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Studies on prevalence and seasonal variation of gastrointestinal helminth parasites in *Capra hircus* and *Ovis bharal* from Sangamner tehsil of Ahilyanagar District (MS) India

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ABSTRACT

The present research was conducted to study the prevalence of gastrointestinal helminth infection in sheep and goats in Sangamner tehsil of Ahilyanagar District. A total 189 gastro-intestinal samples were collected from March, 2024 to February, 2025. Out of 189 samples 129 were positive (68.25%). The goats had a highest prevalence of gastrointestinal helminth parasite infection 72.02% (80 out of 111 goats) than sheep 62.82% (49 out of 78 sheep). The gastrointestinal helminth parasites found in both sheep and goats were *Trichuris* sp., *Haemonchus* sp., *Bunostomum* sp., *Paramphistomum* sp., *Moniezia* sp., and *Avitellina* sp. The study revealed that higher prevalence showed in monsoon season among all seasons.

Figures : 03 References : 22 Tables : 03
KEY WORDS : Gastrointestinal, Goats, Parasites, Sheep

Introduction

Livestock is an important part of agriculture for the economy and human health. It not only helps to improve the financial condition but also significantly contributes to human nutrition[1]. However, a farming system which includes livestock is essential for increasing the economy of a suburban area like Sangamner. These animals' production performance is dependent on their overall health and better management. Poor management methods, inappropriate feeding and diseases caused due to several infections - such as bacteria, viruses, fungus, parasites, *etc.* can each have an impact on these animals' productivity. Due to the presence of parasites, relevant disease and mortality, treatment costs, and control measures, parasitic infections, particularly intestinal parasites, indicate a serious threat to the growth of animals which causes loss of production[7,11,13]. Traditionally, animals are the primary source of income in rural areas, resulting in a significant risk of zoonotic transmission of parasites to humans. Trichostrongyliasis is typically seen as a health issue and a financial loss since it is difficult to control and stop [12].

Small ruminant sheep and goats form the grater part of livestock. The majority of gastrointestinal parasites affect ruminants like sheep. Cestodes, which are obtained through the consumption of contaminated food or water. This group includes the species *Taenia* sp., and *Moniezia* sp., Frequently found in both wild and domesticated herbivores and carnivores. Trematodes can infect the lungs and frequently found in sheep and goats' small intestines or bile ducts. Trematodes particularly include *Schistosoma* sp., *Paramphistomum* sp., and *Fasciola* sp.[21]. Previously underestimated, the impact of disease caused by *Paramphistomum* sp. is recently reported to be a significant cause of production decrease. Because they are plug feeders and produce significant erosion in the mucosa of the upper ileum and

TABLE-1 : Prevalence of gastrointestinal helminths in the sheep and goats

Species of Animal	Total No. of samples examined	Number of positive animals						Prevalence (%)
		Trichuris sp.	*Haemonchus* sp.	*Bunostomum* sp.	*Paramphistomum* sp.	*Moniezia* sp.	*Avitellina* sp.	Total positive samples	
Sheep	78	21	09	08	07	06	00	49	62.82%
Goats	111	30	13	11	15	10	07	80	72.07%
Total	189	51	22	19	22	16	07	129	68.25%

duodenum, immature flukes are mostly responsible for the clinical symptoms of paramphistomiasis. In cases that involve severe infection, enteritis is characterized by oedema, hemorrhage, ulceration, as well as anemia and hypoproteinemia[15,18].

Compared to high-altitude areas, where most animals remain in holders and their food may have a lot of protein, sheep and goats generally graze and the quality of the feed is usually low. These factors might have an impact on how severe the illness. At now, there is little comprehension of the variables influencing the severity of helminth infections in sheep and goats, with inadequate epidemiological data necessary for the formulation of efficient control strategies [4]. In addition to seasonal variations, global warming and increasing environmental pollution have facilitated the increase of parasitic infections [6]. The current study aims to examine the prevalence of gastrointestinal helminth infections in sheep and goats within the Sangamner tehsil of Ahilyanagar district.

Materials and Methods

Study areas and period: The aim of the research was to find out helminth parasites which were in sheep and goats that were slaughtered in the Sangamner area. The present investigation was executed from March 2024 to February 2025. The total of 189 gastrointestinal samples from sheep and goats were collected in the morning and brought to the laboratory for further analysis. The research aims to determine the seasonal prevalence of helminth parasites in sheep and goats. The helminth parasites were classified based on their morphological characteristics as identified by microscopy.[8,20,22].

Results

The examination of gastrointestinal samples revealed that 129 out of 189 small ruminant samples (sheep and goats) examined positive for intestinal parasite infection, resulting in an overall prevalence of 68.25% (Table-1). But the goats had a greater rate of gastrointestinal helminth parasite infection 72.07% (80 out of 111 goats) than the sheep 62.82% (49 out of 78 sheep).

