



**Prevalence of Gastrointestinal Parasite in Sheep and Goat in Shendam town of Plateau State, Nigeria**

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**Abstract**

**SHORT COMMUNICATION**

*Gastrointestinal parasites have a devastating effect on the performance of small ruminants. The study was to determine the prevalence of gastrointestinal parasites in sheep and goats in Shendam town of plateau state, Nigeria. A total of 600 faecal samples 300 each were collected from sheep and goats for both wet and dry season from July 2019 to March 2020. The results show a prevalence rate of 471(78.8%) gastrointestinal parasites infestation in the study area goats (90.8%) had significantly ( $P < 0.05$ ) higher infection rate than sheep(71.2%). Adult goats and sheep had higher rate than the young with 65.3% and 63.6% respectively infestation rate of sheep. Sheep (100%) was significantly ( $P < 0.05$ ) higher than goat (93.3%) during the wet season while the reverse (40 vs. 80%) was observed during the dry season. Common gastrointestinal parasites found include; *Coccidia oocyst*, *oesophagostomum*, *Trichuris*, *Haemonchus*, *Moneiza*, *Dicrocoelium*, *Fasciola* and *Bunostonum*. Proper preventive measures such as regular deworming should be put in place in order to improve on the productivity of small ruminants particularly in the study area.*

**Keywords:** Age, faecal, gastrointestinal parasites, infestation rate, small ruminants, sex

**Introduction**

Gastrointestinal parasites are considered as a major constraints affecting the productive performance of sheep and goats throughout the world including Nigeria (Okorafor *et al.*, 2015). Thus, the epidemiologies of gastrointestinal parasites in sheep and goats have been studied in almost in all agro-climatic regions of Nigeria (Okorafor *et al.*, 2015). Gastrointestinal parasites not only affect the health but the productive and reproductive performance of the animals which leads to loss in body weight, poor reproductive performance, digestive disturbance, emaciation for long periods and increased susceptibility to other infections (Molla *et al.*, 2016). Prevalence of gastrointestinal parasite infection in livestock varies according to the existing climatic condition and management practices (Kumar *et al.*, 2016). The environmental factors like temperature, rainfall and humidity play an important role in the development and survival of pre-parasitic stages (Nemomsa *et al.*, 2013) Therefore it is important to estimate the possible variation in parasitic infection of each host species of animals in different geographical regions and which could help to design effective control measures against the parasitic diseases (Singh *et al.*, 2015). These animals are much prone to parasitic infestations where their

gastrointestinal tract harbors a wide variety of parasites like helminthes and protozoa etc. which causes clinical and sub clinical parasitism (Adejinmi *et al.*, 2015) The aim of the study was to determine the prevalence of gastrointestinal parasites in sheep and goats in Shendam town of plateau state, Nigeria.

**Materials and Methods**

The study on the prevalence of gastrointestinal parasites was based on the collection of faecal samples directly from the rectum of the sheep and goats causing them any harm.

**Study Area**

The study was conducted in Shendam town of Plateau State, Nigeria. It is located on latitude 8.8955oN and longitude 9.4537oE. It is the head quarter of Shendam Local Government Area which is bordered with Quan pan Local Government Area (LGA) by the west, Taraba state to the south, Langtang south LGA to the east, Pankshin and Mikang LGAs to the North. People in the locality mostly engage in crop farming (Rice, Maize, Yam, etc) and livestock rearing (cattle, sheep, and goat etc)

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**Samples collection**

A total of 600 samples were collected (300 each) from sheep and goats. The faecal samples were randomly collected directly from the rectum of the animals during the period of July, 2019 to March 2020. Sheep and goat were randomly selected using a systematic sampling method. Samples collected were labeled accordingly and transported to the Parasitology laboratory of NVRI Vom for processing and screening using floatation and sedimentation methods. Data were based on species, sex, age, and season.

**Data analysis**

Data collected were subjected to chi square test to determine the prevalence rates of gastrointestinal parasites in sheep and goat in Shendam town.

