



ORIGINAL ARTICLE

Biostatistical Indices of Gastrointestinal Helminth Parasites of *Capra hircus* L.**A.N. Jadhav, S.S. Nanware, Dhanraj Balbhim Bhure and V.S. Deshmukh**

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Email: snanware@rediffmail.comReceived: 17th Feb. 2016, Revised: 12th March 2016, Accepted: 15th March 2016**ABSTRACT**

The study was conducted for one year during October, 2014 to September, 2015 to record the biostatistical data of helminths of *Capra hircus* L. The incidence, intensity, density and index of infection of the Helminths has been recorded. Infection was more during Winter, moderate during summer and low during Rainy Season. The seasonal prevalence of helminthic infection in *Capra hircus* L. shows that there was a gradual increase in the prevalence rate from late Rainy to Winter with a maximum infection during Winter, moderate during summer and the lowest prevalence in Rainy Season. There was significant effect of seasons on prevalence of helminthic infections. The study indicates the prevalence of gastrointestinal helminthic infections varies in different seasons.

Keywords: Biostatistical indices, *Capra hircus* L., Gastrointestinal Helminth Parasites

INTRODUCTION

Ruminant's contamination with parasites can cause reduction of milk production and many disorders such as diarrhea, loss of weight gain, abdominal pain, anemia and cachexia. In some parasitic diseases, liver is an important organ that is infected with parasites (Ansari-Lari M, Moazzeni M., 2006, Malone *et.al.*, 1998). Livestock systems in developing countries are characterized by rapid change, driven by factors such as population growth, increases in the demand for live stock products as incomes rise and urbanization. Livestock currently contribute about 30 percent of agricultural gross domestic product in developing countries, with a projected increase to about 40 percent by 2030 (FAO,2010) and is becoming the fastest-growing sub-sector of agriculture (Kefyalew and Tegegne,2012).

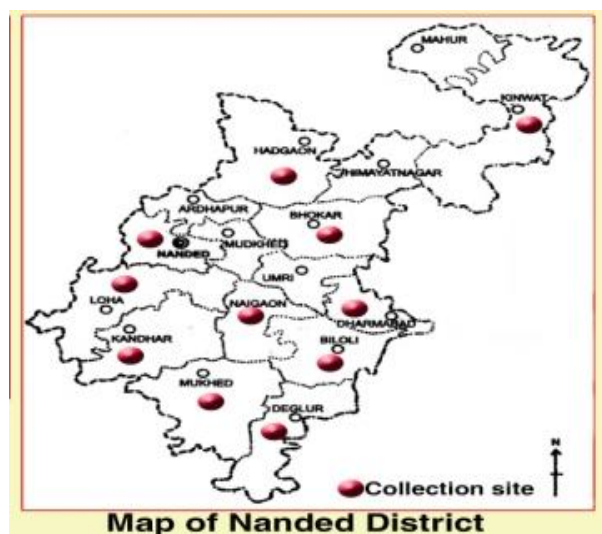
Goats are of great importance as major sources of livelihood and contribute to the sustenance of landless, smallholder and marginal farmers especially to the poor in the rural areas throughout the developing countries. Sheep and goats are very important for resource-poor small holder systems of rural Ethiopia due to their ease of management, short generation cycles and high reproductive rates which lead to high production efficiency and significant role in provision of food and generation of cash income. They serve as a living bank for many farmers.

Globally parasitic diseases continue to be a major constraint for poor developing countries. They are rarely associated with high mortality and their effects are usually characterized by lower outputs of animal products, by-products, manure and traction all contributing to assure food security (FAO, 2002). Notable contribution made in population dynamics of helminth parasites by Dogiel *et. al.*, (1935, 1958); Anderson, (1976, 1978, 1982); Kenddey, (1968, 1970, 1974, 1976, 1977); Moller *et. al.*, (1978) and Rajeshwar Rao (1982). Keeping in view, importance of Helminthic infections of *Capra hircus* L., present study was designed to analyze the Biostatistical indices by using computer aided techniques. In this work, data is summarized and presented in various forms viz. Tabulation, diagrammatic and graphic representation.