Out of 78 sheep gastrointestinal samples examined, 49 (62.82%) were found positive for gastrointestinal parasites. The study showed that, 21 (42.85%) sheep had *Trichuris* sp., 09 (18.36%) sheep had *Haemonchus* sp., 08 (16.32%) sheep had *Bunostomum* sp., 07 (14.28%) sheep had *Paramphistomum* sp., and 06 (12.24%) sheep had *Moniezia* sp. Infection. In sheep and goats' levels of infection were lower during the summer.

Out of 111 goats' gastrointestinal samples

TABLE-2 : Sex wise prevalence of gastrointestinal helminths of sheep and goats in Sangamner

	Sheep			Goats		
	Examined	Positive	Prevalence	Examined	Positive	Prevalence
Male	69	42	60.86%	96	69	71.87%
Female	09	07	77.77%	15	11	73.33%
Total	78	49	62.82%	111	80	72.07%

revealed, 80 (72.07%) were found positive for gastrointestinal parasites. The study showed that, 30 (37.5%) goats had *Trichuris* sp., 13 (16.25) goats had *Haemonchus* sp., 11 (13.75%) goats had *Bunostomum* sp., 15 (18.75%) goats had *Paramphistomum* sp., 10 (12.5%) goats had *Moniezia* sp., and 07 (08.75%) goats had *Avitellina* sp., parasitic infection was found.

The current research indicates a greater incidence of gastrointestinal parasite illnesses in males, with rates of 60.86% in sheep and 71.87% in goats. In females, the prevalence of gastrointestinal parasite illnesses was 77.77% in sheep and 73.33% in goats, respectively.

Table-3 showed the proportion of infections for each season. This research showed that during the monsoon season, sheep and goats had more gastrointestinal parasites than during the other seasons. Small ruminant feed and drinking water become contaminated during the monsoon season. Therefore, helminth infection was highly prevalent during the monsoon season.

Discussion

It has become known that epidemiology forms the fundamental foundation on which the structure of parasitic disease control could be constructed. Nematode infections were the highest prevalent in the current research, followed by trematode and cestode infections. Similar results have been indicated by the works[2,9,16,17].