**Results and Discussion**

The study on the prevalence of gastrointestinal parasites in Shendam town showed a total of 600

faecal samples were collected from sheep and goat. Of the 600 faecal samples 471 (78.5%) were positive which is significantly ( $P < 0.05$ ) higher than the finding of Temesgen *et al.* (2015) who reported the prevalence rate of 49.2%

Table 1 shows the prevalence of gastrointestinal parasite based on species. A total of 300 faecal samples each for the two species were analyzed had 260 (86.7%) and 211(70.3%) for goat and sheep respectively were found positive. The study indicated that prevalence rate (86.7%) of infestation in goat was significantly ( $P < 0.05$ ) higher than that (70.3%) in sheep probably due to their grazing habit. The result of this study is in agreement with Gofwan *et al.* (2021). Temesgen *et al.*, (2015) reported that the infection rate was higher in goats than sheep, and Ntonifor *et al.*, (2013) reported that goats were more susceptible to parasitic infestation than sheep. Molla *et al.*, (2016) also reported that difference in the feeding habits of sheep and goats may be responsible for the difference in the prevalence rate reported.

**Table 1: Prevalence of Gastrointestinal Parasites base on species**

Species	No Examined	No Infected	Percentage (%) Infected	Chi sq	p-value
Goat	300	260	86.7	22.752	.000
Sheep	300	211	70.3		
Total	600	471	78.5		

Table 2 shows the prevalence of gastrointestinal parasites based on Age. 251 and 267 faecal sample of adult goats and sheep were examined and 228 (90.8%) and 190 (71.2%) were found positive respectively. 49 and 33 faecal sample of young goat and sheep were examined where 32 (65.3%) and 21(63.6%) respectively were found positive. The prevalence rate of gastrointestinal parasites in adult goats was significantly ( $P > 0.05$ ) higher than the rate in their young. Perhaps this could be due to their grazing pattern where adults graze for longer periods in the field which easily exposed them to parasitic organisms than the young or it might be that the immunity of the adults is becoming weaker compared to the young ones. The high infestations rate in adults is in agreement with the reports of Radostits *et al.* (2006) and Varadharajan *et al.* (2015) who observed higher prevalence in older animals may be due to the warning of immunity as animals get older coupled with their poor management.

**Table 2: Prevalence of Gastrointestinal Parasites based on Age**

Species	Age	No Examined	No Infected	Percentage (%) Infected	Chi sq	p-value
Goat	Adult	251	228	90.8	20.968	.000S
	Young	49	32	65.3		
	Total	300	260	86.7		
Sheep	Adult	267	190	71.2	0.477	0.380NS
	Young	33	21	63.6		
Total		300	211	770.3		

• =  $p < 0.05$

Table 3 shows the prevalence of gastrointestinal parasites according to sex. 240 and 225 faecal sample of female goat and sheep were examined and 213(88.8%) and 177 (78.7%) respectively were found positive however no significance difference ( $P>0.05$ ) was found among sex in the case of sheep. Though females of both sheep and goat were more infected than their males' counterparts. Probably, this could be due to reproductive stress of the females. The present result was in agreement with the report of Gonfa *et al.* (2013) and Khajuria. (2013) and Misra *et al.* (2010) who found higher infections in female animals than males with a significant difference between them. Khajuria (2013) also reported females are more prone to parasites during pregnancy and per-parturient period due to stress and decreased immune status.

**Table 3: Prevalence of Gastrointestinal Parasites based on Sex**

Species	Sex	No Examined	No Infected	Percentage (%) Infected	Chi sq	p-value
Goat	Females	240	213	88.8	3.651	0.056NS
	Males	60	47	78.3		
	Total	300	260	86.7		
Sheep	Females	225	177	78.7	1.060	0.303NS
	Males	75	54	72.0		
	Total	300	231	77.0		