MATERIALS AND METHODS**Study area and period:**

Study was conducted in different collection sites of Nanded district (Fig.1). Nanded is situated in south eastern part of Maharashtra State. The Nanded district lies between 18.15 to 19.55 North latitudes and 77.07 to 78.15 East longitude. It covers an area of 10,528 sq. km. The survey was conducted from October, 2014 to September, 2015.

Fig.1. Study Area

Fig. 2. Host *Capra hircus* L.

Intestines of domestic goat *Capra hircus* L. (fig.2) were examined for infection of Helminthes during period of October, 2014 to September, 2015 from Nanded District, Maharashtra State India. Collected Cestodes and Trematodes were preserved in hot 4% formalin, stained with Borax carmine, dehydrated in ascending grades of alcohol, cleared in xylene, mounted in D.P.X. Nematode were preserved in glycerol, Mounted in Glycerine jelly. These Helminthes were prepared for identification by standard methods (Yamaguti 1958, 1959, 1961, 1971; Nanware 1994). On taxonomic observations identified Helminth comprises three genera viz. *Moniezia*, *Stilesia* and *Avitellina* belonging to Class Cestoda; three genera viz. *Paramphistomum* sp., *Fasciola* sp. and *Cotylophoron* sp. belonging from Class Trematoda and two genera i.e. *Bunoatomum* sp. and *Oesophagostomum* sp. belonging from Class Nematoda were recorded during this investigation from four localities of Nanded District.

STATISTICAL ANALYSIS

The prevalence, intensity, density and index of infection were recorded and calculated according to Margolis et.al.,(1982) and Bhure (2008).

Population dynamics are determined by following formulae-

$$\text{Incidence of Infection} = \frac{\text{Infected hosts}}{\text{Total hosts examined}} \times 100$$

$$\text{Intensity of Infection} = \frac{\text{No. of parasites collected in a sample}}{\text{No. of infected hosts}}$$

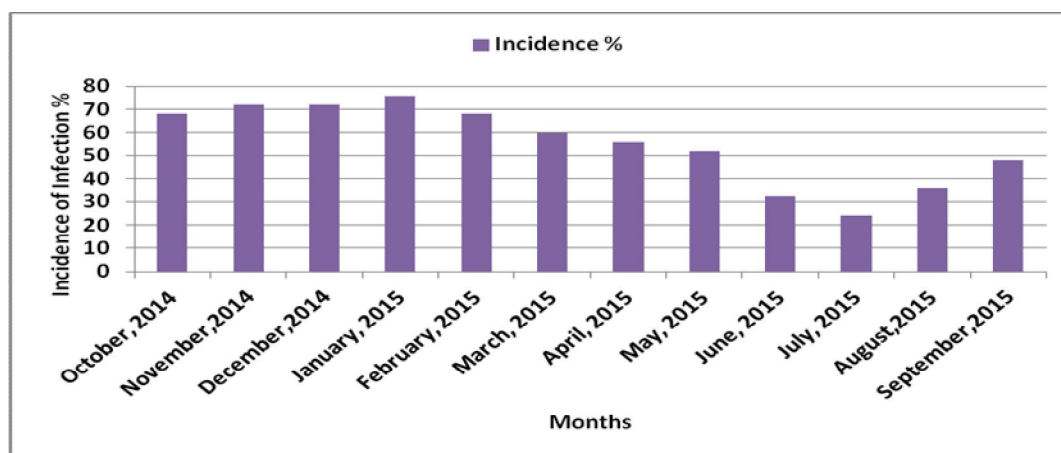
$$\text{Density of Infection} = \frac{\text{Number of parasites collected in a sample}}{\text{Total hosts examined}}$$

$$\text{Index of Infection} = \frac{\text{No. of hosts infected} \times \text{No. of parasite collected}}{(\text{Total hosts examined})^2}$$

