
**PREVALENCE OF PARAMPHISTOMUM PARASITE IN SHEEP
SLAUGHTERED AT NUKKAI SLAUGHTER SLAB, TARABA,
NIGERIA.**

**Bulus Reuben ^a, Charity Bala, Augustine Joshua ^b, Tangnum Nyiputen ^a, Bandekaji
Thomas Agbu ^a, Glory Mamman ^a, Henry Naphtali ^a, Yusuf Sazeya ^a**

a. Department of Animal Health Technology, College of Agriculture, Science and
Technology, Jalingo, P.M.B 1025, Jalingo, Taraba State, Nigeria.

b. Department of Animal Production and Health, Faculty of Agriculture and life sciences,
Federal University Wukari , P.M.B 1020, Wukari, Taraba State, Nigeria.

c. Department of Animal Production Technology, College of Agriculture, Science and
Technology, Jalingo, P.M.B 1025, Jalingo, Taraba State, Nigeria.

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***Corresponding Author: Bulus Reuben**

Department of Animal Health Technology, College of Agriculture, Science and Technology, Jalingo, P.M.B 1025,
Jalingo, Taraba State, Nigeria.

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ABSTRACT

A study was carried out in October 2023 in Nukkai slaughter slab to determine prevalence of Paramphistomum spp. in slaughtered sheep. Two hundred and fifty nine (259) sheep were subjected to standard meat inspection procedures to determine Paramphistomum species presence. Determination of parasites was done during rumen post mortem examination. Overall point prevalence of Paramphistomum spp. from the study was (32 %). The prevalence was high in female than in male sheep with a rate of 45.3 % and 21.1 % respectively. Likewise, infection rate was high in adult than young sheep with a prevalence of 39.0% and 27.7%. The recorded high infection rate of sheep with Paramphistomum spp. shows that there is a large scale transmission of these parasites in the area under study. Sheep owners are advised to improve management so as to obtain good body condition providing sufficient level of resistance against Paramphistomum. Anthelmintic therapy and snail control is also been recommended to mitigate losses through mortality and morbidity.

KEYWORDS: Paramphistomum, trematodes, parasites, prevalence, intermediate host, metacercaria, Nukkai, Taraba, infection, snail, slaughter slab.

INTRODUCTION

Small ruminants are impressed by multifactorial gastrointestinal parasites such as nematodes, trematodes and cestodes [6]. Paramphistomum spp. are Platyhelminthes (flatworm) parasites that cause the disease called Paramphistomosis. In many countries, these flukes infection is still underestimated [21]. Paramphistomum is an emerging parasite that can affect a wide variety of livestock species across a broad geographical range including subtropical and tropical regions. However, paramphistomes can limit livestock productivity, account for high economic loss and immature flukes can cause disease in sheep [1]. The epidemiology of Paramphistomum is determined by several factors governed by parasite-host-environment interactions [17]. Ruminants are the definitive host and freshwater snails are the intermediate hosts of the genus *Bulinus*, *Planorbis* and *Stagnicola* [4]. The infection of definitive host is initiated by the ingestion of the encysted metacercariae attached to vegetation or floating in the water. Following the ingestion of metacercariae by the final host, the juvenile rumen fluke are found in the small intestine where they attached to the mucosa and grow before they migrate to the rumen [6]. A light infestation doesn't cause serious damage to the animals, but a massive number of immature Paramphistomum can migrate through the intestinal tract causing acute parasitic gastroenteritis with a rise in morbidity and mortality rates, especially in young animals. Paramphistomum in the duodenum and ileum are plug feeder and cause hemorrhage which results in bleeding and diarrhea and bleeding for a prolonged time may cause to anemia which farther weaken the host [5]. Mature paramphistomum is also responsible for ruminants' irregular rumination, lower nutrition conversion, loss of body condition, decreased milk yield incurring economic loss and compromised welfare [19]. Passive surveillance in the Veterinary diagnostic laboratory is based on routine examination of feces for rumen fluke egg and largely follows the same sedimentation procedure for the detection of liver fluke. Adult rumen fluke live attached to the surface of the rumen and reticulum and have a light to bright red color when fresh, are pear-shaped and about 1cm in length. The prepatent period may be around 70 up to 80 days and the total life cycle is thought to take at least 34 months to complete [22]. Of recent, a sharp increase in the prevalence of rumen fluke infection has been reported. The controlling management of rumen fluke is based on mainly control of the rumen population, fencing of the watery area [4]. However, limited information is available in diagnosis, pathogenic importance and control

strategies of this rumen fluke [20]. This work is aimed at investigating the prevalence of Paramphistomum parasite in sheep in Nukkai slaughter slab in order to provide a baseline approach in the control and prevention of the parasite and the disease it causes in the area.

