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Seasonal Prevalence of Gastrointestinal *Trichuris species* in Sheep and Goat of Amravati District, Maharashtra, India

Smita P. Augad and Pradeep S. Deshmukh

Department of Zoology, Government Vidarbha Institute of Science & Humanities, Amravati (M.S) India
Email: sp261574@gmail.com

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ABSTRACT

Trichuris Ovis commonly called the whipworm of sheep and goats, is found in caecum and colon region of large intestine. A Study on the seasonal prevalence of gastrointestinal *Trichuris species* in Sheep and Goats were carried during 2022 to 2023. Total 720 fecal samples were collected from various Talukas of Amravati district of Maharashtra. The highest prevalence of *Trichuris species* were recorded in the winter i.e. 63.39%, whereas the prevalence was lowest in the summer season i.e.32.75%. The median range of prevalence was noted in the monsoon i.e. 44.69%. In the above study it was observed that the prevalence of *Trichuris species* was recorded highest in the winter season and lowest in the summer season. Age and sex wise *Trichuris species* infection examined, female host were more prevalence 43.75% then Male host 29.16% likewise, age-wise, there were no more differences; they were near about similar, i.e., in kids (41.66%), young (41.96%), and in Adults (41.69%) because of lack of cleanliness, poor management practices and less awareness about deworming.

Keywords: Seasonal, *Trichuris Ovis*, Gastrointestinal, parasite, sheep, goat.

INTRODUCTION

Goat acts as a multi-purpose animal that play an important role in the economy and nutrition of landless and marginal farmers. The estimate population of sheep and goats in India has been 47.26 million and 148.88 million, respectively, whereas the North –Western Himalayan state of Himachal Pradesh has 0.79 million sheep and 1.1 million goats as per 20th livestock census (20th livestock census, 2019). India's livestock sector is one of the highest in the world, accounting for 26.40% goats, which play an important in Indian economy (Anon, 2012). *Trichuris* is widespread gastrointestinal parasites that can occur in a broad range of hosts. Its life cycle is direct, where orally ingested embryonated eggs hatch in the small intestine and discharge larva shelter inside the intestinal wall of the caecum and colon, where they

develop in to mature worms (Jenkins, 1970., Beer, 1973). Gastrointestinal parasite causes economic losses by different ways, like lower fertility, reduced work capacity, slow food intake capacity, and slow weight gains treatment and cost in massively parasitized animals. The nematodes parasite causes the host – parasite relationship, which results in the large-scale damage at the site of attachment consequently economic loss (Padwal et al., 2011). Trichuriasis is found in small ruminants i.e., sheep and goats caused by *trichuris ovis*. Gastrointestinal parasitic diseases are the main issue that affects the productivity of goat industry in India and worldwide (Pathak and Pal 2008). Seasonal prevalence of species is done to find out the time at which infection with larvae starts rises too high and low, and so treatment can be timed to avoid development of massive infection. Age wise prevalence has been most important for to find out which age group is more susceptible to *Trichuris* species and which is less susceptible. In *Trichuris* specie sexual dimorphism occurs males 50-80 mm in length, of which narrow and filamentous anterior end constitutes three quarters of length (Soulsby 1982), females are 37-70mm long, the anterior end is narrow, and filamentous forms two-thirds to four-fifths (Urquhart GM). The spicule is fully evaginated, 5-6 mm long, with a sheath which bear a swelling a short distance from its distal side, which is covered by a spine that is smaller in size towards the distal side. *Trichuris* eggs are brown, barrel –shaped, or lemon- shaped at both the end; transparent, conspicuous ends are present and have a length 70-80 by 30-42cm with plug inside unsegemented embryo when laid. High worm burden leads to sever anemia and dehydration, and jaundice may lead to the death of the animal (Soulsby, 1982. Bowman, 2002., Taylor et al.2007). The eggs of Trichuris species were identified on the basis of morphological characters (Soulsby Helminths, Arthropods & protozoa of domesticated animal, CLBS &Bailliere Tinda, London 19820).