RESULTS AND DISCUSSION

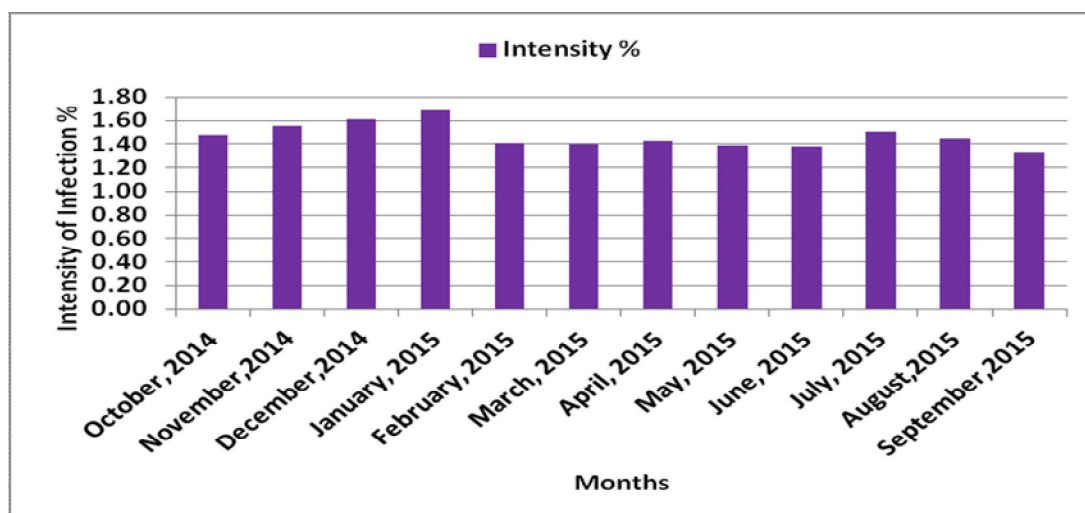
Results of present studies on Biostatistical indices of Gastrointestinal Helminths of domestic goat *Capra hircus* L. are presented in Graph 1 to 4.

Graph 1: Incidence of infection of Gastrointestinal Helminths of *Capra hircus* L. during October, 2014 to September, 2015

