abattoir in Gwako. Furthermore, eighteen (18) *Ascaris lumbricoide* was recorded followed by fifteen (15) *Taenia saginata* and *Trichuris trichiura* recorded was twelve (12) while only three (3) *Fasciola gigantica* was recorded for abattoir in Giri. Also, *Taenia saginata* and *Ascaris lumbricoide* recorded were nine (9) each while *Trichuris trichiura* and *Fasciola gigantica* recorded were six (6) each, for samples collected from abattoir in Kutunku as seen in Table 1.

Table 1: Occurrence of gastrointestinal helminth parasites in cattle slaughtered in Gwagwalada abattoirs

Abattoirs locations	No of Sample	Parasites Species	Frequencies of Occurrence
Agwandodo	40	<i>Fasciola gigantica</i>	3
		<i>Taenia saginata</i>	6
		<i>Ascaris lumbricoide</i>	27
		<i>Trichuris trichura</i>	
Gwako	40	<i>Taenia saginata</i>	21
		<i>Trichuris trichiura</i>	9
		<i>Fasciola gigantica</i>	9
		<i>Ascaris lumbricoide</i>	12
Giri	40	<i>Taenia saginata</i>	15
		<i>Trichuris trichiura</i>	12
		<i>Fasciola gigantica</i>	3
		<i>Ascaris lumbricoide</i>	18
Kutunku	40	<i>Taenia saginata</i>	9
		<i>Trichuris trichiura</i>	6
		<i>Fasciola gigantica</i>	6
		<i>Ascaris lumbricoide</i>	9
Total	160		165

160 samples were collected and 165 were encountered in the following proportions:

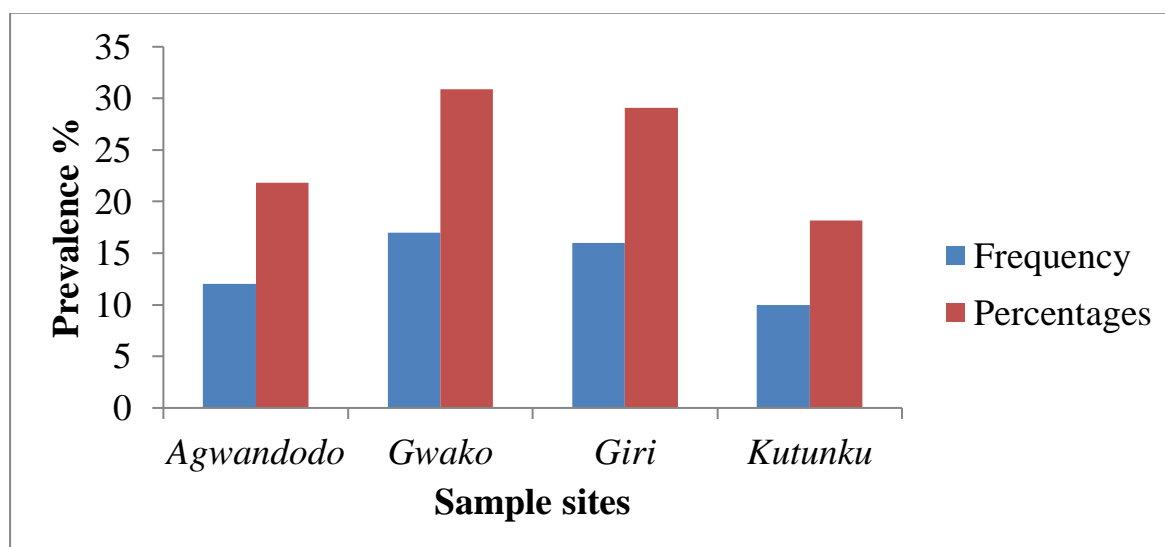


Figure 1: Total intestinal helminth parasites in cattle slaughtered in different abattoirs in Gwagwalada

Table 2: Percentage occurrence of intestinal helminth parasites in cattle slaughtered in abattoirs in Gwagwalada Area Council

Parasite species	Frequencies	Percentages (%)
<i>Ascaris lumbricoide</i>	66	40
<i>Taenia saginata</i>	51	30.91
<i>Trichuris trichiura</i>	27	16.36
<i>Fasciola gigantica</i>	21	12.73
Total	165	100

