IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 8, Issue 5 Ver. I (May. 2015), PP 86-89
www.iosrjournals.org

The Prevalence of Gastro-Intestinal Parasites of Small Ruminants in Madagali Local Government Area, Adamawa State Nigeria

[*1]Yaro, M. B., [2]Alo, E. B., [2]Naptali, R. S., [2]Pukuma, M. S., [3]Nganjiwa, J. I., [1]Tumba, D. P. and [2]Daniel, L. A.

1Department of Biology, School of Sciences, College of Education, Hong, Adamawa. State, Nigeria.
2Department of Zoology, school of Pure and Applied Sciences, Modibbo Adama university of Technology, Yola, Nigeria.
3 Department of Science Laboratory technology Ramat Polytechnic, Maiduuri, Borno State, Nigeria.

Abstract: *The frequency of gastro-intestinal parasite has been increasing over the years resulting to loss of many species of ruminant animals and majority is in developing and tropical countries. Madagali Local Government Area is one of the Local Governments faced with numerous problems of helminthiasis occasioned by instability within the farming sectors. This study is aimed at determining and assessing the Prevalence, clinical and parasitological effects of Gastro-intestinal parasite of small ruminants with reference to sex and age in the study area. Five (5) grams of faecal samples were collected directly from the rectum of the animals and was examined in laboratory using saturated sodium chloride solution as a flotation medium. The data was subjected to statistical analysis (Mann Whitney U-test) at 5% level of significance. The population of the study consists of 249 sheep and goats which were conveniently sampled from the three (3) districts. The result reveals that 126 sheep and goats were positive with ova (eggs), the result of the faecal examination also show that 42.0% males, 52.2% females, 51.6% adult and 40.0% young sheep were found infected, while 46.0% males, 57.1% females, 54.4% adult and 35.3% young goats were positive with at least one ova. Strongyle had the highest prevalence while trichuris had the least in terms of egg counts per gram of faeces and across the months with statistical significant difference ($p<0.05$).*

Keywords- *Adamawa, Gastro-Intestinal Parasite, Helminthes, Madagali, Nigeria, Prevalence, Ruminants*

I. Introduction

Parasitic infection is a major constraint of livestock and causes a great economic loss to diary industry by way of retarded growth, low productivity and increased susceptibility of animal to other infection [1]. In urban and peri-urban livestock keeping has been hailed as a source of livelihood by some households in cities, town and around the world [2]. A lot of socio-economic importance is therefore attached to the ownership of these animals which in some cases may be the only realizable source of rural household [3], however, high morbidity rate as a result helminthes attack remain a major constrain to small ruminants production [4].

The disease is widely distributed in most geographical zone of Nigeria and it causes enormous economic losses due to the associated morbidity and mortality [5]. [6] Estimated about 20% of total goats flock in Nigeria die or slaughter in extremes due to helminthiasis. In Ivory Coast, *stongyle* and *strongyloide* are the most important nematode parasite of small ruminants [7]. [8] Reported high cases of nematodes that range from 5,000-25,000 egg per gram of faeces. The prevalence of various nematodes as recorded by [9] in Sokoto Godali (SG) and West Africa Dwarf (WAD) goats were relatively high. [9] Also noted high prevalence infection in female than male goat and in adult than young. The prevalence of nematode ova/oocyst identified in previous work shows that, the overall rate of 51.3% nematode, [10] has recorded high prevalence of *haemonchus* rather than *strongyle* respectively. [10], he further reported that, *strongyle* ova had the highest prevalence of 34.4% and recorded insignificant differences ($p>0.05$) among infected sex and age of goat [11] Reported high incidence of parasitic gastroenteritis in ruminants especially those kept under traditional husbandry method. [12] Recorded 77-100% prevalence of gastroenteritis throughout the year of the study, [13] revealed that *strongyle* has 62.96% followed by *strongyloide* (9.26%) and *trichris* (7.41%) respectively. [14] Noted high prevalence of *haemonchus* ova and less prevalence of *T. columbriformis* which is contrary to the findings of this study. Previous work have shown the prevalence of nematode infections in small ruminants in other part of Nigeria may be as high as 77-100% throughout the year with or without minor seasonal variation [15].