MATERIALS AND METHODS:

Study area:

The study was conducted at different talukas in Amravati District, Maharashtra, India from Dec 2022 to Dec 2023. The study was done on various breeds of sheep and goats. The sheep breeds Deccani and Madgyal and the goat breeds Beetal, Osmanabadi, Sirohi, Nondescriptive (Deshi Breed), Barbari. The age of both hosts was considered 6 months to 6 years of both sexes.

Collection of fecal samples:

During one year of a study total 720 fresh fecal samples were collected in morning directly from the rectum of each animal by using sterile disposable gloves and collect in plastic zip- lock bags. The sample date, sex, age, breed and place label on zip- lock bag. The sample were transferred directly at the same day of collection to the laboratory of zoology department of Government Vidarbha Institute of Science and Humanities, Amravati, Maharashtra and then stored at 4^0 Celsius for one month.

Fecal sample examination:

Each fecal sample was examined by Smear method as the method adopted by Soulsby (1986). Identification of eggs, larva on the basis of morphological characteristics as per Urquhart et al. (1996) that is observed under the compound microscope 10X and 40X magnification and photographs were taken.

Age wise category:

6-8 months (kids), 9-36 month (young) and above 3 years (Adult). Seasonal variation was studied in the three seasons: Winter (October to January), summer (February to May) and Monsoon (June to September).

RESULT AND DISCUSSION

Month wise Prevalence's of *Trichuris species:*

The highest prevalence of *Trichuris* species was recorded in the month of January 2022 & February 2023 i.e., 82% & 86 %, respectively, whereas prevalence was lowest in the month of April and May 2023 i.e., 34.72 % & 35.41%. However, the monthly prevalence and parasitic abundance are shown in the current finding are in close association with the report of Lone et al. (2011), who reported that the highest prevalence was recorded during the month of January 2012 (66.6%) whereas lowest prevalence was recorded in the month of August 2012 (20%). These results did not correlate with our study.

Seasonal prevalence of *Trichuris species:*

As per our study, highest prevalence was during winter month (63.39%) and least in summer (32.75%) as shown in Table No. 1. These results are closely related to previous researcher (Padwal et al., 2011).

Umar (2005) reported that the late high wave of infection, occurring in winter, may have derived from egg deposited by young and mature sheep grazing on grassland in late October and September month. Similar results were reported by Saha et al. (1996), and they reported that the high incidence of parasitic infection during winter could be attributed to suitable climatic condition and the availability of food during their development.

Table 1: Seasonal prevalence *Trichuris species*

Season	No. examined	No. positive	Prevalence %
Winter	224	142	66.39
Summer	232	76	32.75
Monsoon	264	118	44.69