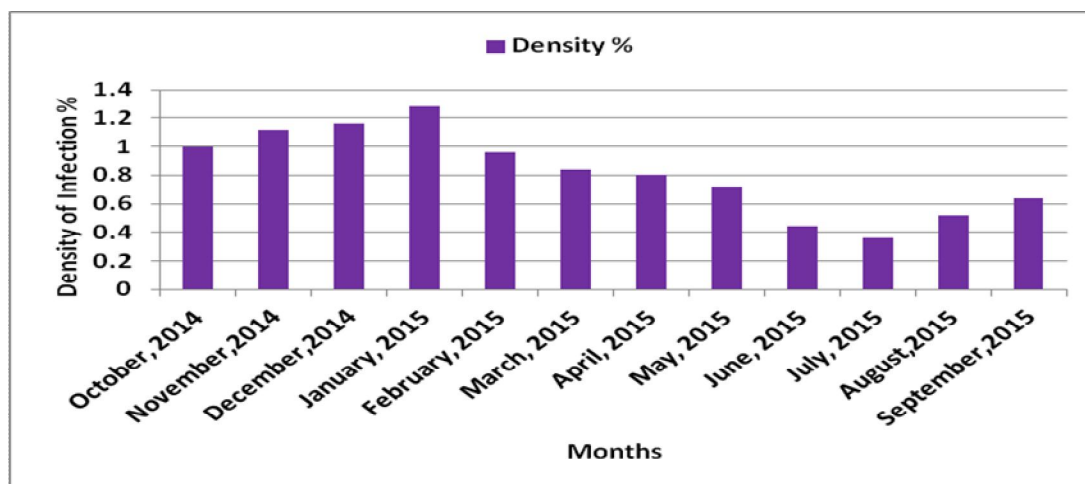


Results of present study are in agreement with Sissay. et al. (2007) described similar results in *Capra hircus* and *Ovis bharal* from Eastern, Ethiopia. Saleh Abdel-Rahman Al-Qureishy(2008) studied seasonal dynamics of cestodes of Sheeps, He recorded highest prevalence in October and November (13.5 & 8.3%), while lowest one was in June and July (0.7 & 1.3%). Farhaduzzaman et.al.,2010 studied Prevalence of Parasites in the Indian Major Carp, *Labeo rohita* (Hamilton) in Rajshahi, Bangladesh and noticed highest prevalence (75%) and mean density (10.44) of parasites were found in the month of December and lowest (20%) in the month of February. Shaikh at.al.,2011 described seasonal variation of gastro-intestinal cestode *Moniezia* shows the higher prevalence which occurs in winter (56.55%) followed by summer (51.05%) and low prevalence found in Monsoon (13.53%). Pawade et.al.,2011 reported seasonal variation of gastro-intestinal cestode infection in *Capra hircus* shows high prevalence occur in winter (32.07%) following by Rainy (30 %) and summer (24.13%). Bhure et.al.,2013 recorded seasonal variation of Caryophyllidean tapeworms, Which showed maximum infection in winter (71.66%) followed by summer (43.33%) whereas lower infection in monsoon (15.00%).

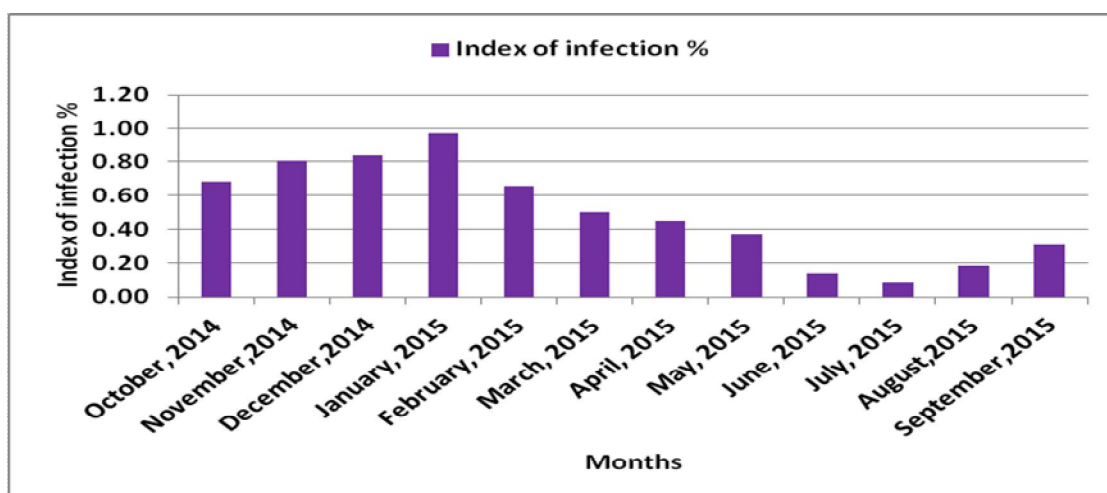
Graph 2: Intensity of infection of Gastrointestinal Helminths of *Capra hircus* L. during October, 2014 to September, 2015



Graph 3: Density of infection of Gastrointestinal Helminths of *Capra hircus* L. during October, 2014 to September, 2015



Graph 4: Index of infection of Gastrointestinal Helminths of *Capra hircus* L. during October, 2014 to September, 2015



Kennedy C.R. (1976) reported temperature; humidity, rainfall, feeding habits of host, availability of infective host and parasite maturation are responsible for influencing the parasitic infections. Feeding activity of the host is reason for seasonal fluctuation of infections (Pennuyquick1973).

CONCLUSION

Recorded data of present study shows high incidence, density and index of infections of Helminths was in Winter followed by Summer where as low in monsoon due to environmental factors and feeding habitat influence the seasonality of parasitic infection either directly or indirectly.

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