II. Materials and Methods

Madagali Local Government Area is located between latitude 9^0 21^1 and 20^0 10^1 North and between longitude 13^0 11^1 and 13^0 14^1 East. Its Eastern side is bordered by Cameroun republic on the adjacent side of the Mandara mountain ranges and bordered Gwoza LGA to the South (Nwagbosoand Uanga, 1999) with Michika LGA to North and Askira Uba East.

Faeces from each selected animals were collected at 6:00am and 11:30am every month in each targeted district from the shed/pen with index finger through the animal rectum and was placed into universal container for processing and proper laboratory analysis and examination of worm stages as described by Hansen and Prey (1990). The specimen was examined for the presence worm eggs. The processed sample was examined and Sheep/goats of different sexes and age groups that were for sample collection were randomly selected (simple random sampling) from each of the study sites. Faecal sample from sheep 142 goats 107 were examined from January to December 2013 a crossed the selected district (Shuwa, Gulak and Madagali).

About 5 grams of faecal samples were collected directly from the rectum of each animal in each of the selected study sites. The sample collected was placed in a container containing 10% formalin for preservation before taken to the laboratory for analysis. The samples were examined by floatation technique using saturated sodium chloride solution as the floatation medium. Faecal egg counts was done using the modify Mac Master Technique and parasite stage identification using standard parasitological criteria (Hansen and Pery 1990).

Mann-Whitney U-test was used to determine the differences in the results obtained during the study at 5% level of significance.

III. Results

Small ruminants in Africa and other tropical areas of the world have also been shown to suffer from infection by similar nematode species. Table 1 shows the total of 50.6% of sheep and goats that were infected with egg of nematodes with highest prevalence in female sheep (52.2%), goats (57.1%) while male sheep has 42.0% male goats 46.0% and there is no statistical significant differences ($p>0.05$) as shown in table 1, adult sheep and goats has 51.6%, 54.4% and young sheep and goats has 40.0%, 35.3% and there is no statistical significant differences ($p>0.05$) as shown in table 1. *Strongyle* egg had the highest prevalence (30.1%) and the least was *Strongyloide* egg (4.4%). The egg count per gram of faeces happens to be highest in *Strongyle* (1759±2973) and the least was *trichuris* (546±401) and there was statistical significant difference ($p<0.05$) as shown in table 1.

The seasonal prevalence of nematode eggs of sheep and goats in figure 1identifies that, *Strongyle* reached its peak in September (70.0%) while *trichuris* which has the lowest prevalence reached build up in August (11.0%) and the differences was statistically significant ($p<0.05$).

Table 1: Prevalence and Eggs Count of Gastro-intestinal Nematodes in Sheep and Goats Examined in the LGA.

	All animals	Sheep				Goat			
		Sex		Age		Sex		Age	
		Male	Female	Adult	Young	Male	Female	Adult	Young
No. examined	249	50	92	122	20	37	70	90	17
No. Infected (%)	126(50.6)	21(42.0)	48(52.2)	63(51.6)	8(40.0)	17(46.0)	40(57.1)	49(54.4)	6(35.3)
Strongyle eggs	75(30.1)	14(28.0)	35(38.0)	37(30.3)	4(20.0)	10(27.0)	16(22.8)	30(33.3)	4(23.5)
Trichuris eggs	18(7.7)	2(4.0)	7(7.6)	10(8.2)	1(5.0)	3(8.1)	6(8.6)	6(6.7)	1(5.9)
Strongyloides eggs	11(4.4)	1(4.0)	6(6.5)	5(4.1)	1(5.0)	1(2.7)	3(4.3)	4(4.4)	1(5.9)
EGG COUNTS/GRAM OF FAECES									
Strongyle eggs	1759±2973 (200-19300)*	1667±2836 (200-19300)	568±2988 (200-1889)	1824±2502 (200-13300)	1844±3500 (200-2450)	1864±1864 (200-19300)	6651±3400 (200-45681)	1013±1063 (300-3600)	314±360 (300-7118)
Strongyloide seggs	972±758 (200-2800)	460±182 (300-700)	601±5663 (300-4566)	1169±808 -(200-2800)	250±4250 (300-1350)	975±802 (200-2800)	5121±3455 (300-1300)	950±354 (700-1200)	1882±1191 (300-501)*
Trichuris eggs	546 ±401 (200-1300)	350±71 (300-400)	300±5698 (200-1350)	580±434 (200-1300)	3601±6800 (400-3250)	578±411 (200-1300)	475±6602 (200-5788)	400±0 (400)	1677±1501 (200-1605)*