• =  $p<0.05$

Table 4 shows the prevalence of gastrointestinal parasite based on season. A total of 150 samples were examined each for goat and sheep during the Wet season where 140(93.3%) and 150(100%) were found positive. The infection rates of 93.3% in goat and 100% sheep during the wet season were significantly ( $P< 0.05$ ) higher than that of dry season with 80.0% and 40.0% respectively. This showed that parasitic infection in both species during the wet season was higher than that of dry season. Perhaps parasites are commonly found during the wet season due to its wet environment and Period of grazing is also reduced during the dry season which contributes to low infestation rate during the period. Sheep were more prone to parasitic infection during the wet season (100%) than goat (93.3%) while infestation rate in goat of 80.0% was higher in the

dry season than sheep with 40.0%. This study concur with the findings of Singh *et al.* (2016) who reported 191(89.3%) higher infection in sheep than goat with 148(87.1%) during the wet season. Thus the present study showed that parasitic infestation in both of the species during the wet season 290(96.7%) is higher than the infestation rate 181(60.0%) during the dry season. The results of this study is also in agreement with those of Swarnkar *et al.* (2014) reported high parasitic infestation in the wet season than the infestation in the dry season Emiru *et al.* (2013) and Ntonifor *et al.* (2013) also reported that cold stimulus is responsible for development of larvae in the wet season and Singh *et al.* (2016) also reported that during the dry season, animals are also partially stall-fed and that reduced chance of infection.

**Table 4: Season wise prevalence of Gastrointestinal Parasites in small ruminant**

Species	Season	No Examined	No Infected	Percentage (%) Infected	Chi sq	p-value
Goat	Wet	150	140	93.3	10.413	0.001
	Dry	150	120	80.0		
	Total	300	260	86.7		
Sheep	Wet	150	150	100	123.713	0.000
	Dry	150	61	40.0		
Total		300	211	70.3		

Table 5 shows the gastrointestinal parasites found in sheep and goat in the study area. The study revealed *Coccidia oocyst* had the highest prevalence with 47.3% in sheep and 48.6% in goat followed by *oesophagostomum* 11.5% in sheep and 14.5% in goat while least was *Fasciola* (3.2%) in sheep and *Moneiza* (3.4%) in goats. In general, *Coccidia oocyst* is the most common in both species (sheep and goat) followed by *oesophagostomum*, *Trichuris*, *Haemonchus*, *Moneiza*, *Dicrocoelium*, and *Fasciola* in the case of sheep and *oesophagostomum*, *Bunostonum*, *Trichostrongylus*, *Haemonchus*, *Moneiza* and *Trichuris* were found in goats at varied levels of

infection. Some of the positive sample contained more than one parasites while some only contained one parasite per sample. The high prevalence of *coccidia oocyst* could be as a result of overcrowding. Many researchers (Adejimmi and Osayomi, 2015; Gofwan *et al.*, 2019; Obijiaku and Agbede, 2007) previously reported that the commonest of gastrointestinal parasite in small ruminants is the oocyst of *Emeria*. Adejimmi and Osayomi (2015) attributed the high infestation of small ruminants by *Coccidia oocyst* to overcrowding and poor hygienic environment.

**Table 5: Gastrointestinal parasites in sheep and Goat**

Sheep			Goat		
Parasites sp	Number Infected	% Infected	Parasites sp	Number Infected	% Infected
<i>Coccidia oocyst</i>	132	47.3	<i>Coccidia oocyst</i>	141	48.6
<i>Oesophagostomum</i>	32	11.5	<i>Oesophagostomum</i>	42	14.5
<i>Trichuris</i>	27	9.7	<i>Bunostonum</i>	21	7.2
<i>Haemonchus</i>	41	14.7	<i>Trichostrongylus</i>	33	11.4
<i>Moneiza</i>	24	8.6	<i>Haemonchus</i>	10	3.4
<i>Dicrocoelium</i>	14	5.0	<i>Moneiza</i>	26	9.0
<i>Fasciola</i>	09	3.2	<i>Trichuris</i>	17	5.9
<b>Total</b>	<b>279</b>	<b>100</b>	<b>Total</b>	<b>290</b>	<b>100</b>

**Conclusion**

The study revealed the prevalence of gastrointestinal parasites in small ruminants in Shendam town. Infestation of gastrointestinal parasites was higher in goat than in sheep and also higher in adult and females of both species than their young and males counterparts. The commonest gastrointestinal parasites found were *Coccidia oocyst*, *Oesophagostomum*, *Bunostonum*, *Trichostrongylus*, *Trichuris*, *Haemonchus*, *Moneiza*, *Dicrocoelium*, *Stroglyoides* and *Fasciola*. Therefore proper preventive measures should be put in place in order to improve on the productive performance of sheep and goats.

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