MATERIALS AND METHODS

The study was carried out in Nukkai slaughter slab. Nukkai is a ward under Jalingo, a local Government area in Taraba state, Nigeria. Jalingo local government area is one among the sixteen (16) local government areas in Taraba state. It is situated along longitude 11.3N and latitude 8.95E. Jalingo is bounded by Lau local government area in the north, Yorro local government area at the south - east and Ardo-kola local government area at the southwest. Jalingo local government has yearly rainfall of 1,260mm with annual temperature of 29.7°C in the rainy season while 35-45°C in dry season. The vegetation of Jalingo is within the New Guinea ecological zone characterized by short grass interspersed with conditions which are mostly of economically value [16].

This cross sectional study was carried out on slaughtered animals in Nukkai slaughter slab in October 2023. Two hundred and fifty nine (259) sheep slaughtered in Nukkai slaughter slab, Jalingo, Taraba State, Nigeria were examined for the presence of Paramphistomum species. Ante mortem inspection was done in animals before slaughter to assess them generally. During the ante mortem examination, detailed records about the sex and age were taken. Determination of sex was based on the appearance of the genitals. Rumens of animals that were sampled were systematically inspected for the presence or absence of adult Paramphistomum. Further incision of the rumen was made to check presence or absence of Paramphistomum spp. as defined by [25]. Adult worms were collected from the rumen of sampled animals using a standard meat inspection procedure. Recovered flukes were transported to the Parasitology Laboratory, College Of Agriculture, Science and Technology, Jalingo for identification in plastic containers with 10% formalin. The flukes were later prepared for identification. Final identification of Paramphistomum was done based on morphological features following the guidelines given by [25].

DATA ANALYSIS

Data were collected during the study and analyzed using simple percentage. Descriptive statistics was employed and expressed in terms of simple percentage.

RESULTS

The overall prevalence of *Paramphistomum* spp. in sheep slaughtered at in Nukkai slaughter slab was 32.0 %. Higher prevalence of *Paramphistomum* spp. was recorded in adult sheep (39.0%) than in young ones (27.7%). Female sheep showed a higher prevalence (45.3%) than male (21.1 %).

Table 1. The Overall Prevalence of *Paramphistomum* parasites in sheep slaughtered at Nukkai slaughter slab, Jalingo Local Government Area.

S/N	No. of rumen examined	No. positive with rumen flukes	Prevalence (%)
1	259	83	32.0

Table 2. Prevalence of *Paramphistomum* parasites in sheep slaughtered at Nukkai slaughter slab, Jalingo Local Government Area in relation to sex.

Sex	No. of rumen examined	No. positive with rumen flukes	Prevalence (%)
Female	117	53	45.3
Male	142	30	21.1
Total	259	83	32.0

Table 3. Prevalence of *Paramphistomum* parasites in sheep slaughtered at Nukkai slaughter slab, Jalingo Local Government Area in relation to age.

Age	No. of rumen examined	No. positive with rumen flukes	Prevalence (%)
Young	159	44	27.7
Adult	100	39	39.0
Total	259	83	32.0

DISCUSSION

The overall prevalence of this study was recorded to be 32.0 %. This prevalence is high when compared to lower rates recorded in studies by [2, 26, 10 and 15] who recorded 10.0%, 9%, 4% and 1.09% prevalence rates respectively but low when compared to higher prevalence in studies by [14] and [27] who recorded 55.9% and 48.8% prevalence rates respectively. [28] also recorded higher prevalence of 39.1% in sheep. The main reason for this prevalence might be due to variation in sample size, ecology and awareness to use of anthelmintic in sheep. Uncontrolled grazing habits and the preponderance of *Bulinus* snail in the study area is a contributory factor.