*Range of egg count

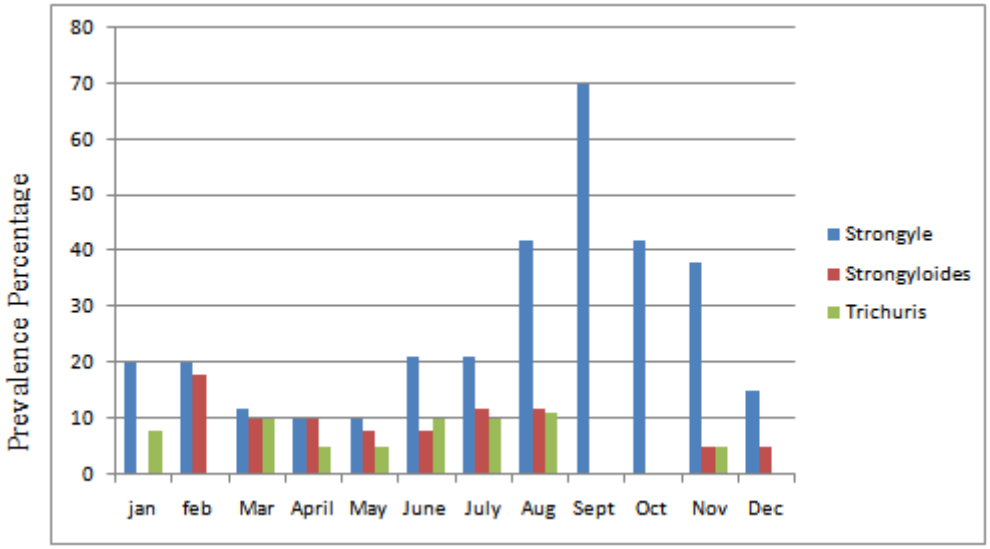

Figure 1: Seasonal Prevalence of Nematode Eggs in Sheep and Goats during the Study Period.

IV. Discussion

The infection of small ruminants with nematodes signifies high prevalence in female than male in this study which concurred with the studies carried out by many author [7], [8] and [9]. Egg/ova prevalence recorded the highest prevalence was the *strongyle* which agreed with the findings of [6] [9] and disagreed with the work of [8], who recorded high prevalence in *haemonchus* the reasons for this could be due to long life span *haemonchus* than *strongyle*. Poor veterinary infrastructure and medication could have also been the causative factors here and other places with similar high rate of gastro-intestinal helminth prevalence rate [17]. Generally high oocyst/ova recorded in this study agreed with the findings of [10] who reported incidence of parasitic gastroenteritis of ruminants is usually high especially those kept under traditional husbandry method. The seasonal prevalence of *stron*gyle and *tric*huris eggs which reached their peak in September and August disagreed with the findings of [14] [15] and agreed with [13]. The present study also disagreed with the work of [15] who observed high infections of nematodes throughout the year with or without minor seasonal variation this could be due to few numbers of animals manage by the farmers.

V. Recommendations and Conclusion

i. A details study of the epidemiology, pathogenicity, treatment and control strategies, and immune response of small ruminants to infection of each parasitic genera/species is highly recommended.

ii. Mass education to small ruminant farmers on the importance of sanitation and hygiene in small ruminant management is recommended.

iii. De-worming sheep and goats prior to rainy season is recommended.