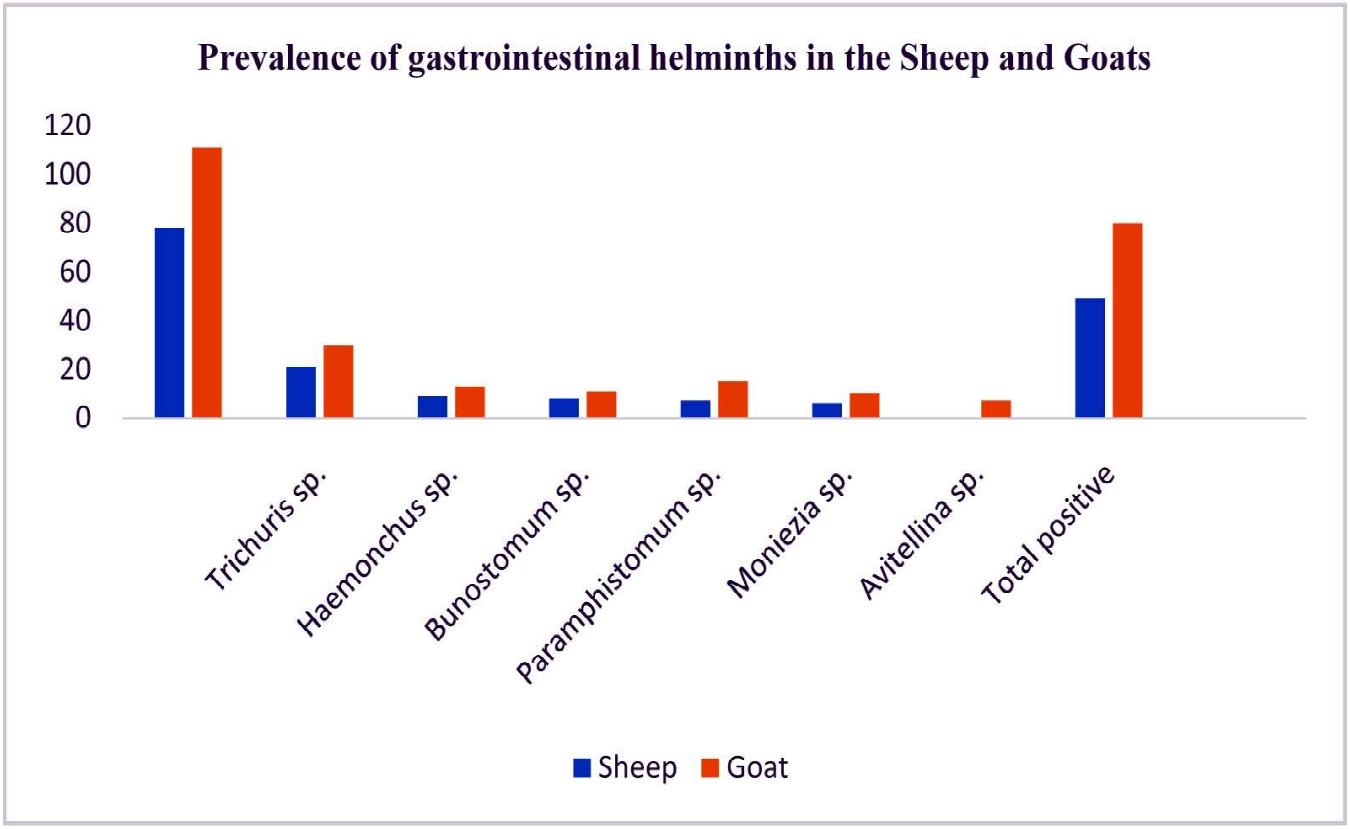

Fig. 1 : Prevalence of gastrointestinal helminths in the sheep and goats

TABLE-3 : Seasonal variation of gastrointestinal helminths in the sheep and goats

Season	Sheep		Goats	
	Total number of samples examined	Number of sample infected (%)	Total number of samples examined	Number of sample infected (%)
Summer	26	12 (46.15)	37	22 (59.45)
Monsoon	26	21 (80.76)	37	31 (83.78)
Winter	26	16 (61.53)	37	27 (72.97)

The occurrence of gastrointestinal parasites, including the genera of helminth parasites, species, and the severity of illness, exhibits significant variation based on local environmental factors such as humidity, temperature, precipitation, vegetation, and management strategies. The spread and prevalence of the illness are influenced by climatic factors. It is well acknowledged that in resource-limited areas globally, helminth infections in sheep and goats significantly contribute to economic losses by reducing production and increasing death rates.[10,19]. The gastrointestinal helminth parasite is more common in goats during the rainy season.[3,5,14].

The current observations might initially be very helpful in understanding the intestinal helminth parasites in sheep and goats in Sangamner tehsil of Ahilyanagar District and it can help in the planning of pasture and grazing management as well as other prevention strategies in the study area of sheep and goats. In conclusion, various types of intestinal parasites have been found in sheep and goats. The burden of parasites in the affected regions should be reduced through regular control methods.

Conclusion

This study highlights the significant role of helminths, including nematodes, trematodes, and cestodes, in gastro-parasitic infections in sheep and goats. The potential for economic losses exists through various mechanisms, highlighting the importance for controlling helminthiasis. This endeavor demands a comprehensive understanding of these parasites, and it is expected that the current study will contribute valuable insights toward this goal. However, a greater prevalence was observed during the monsoon season compared to other seasons.