It was observed in the study that the prevalence of *Paramphistomum* infections was higher in females (45.3%) than in male sheep (21.1%). This finding is in agreement with the study of [24] who reported a prevalence of 22.33% and 17.83% in female and male sheep

respectively. Similar results were also reported by [12] who reported the prevalence of 29.49% in females and 15.79% in male sheep. Contrasting results were reported by [23] who reported a higher prevalence in male sheep than in female sheep. The reason for higher prevalence of paramphistomum infection in the females can be assumed to be due to genetic predisposition and susceptibility due to hormonal effects. Additionally, stress stemming from pregnancy and lactation and insufficient feed supplements which are required for reproductive activities can be important factors. These parameters can suppress immune status of females and thereby increase prevalence of amphistomes in case of females than their male counterparts [3]. In addition, higher mean age of females than males results females being slaughtered at an older age [10].

Young animals (27.7%) had a low prevalence rate than adult (39.0%) which agrees with those of [28] who reported a prevalence of (40.9%) and (33.3%) in adult and young sheep respectively. The reason behind this low infestation in young than adult sheep may be attributed to maternal immunity attained by very young animals [9] and less exposure of the young sheep to the parasite than adult. The lower rate of infection in young animals may be attributed to the little chance of exposure to contaminated pasture and the fact that they do not travel long distance to get their food.

[18] remarked that climate change modifies the geographic distribution of parasite infections and causes changes to their hosts drastically. Extrinsic factors like rainfall, water velocity, temperature, humidity and habitat stability also determine the economic importance of Paramphistomum infections. Meteorological factors also affect the life cycle of Paramphistomum spp as well as their prevalence as stated by [11].



Figure 1. Matured paramphistomes recovered from the rumen.

CONCLUSION

In this study, Paramphistomum spp. was found to be prevalent in sheep in the study area. This will be an obstacle to the livestock production by causing massive production losses in the study area. Moreover, the study area is suitable for the survival of Bulinus snail that will aggravate the situation in the future. Therefore, from this conclusion, selected anthelmintic therapy, proper awareness and control of Bulinus snail should be employed to curtail the problem.

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REFERENCES

1. Adane, G,W and Demelash K. (2020). Review on Paramphistomosis. *Advances in Biological Research* 14 (4): 184-192, ISSN 1992-0067 © IDOSI Publications, 2020 DOI: 10.5829/idosi.abr.2020.184.192 Livestock and Fishery Resource Office, Gamo Zone, SNNPR, Ethiopia.
2. Al-Gaabary, M.H. and Nasr, M.Y. (1997). Epidemiological, clincobiochemical and electrophoretic studies on paramphistomiasis in buffaloes in Kafr El-Sheikh province. *Zagazig Veterinary Journal*, 25(3): 34-40.
3. Bilbo, S. D., and Nelson, R. J. (2001). Sex steroid hormones enhance immune function in male and female Siberian hamsters. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*, 280, 207–213.
<https://doi.org/10.1152/ajpregu.2001.280.1.R207>
4. Bowman, G, R.(2008). Georgis' Parasitology for Veterinarians (9th Ed.). *W.B. Saunders Company*, pp: 124.
5. Dalton, R. and D. Pole, (1978). Contact patterns in relation to *Schistosoma haematobium* infection. *World Health Organization*, 563: 417-426.
6. De waal, T. (2010). Paramphistomum a brief review. *Irish veterinary Journal* 63:313-315
7. Dube, S. and Aisien, M. (2010). Descriptive studies on paramphistomes of small domestic ruminants in Southern Nigeria. *Zimbabwe Journal of Science Technology*, 5: 12-21.
8. Hajipour, N. and Tavassoli, M. (2019). Prevalence and associated risk factors of *Linguatula serrata* infection in definitive and intermediate hosts in Iran and other