References

[1]. Yadav, A. K. and Raina, A. K. Survey of Helminth infections in Maine dairy catle, Journal of veterinary parasitol, 18, 2004, 167-169.

[2]. Mireri, C., Atekyereza, P., Kyessi, A. and Mushi, N. Environmental risk of urban agriculture in Lake Victoria drainage basin: A case of Kesumu municipality, Kenya. Habitat international, 31, 2007, 375-386.

[3]. Mathew man, R. W. Omeke.I. A survey of small ruminant production at village level in the derived savanna and lowland forest zones. Department of Agriculture and Horticulture, University of Reading. 2007. 65.P. 45.

[4]. Perry, B. D., Randolph, R. F., Mcdmot, J. J., Sones, K. R. and Thomtom, P. K. Investigation in animal health research to alleviatepoverty. International livestock research institute Nairobi, Kenya. 2002. 148.

[5]. Chiejina, S. N. and Ikeme, B. O. Arrested development of gastro-intestinal trichostrongylids in goats in Nigeria. Veterinary Parasite, 28, 2007, 103 - 113.

[6]. Kuil, H. Livestock development and parasites. Proceedings of the Conference on Livestock Development in the Dry and Intermediate Savanna Zone, Zaria, 2009.

[7]. Schillhorn van Veen, T.W. Drought, malnutrition and parasitism. Nigeria Animal Production, 1, 2004, 231-236.

[8]. N'Depo, E. A. Helminthiasis of the digestive system of sheep in Cote D'ivoire. In: First African Veterinary Days. Proceedings of Conference held at Hammamet, Tunisia, May/June 1987, OlE, Paris, France, 2004, 3 - 16.

[9]. Ikem, C.O., Rose, N. O., Doris, N.O. and Micheal Awi. High prevalence of gastro-intestinal parasite in indigenous goats of Nigeria, Indian Journal of research Parapex, 2(10), 2013, 17-19.

[10]. Biu, A. A., Maimuna, A., Salamatu, A. F. and Agbadu, E. T. A faecal survey of gastro-intestinal parasites of ruminants on the University of Maiduguri research farm, 5, 2009, 175-179.

[11]. production and control, Tropical veterinarian, 15, 1997, 137-148.

[12]. Fakae, B. B. The epidemiology of helminthiasis in small ruminants under the traditional husbandry system in Eastern Nigeria. Veterinary Reserved Commons, 14, 2001, 381-391.
[13]. Manuda, A., Moammed, A. A., Alayande, M. O., Habila, Y. I., Lawal, M. D., Usman, M., Raji, A. A., Saidu, B., Yahaya, M. S. and Suleiman, N. Prevalence and distribution of gastro-intestinal parasites of working camel in Sokoto metropolis, Veterinary world, 7(3), 2014, 108-112.
[14]. Regassa, F., Sori, T., Dhuguma,R. and Kiros, Y. epidemiology of gastro-intestinal parasites of small ruminants in western Oromia, Ethpia, International journal of veterinary medicine, 4, 2006, 2-6.
[15]. Fakae, B. B. and S. N. Further studies on the development and availabilyof infective larvae of Bovine gastro-intestinal trichostrongyloides on pasture in eastern Nigeria, veterinary parasite, 28, 2009, 143-152.
[16]. Nwagboso, N. K. and Uyanga, J. Population in Tekwa, I. J. and Usman, B. H. Estimation of soil loss gully erosion in Mubi, Adamawa State, Nigeria. Journal of the environment, Paraclete Publisher, 1(1), 1999, 2006, 3-6.
[17]. Dagnacheus, S., Amanute, A. and Temesgen, W.C. Epidemiology and gastro-intestinal helminthiasis of small ruminants in selected site of north Gondar zone, northwest, Ethopia. Ethopia veterinary journal, 15(2), 2011, 57-66.