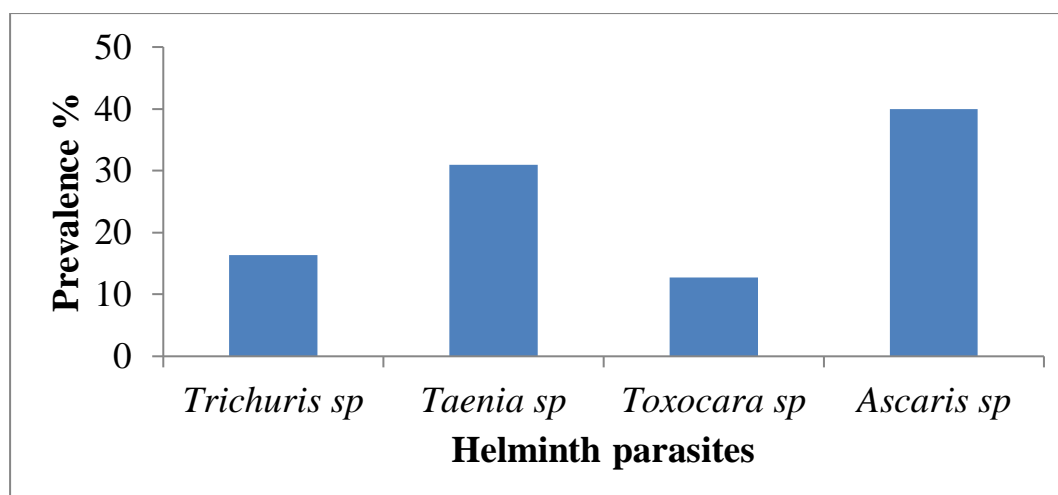


Figure 2: Overall occurrence of intestinal helminth parasite in cattle slaughtered in different abattoirs in Gwagwalada

DISCUSSION

The findings of this study show that all the cattle screened had at least one type of helminth infection, thus providing a baseline information on the burden of helminths among cattle in Nigeria since animals slaughtered in this abattoir are representative of cattle from different part of the country. The overall prevalence of 165 % of helminth infection obtained in this study is similar to that of Edosomwan and Shoyemi (2012) who reported a prevalence of 167 % in south-south region of Nigeria but higher than the 50.8% and 62.1% earlier reported by Edosomwan and Shoyemi (2012) and Nwigwe *et al.* (2013) in south-eastern and south-southern Nigeria, respectively. The differences observed could be due to the periods or seasons in which the studies were conducted as well as the sources of cattle sampled in the various regions. The most prevalence helminth parasite observed in the cattle slaughtered was *Ascaris lumbricoide* with sixty-six (66), equivalent to 40 % of the total number of parasites observed which was the highest in number and fifty-one (51) of them which is equivalent to 30.91 % were *Taenia saginata* while twenty-seven (27) were *Trichuris trichiura* (16.36 %) and only twenty-one were *Fasciola gigantica* being the least parasite observed with 12.73 % as seen in Table 2. Dantanko and Idris (2014) also reported the prevalence of *Taenia sp*, *Ascaris sp* and *Trichuris trichiura* in livestock slaughtered in Dei-Dei Abattoir, F.C.T Abuja. Furthermore, this findings revealed that nematodes and cestodes were the most prevalent among the helminths; however, this is at variance with

previous reports by Hailu *et al.* (2011), Mir *et al.* (2013), and Nwigwe *et al.* (2013) who reported nematodes as the most prevalent helminths in studies carried out in India, Ethiopia, and eastern Nigeria, respectively. This difference could however be associated with the differences in geographical and/or climatic conditions and ecology. Again, the helminths identified in this study were similar to those identified by Edosomwan and Shoyemi (2013) and Elele *et al.* (2013) in earlier studies carried out in Benin and Port Harcourt, south-south Nigeria. It can therefore be suggested that the similarity in the helminth profile indicates exposure of these animals to common conditions (e.g., ecology, pasture, and humidity) which are prevalent in northern Nigeria where majority of these animals are sourced from before being transported to different abattoirs in Nigeria. One major factor that would have accounted for this is the fact that cattle under the local setting in Nigeria are exposed to poor feeding and veterinary care, factors accountable for equal susceptibility to helminth infections. The difference in the prevalence obtained could be attributed to the existence of favorable environmental factors necessary for the prolonged survival and development of infective larval stage of most helminths. Furthermore, management system of animals could also be accountable for the difference in prevalence. Cattle with moderate body condition score had higher prevalence of intestinal helminths when compared to those that were emaciated. Possible reason for this could be that those with moderate

body condition for a number of reasons, including good nutrition, tolerated helminth infections better or that both host and parasites had reached a state of equilibrium and were asymptomatic at the point of sample collection.