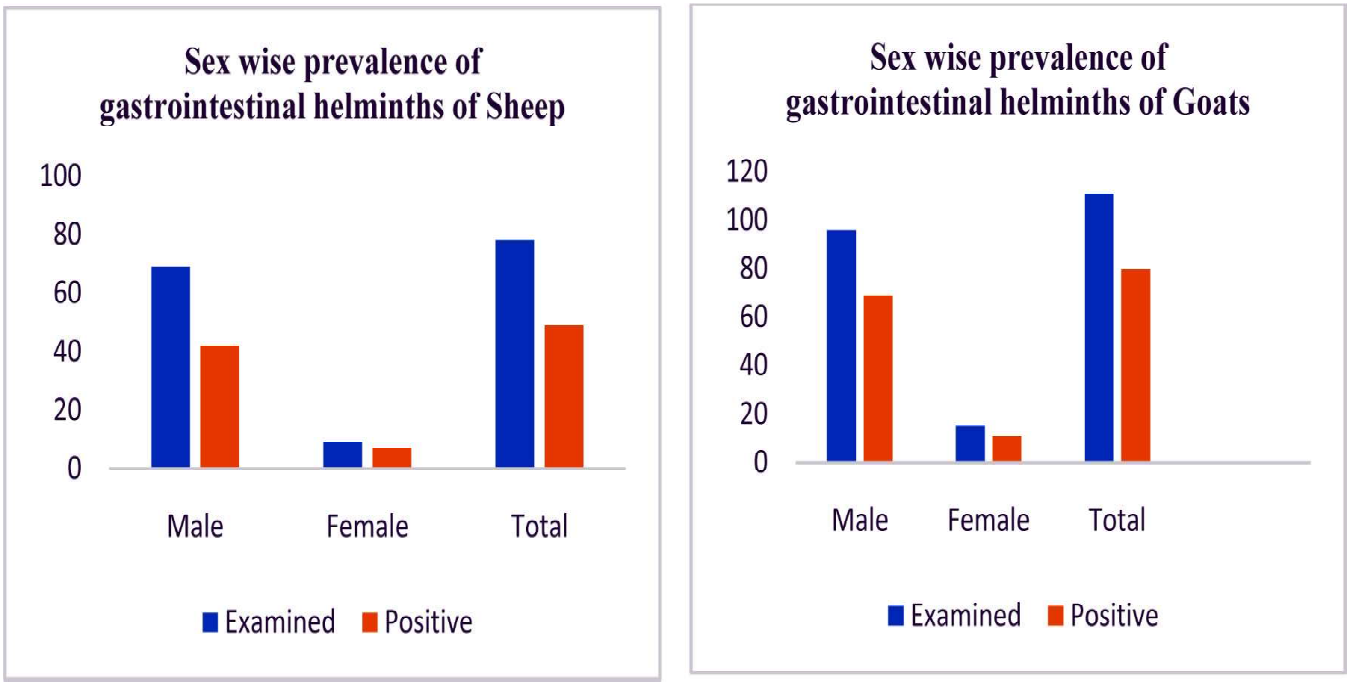

Fig. 2 : Sex wise prevalence of gastrointestinal helminths of sheep and goats in Sangamner

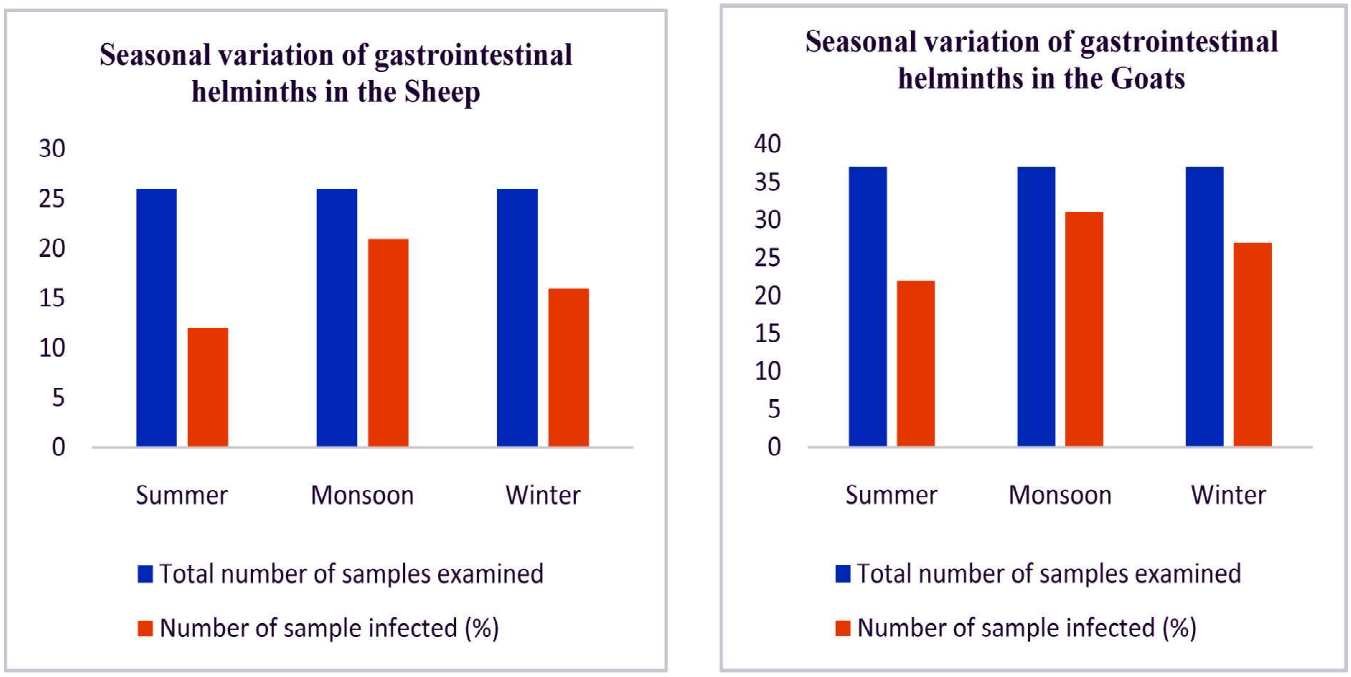

Fig. 3 : Seasonal variation of gastrointestinal helminths in the sheep and goats

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