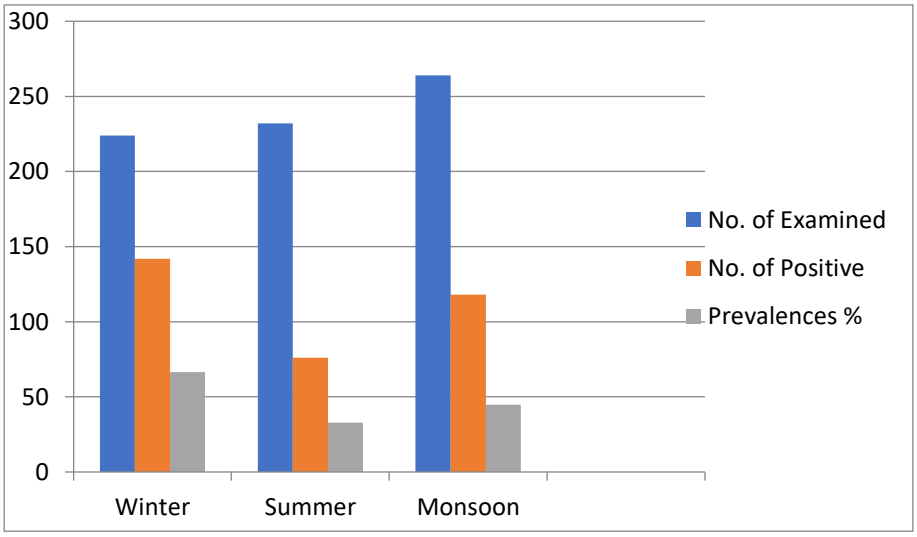


Table 2: Sex wise prevalence of *Trichuris species*

Sex	Examined	Infected	Prevalence %
Female	480	210	43.75
Male	240	70	29.16

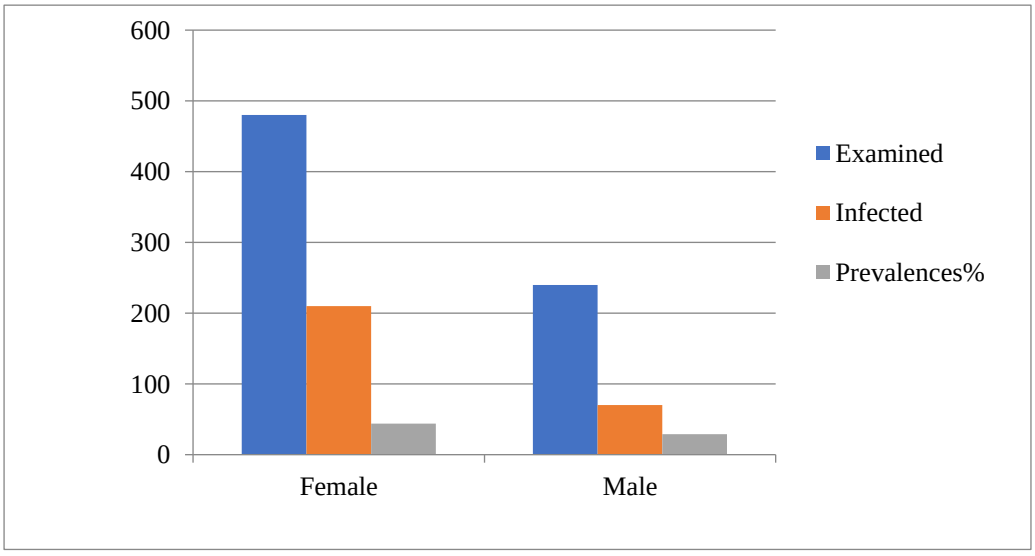
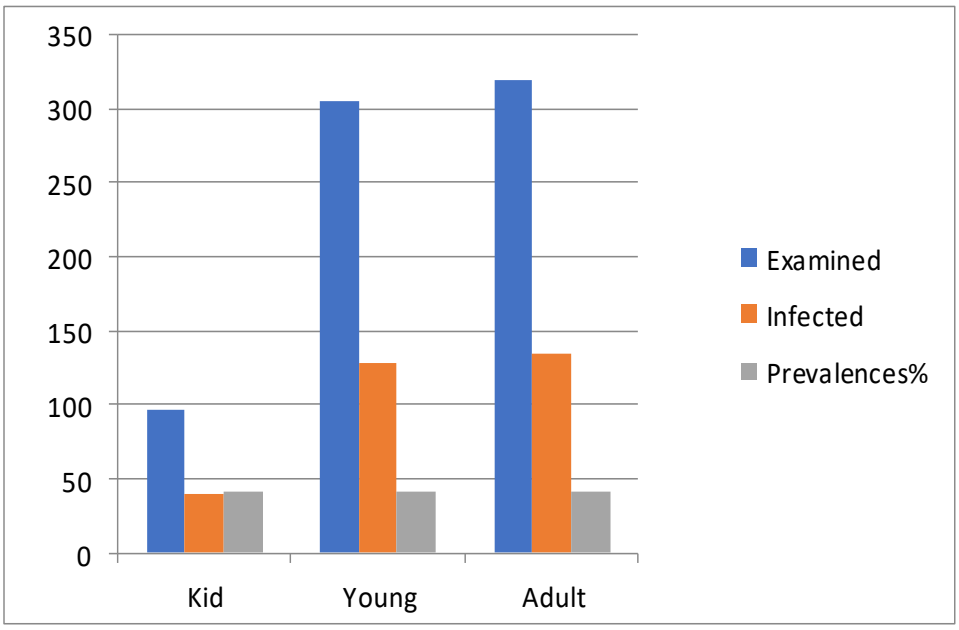
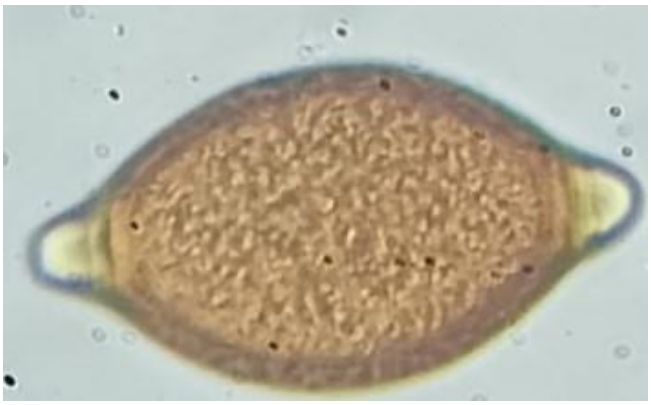


