



ORIGINAL RESEARCH PAPER

Microbiology

PROFILE OF INTESTINAL PARASITIC INFECTION IN PATIENTS ATTENDING CENTRAL REFERRAL HOSPITAL, GANGTOK- A RETROSPECTIVE ANALYSIS

**KEY WORDS:** Parasites, Gangtok, Protozoa, Helminths

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ABSTRACT

**Objectives:** A retrospective study on the prevalence of intestinal parasites among patients who attended the central Reference Hospital, Gangtok.  
**Methods:** The data were collected from the record kept in the central laboratory of Central Referral Hospital (CRH). The total of 3447 stool sample was examined by routine microscopy from January 2014 to June 2017 in CRH, Tadong Sikkim.  
**Results:** Out of total 3447 stool samples 104 (3.02%) were positive for parasites (Protozoa 72.11% and Helminths 27.88%). Multiple parasites were seen in 2 samples. Females had a higher prevalence (51%). Children below 15 years of age were most commonly infected (46.08%). Among the protozoan infection, *Entamoeba histolytica* was most common (50%) and *Ascaris lumbricoides* (11.53%) was most common helminth.  
**Conclusion:** Intestinal helminthiasis is a common cause of morbidity accounting for 4.98 million DALYS and may sometimes cause severe complications and death. Therefore, due importance should be given to stool examination in symptomatic patients.

Introduction:

Intestinal parasitic infections are among the major public health problems in the world. The distribution is mainly associated with poor personal hygiene, environmental sanitation and limited access to clean water. Indeed, epidemiological information on the prevalence of various intestinal parasitic infections in different localities is a prerequisite to develop appropriate control measures.<sup>1</sup> Prevalence of intestinal helminths and other intestinal parasites have been studied in different areas of the tropics and subtropics.<sup>2</sup> In India, the overall prevalence rate ranges from 12.5% to 66% with the prevalence rate for individual parasite varying from region to region.<sup>3-6</sup> Therefore, the aim of this study was to assess the prevalence of intestinal parasitic infections among symptomatic patients who attended the Central Referral Hospital, Gangtok.

Materials and methods:

A retrospective study of 3447 symptomatic patients referred from different departments both inpatients and out patients, whose stool was examined by routine microscopy by saline and iodine mount preparations without concentration techniques from January 2014 to June 2017 in Central Referral Hospital (CRH), Tadong Sikkim was done. The data were collected from the record kept in the central laboratory, CRH.

Results:

One hundred and four (3.02%) parasites (protozoa 75/104; 72.11% and helminths 29/104; 27.88%) were observed from 3447 stool samples. Out of total sample 2 had multiple infections. Females had a higher prevalence (51%) compared to males. Table 1 shows the age wise and year wise distribution of positive patients. Children below 15 years of age were most commonly infected. Among the protozoan infection, *Entamoeba histolytica* was most common (50%), followed by *Giardia lamblia* (22.11%). Among helminthic infection, *Ascaris lumbricoides* was most common (11.54%) followed by hookworm (8.65%). Table 2 shows different isolates in different years.

\*One each had multiple infections

Table 2: Species and Year wise distribution of positive cases

Isolates	2014 (%)	2015 (%)	2016 (%)	2017 (%)	Total (%)
<i>E. histolytica</i> (cyst)	5	7	14	19	45 (43.27)
<i>E. histolytica</i> (trophozoite)	3	2	2	-	7 (6.73)
<i>G. lamblia</i> (cyst)	6	2	3	12	23 (22.11)
<i>A. lumbricoides</i> (fertilized egg)	-	5	4	1	10 (9.61)
<i>A. lumbricoides</i> (unfertilized egg)	-	1	1	-	2 (1.92)
<i>Taenia spp.</i> (egg)	-	2	2	-	4 (3.85)
<i>Trichuris trichura</i> (egg)	-	1	1	-	2 (1.92)
Hookworm (egg)	2	1	4	1	8 (7.69)
Hookworm (larva)	1	-	-	-	1 (0.96)
<i>E. vermicularis</i> (egg)	-	2	-	-	2 (1.92)
Total	17 (16.35)	23 (22.11)	31 (29.80)	33 (31.73)	104

Table 1: Age and Year wise distribution of positive cases

Age interval (years)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	Total (%)
≤ 15	7*	10	14	16	47(46.08)
16-30	5	7	2	9	23 (22.54%)
31-45	1	1	4	1	7 (6.86%)
46-60	1	1	5	5	12 (11.76%)
≥ 61	2	3*	6	2	13 (12.74)
Total	16 (15.69)	22 (21.57)	31 (30.39)	33 (32.35)	102



Figure 1: cyst of *E. histolytica*



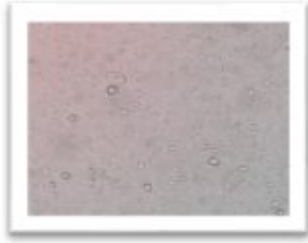
Figure 2: Egg of Hookworm



Figure 3: Egg of *Taenia spp.*



Figure 4: Fertilized egg of *A. lumbricoides*



**Figure 5: Cyst of *G. lamblia***

**Conclusion:**

Though the prevalence of infection in this part of the country is less i.e. 3.02% which could be due to the timely deworming, but in general, intestinal helminthiasis is a common cause of morbidity accounting for 4.98 million DALYS and may sometimes cause severe complications and death.<sup>7</sup> Therefore, due importance should be given to stool examination in symptomatic patients.

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