- countries: A systematic review. *Veterinary Parasitology: Regional Studies and Reports*, 16, 100288. <https://doi.org/10.1016/j.vprsr.2019.100288>
9. Horak, I.C. (1971). Paramphistomiasis of domestic ruminants. *Advances in Parasitology*, (9) 3–72
 10. Haridy, F.M., El-Sherbiny, J.T. and Morsy, T.A. (2006). Some parasitic flukes infecting farm animals in Al-Santa center, Gharbia Governorate, Egypt. *Journal of the Egyptian Society of Parasitology*, 36 (1): 259- 264.
 11. Khan, U.J. and Maqbool, A. (2012): Prevalence of paramphistomosis in relation to meteorological factors. *Pak J Zool*, 44: 823 – 828.
 12. Kifleyohannes, T., Kebede, E., Hagos Y., Weldu, K., Michael, M.G. (2015). Prevalence of paramphistomosis in ruminants in Ashenge, Tigray Ethiopia. *Acta Parasitol Glob.* 6:83–6.
 13. Magdy H. Al-Gaabary, Salama A. Osman and Amara G.M. El-Tonoby. (2009). Studies on paramphistomiasis in ruminants. *Kafrelsheikh, Vet. Med. J.*, 3rd Sci. Congress. 10-12 May, pp. (116-136)
 14. Manna, A.K., Pramanik, S. and Mukherjee, G.S. (1994). Incidence of Paramphistomiasis in west Bengal. *Indian Journal of Animal Health*, 33(2): 87-89.
 15. Moghoddar, N. and Khanitapeh, N. (2003). Prevalence of Paramphistomes in sheep and goat in the Fars province of Iran. *Iranian Journal of Veterinary Research*, 4(2): 166-170.
 16. National Population Commission (2006). *Population Census of the Federal Republic of Nigeria*.
 17. Ozdal, N., Gul, A., Ilhan, F. and Deger, S. (2010). Prevalence of Paramphistomum infection in cattle and sheep in Van Province, Turkey. *Helminthologia*, 47: 20-24
 18. Polley, L., Hoberg, E. and Kutz, S. (2010): Climate change, parasites and shifting boundaries. *Acta Vet Scand*, 52: S1. DOI: 10.1186/1751-0147-52-S1-S1
 19. Rengel, J., Albores, T. and Gamboa, J. (2003). Seasonal trends of *Paramphistomum cervi* in Tabasco, Mexico. *Veterinary Parasitology*, 116: 217-222.
 20. Rolfe, F., Boray, C. and Collins, H. (1994). Pathology of infection with *Paramphistomum ichikawai* in sheep. *International Journal of Parasitology*, 24: 995-1004
 21. Roy, S. and Lynden, L.M. (2019). An in vitro confirmation of the ethnopharmacological use of Senna plants as anthelmintic against rumen fluke *Paramphistomum gracile* *BMC Vet. Res.*, 15: 360. <https://doi.org/10.1186/s12917-019-2094-3>.

22. Taylor, A., Coop, M and Wall, R. (2007). *Veterinary Parasitology*, 3 Ed. Blackwell Publishing, Oxford, pp: 874. Human consumption of rumen flukes of cattle in India. *Southeast Asian Journal of Tropical Public Health*, 45: 26-30
23. Tariq, K.A., Chishti ,M.Z., Ahmad, F., and Shawl, A.S.(2008).The epidemiology of paramphistomosis of sheep (*Ovis aries* L.) in the north west temperate Himalayan region of India. *Vet Res Commun.* 32:383–91. doi: 10.1007/s11259-008-9046-x
24. Tehmina, S., Shahina, R., Razzaq, A., Marghazani, I.B and Khosa, A.N. (2014).Prevalence of *Paramphistomum cervi* in different sheep breeds of Balochistan (Pakistan). *Rev Vet.* 25:12–5. doi: 10.30972/vet.251542
25. Urquhart, G.M., Armour J., Duncan, J.L., Dunn, A.M and Jennings F.W. (1996). *Veterinary Parasitology*. (2nd edition). *Oxford, Longman Scientific and Technical Press, United Kingdom.* 785 p.
26. Vartic, N., Zagreanu, C., Trica, Z. and Suteu, E. (1982). Epizootiological, pathological, clinical, therapeutic studies of paramphistomiasis in cattle and sheep. *Seminarul Amerliorarea Tehnologa Si Pathologia Rumenga-toarelor*, Volume, VII: 29-30.
27. Wang, C.R., Qiu, J.H., Zhu, X.Q., Han, X.H., Ni, H.B., Zhoo, J.P., Zhou, Q.M., Zhang, H.W. and Lun, Z.R. (2006). Survey of Helminths in adult sheep in Heilongjiang Province, People’s Republic of China. *Veterinary Parasitology*, 140: 378-382.
28. Wondmnew, K., Wossen, T., Mohammed H. and Yeshiwork, A. (2019) Study on Prevalence of Ovine Paramphistomiasis In Kutaber Woreda. *Advances in biotechnology and microbiology.* 14(4) 129-131.