Conclusion and Recommendation

The result of this study showed a moderately high prevalence of intestinal helminth infection of both economic and zoonotic importance among trade cattle slaughtered in abattoirs in Gwagwalada, Nigeria. This has negative impact on both animal production and public health. Therefore, to mitigate these problems, appropriate anthelmintic regimen and control measures (i.e., comprehensive parasite control program, pasture management, and environmental sanitation) in cattle and public health awareness should be encouraged. Finally, there is a need to monitor intestinal parasites of cattle to promote animal production and public health in Nigeria.

REFERENCES

- Ameen, S.A., Joshua, R.A., Adedeji, O.S., Ige, A.O., Oyebanji, B.O., Ogundola, A.F., and Rafiu, T.A., (2016). Experimental Studies on GastroIntestinal Nematode Infection; Clinical Observations and Hematological changes Following *Haemonchus contortus* Infection in West African Dwarf (WAD) Kids. *Journal of Animal and Veterinary Advances*, 5 (6): 511-514.
- Adedipe, N.O., Bakshi, J.S., Odegbaro, O.A. and Aliyu, A. (2016). Study on gastrointestinal helminth infections in small-scale dairy cattle farms of Jimma town, Ethiopia. *Journal of Applied Sciences and Technology*, 34: 45-65.
- Ayeni, A.O. (2013). Intestinal parasites of Livestock in the western state of Nigeria III. Helminths parasites of cattles in Ile-Ife. *Proceeding of the Agricultural society of Nigeria*, 10:61-127.
- Awowole, B. and Francis (2017). [*"This is a waste!"*](#). Daily Sun The Sun Publishing Limited, Lagos. 10-23.
- Blood, D.C. and Henderson, J.A. (2018). *Veterinary medicine 3rd Ed.* Baillier. Tindal and Cassell Ltd. London. Pp. 594.
- Edosomwan, E.U. and Shoyemi, O.O. (2012). Prevalence of gastrointestinal helminth parasites of cattle and goats slaughtered at abattoirs in Benin City, Nigeria. *African Scientist*, 13 (2): 109–114.
- Hesterberg, U. W., Bagnall, R., Perrett, K., Horner, R. and Gummow, B. (2017). A questionnaire survey of perceptions and preventive measures related to animal health amongst cattle owners of rural communities in KwaZulu-Natal, South Africa. *Journal of the South African Veterinary Association*, 78 (4): 205–208.
- Keyyu, J.D., Monrad, J., Kyvsgaard, N.C. and Kassuku, A.A. (2015). Epidemiology of *Fasciola gigantica* and amphistomes in cattle on traditional, small-scale dairy and large-scale dairy farms in the southern highlands of Tanzania. *Tropical Animal Health and Production*, 37 (4): 303–314.
- Nwosu, C.O., Madu, P.P. and Richards, W.S. (2017). Prevalence and seasonal changes in the population of gastrointestinal nematodes of small ruminants in the semi-arid zone of north-eastern Nigeria. *Veterinary Parasitology*, 144 (1-2): 118–124.
- Rajput, Z.I., Hu, S.W., Chen, J., Arijo, A.G. and Xiao, C.W. (2016). Importance of ticks and their chemical and immunological control in livestock. *Science Journal of Zhejiang University*, 7 (11): 912–921.
- Springer, V. (2016). A preliminary survey of gastrointestinal and haemoparasites of beef cattle in the tropical livestock farming system in Nan Province, Northern Thailand. *Parasitology Research*, 99 (3): 1-6.
- Tewe, O.O. (2017). *Sustainability and Development: Paradigms from Nigeria's Livestock Industry*, Inaugural Lecture series. University of Ibadan Press, Ibadan, Nigeria. Pp. 97.