Table 3: Age wise Prevalence of *Trichuris species*

Age	Examined	Infected	Prevalence %
Kid	96	40	41.66
Young	305	128	41.96
Adult	319	155	41.69



Fecal sample



Trichuris ovis egg

Sex wise Prevalence's of *Trichuris species:* According to our analysis female shows high prevalence (43.75%) as compared to male (29.16%). Our findings were closely related to those of previous observers (Asanji and Williams 1987; Pal and Qayyum 1992; Patel et al. 2001; Raza et al., 2007; Saiful Islam KBM and Taimur MJFA 2008). High prevalence in females could be due to the physiological peculiarities. The above factors constitute stress factors, thus reducing their immunity to infections, and for being lactating mothers, females happen to be weak, as a result of which they are more susceptible to the infection, among other reasons (Kuchai et al., 2011),

Age wise Prevalence of *Trichuris species:*
In present study, age wise prevalence is near about similar i.e. in kid (41.66) young (41.96) Adult (41.69) because of lack of cleanliness, poor management practices, and awareness about deworming. This study was completely different from Islam M.K (1989) finding that a high occurrence of Trichuris *species* was observed in the middle-aged animals. This result also

different with (Tariq et al.2008). The low level of parasitism reported in adult animal is due to the immunity of the host. Previous infection and age of the host provide effective protection against re-infection. The low level of immunity in adults is initially low but increases with the intensity and duration of exposure of infection. During this study, goats were found to be more susceptible to *trichuris* infection than sheep. It could be assumed from the fact that sheep do have a higher immunological response to gastrointestinal parasites compared with goats (Urquhart et al. 1996). According to Talukdar (1996), age-wise a higher incidence of infection in young animals as compared to adult was observed in the goats of Assam and same types of results were reported by Pundlikrao (2009) in goat of Nagpur, Maharashtra. The highest prevalence rate of parasites recorded in younger age group while the lowest prevalence was in older age group. A previous study by Priyanka (2019) observed that highest infection of Trichuris in young animals as compare to adult recorded in aeolion plains of Haryana.

CONCLUSION

The highest prevalence of *Trichuris species* was recorded in the winter i.e. 63.39%, whereas the prevalence was lowest in the summer season i.e.32.75%. The median range of prevalence was noted in the monsoon i.e. 44.69%. In the above study, it was observed that the prevalence of *Trichuris species* was recorded highest in the winter season and lowest in the summer season. Age and sex –wise, *Trichuris species* infections were examined; female host had a higher prevalence (43.75%), followed by Male host 29.16%; likewise, age- wise there were no more differences; they were near about similar, i.e., in kids (41.66%), young (41.96%), and Adults (41.69%) because of lack of cleanliness, poor management practice and less awareness about deworming. In the present study, it is observed that the highest prevalence of *Trichuris species* is observed in the winter season and reaches its minimum level in the summer. This type of result, due to environmental factor and feeding habitats of goat and sheep, increases the chance of seasonality of parasitic infection, either directly or indirectly. But the age - wise prevalence of *Trichuris species* is similar to each other because of poor management practice, lack of cleanliness, less awareness deworming in grazing livestock. Parasitism is of supreme importance in many agro-ecological areas and still a serious threat to the livestock economy worldwide. Sheep and goats are known to suffer from various gastrointestinal parasites, which are of great importance. We observed that in the Amravati district of Maharashtra, goat and Sheep farmers are not well aware with
Deworming practice till now.

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Correspondence and requests for materials should be addressed to Smita Augad.

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