

## Intestinal Parasitic Infestation: Analysis Over One Year at Shree Birendra Hospital, Chhauni

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### Abstract

This is a retrospective study of examination of stool for intestinal parasites for the presence of ova, larva and cysts of helminths and protozoa from 1st of Kartik 060 to 30th of Asoj 061 over a span of one year. (Nov 2003 – Oct 2004) During this period a total of 13724 stool samples were received in the laboratory of pathology of Shree Birendra Hospital, Chhauni out of which 1369, i.e. 9.97%, showed ova, cyst or larva. This study proved that the most common intestinal parasite was Giardia which was positive in 653 cases (47.69%) and others were E.hystolytica (15.48%), Ascaris (14.17%) and the least prevalent was Strongyloides stercoralis (0.07%). Hence, prevalence of protozoa compared to helminths was striking.

This study also showed that regular army personnel (serving) have less parasitic infestation (6.86%) as compared to family which includes wife, children and parents of serving and retired individuals (12.9%)

The study also shows increased load of stool samples in the months of Baishak, Jestha, Ashad, Shrawan and Bhadra. As the requisition forms were incompletely filled, the particular age group, indication, geographical location and the barracks most affected could not be identified. However, information regarding hygiene and sanitation and safe water supply should be assessed and the army should focus on these basic amenities to rectify the problems.

### Key words

Stool sample, helminths, protozoa, families, regular army, hygiene and sanitation.

### Introduction

The incident of intestinal parasites in people with gastroenteritis<sup>1</sup>, healthy school children<sup>2</sup>, and

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pregnant ladies have been reported in many studies. However, overall hospital based studies are very few. Till now, no such study has been carried out in our army hospital. This study is based on both symptomatic and asymptomatic outpatients and inpatients (indications not mentioned in most of the requisition forms) in the army hospital in Kathmandu.

The reservoir of infestation is the carrier or the asymptomatic individual and the mode of transmission is faeco-oral route. The faecal matter contaminates the water and soil. The consumption of contaminated water and food further handled with unclean hands are the major source of infestation. The ova reach the gastrointestinal tract and hatch to start life cycle. When the infective load is very high, damage to the tissue of host starts. Infestation with intestinal roundworms (*A. lumbricoides*) contributes to the largest group of helminthiasis in human beings. Children are generally more heavily infested and hence are more likely to suffer from pathological consequences of these infestations. Weis EL3 states that infection with *Ascaris lumbricoides* is rarely fatal but death may occur because of intestinal obstruction. Detection and treatment of asymptomatic carriers of helminths and protozoal parasites is hence of great value to protect their lives.

### Material and Methods

This retrospective study was conducted in Shree Birendra Hospital, Chhauni. All stool samples along with their etiological parasitic agents were noted from the registers of parasitology from 1st of Kartik 060 to 30th of Asoj 061 (Nov. 2003 to October 2004). Specimens were processed for routine microscopic examination. Sterile normal saline was used for emulsification in wet preparation. Iodine preparation was carried out to aid identification when necessary. As the load in the hospital is very high, concentration method was followed only in few highly suspicious samples. The stool samples were examined under a microscope with 10X. The suspected ova, cyst, trophozoites and larva were confirmed by viewing with 40X.



## Results

Type of Patients	Number of Sample	Number of Positive Sample	Percentage Positive Sample
Family	7155	923	12.9
Regular	6494	446	6.86
Civil	38	0	0
Police (Including Armed Police)	37	0	0
<b>Total</b>	<b>13724</b>	<b>1369</b>	

Table No. 1: Showing total Positive Stool Sample in Different Groups

The above table shows that family members comprise the largest group of patients who require stool examination (7155) and 12.9% of their stool samples are positive for parasites.

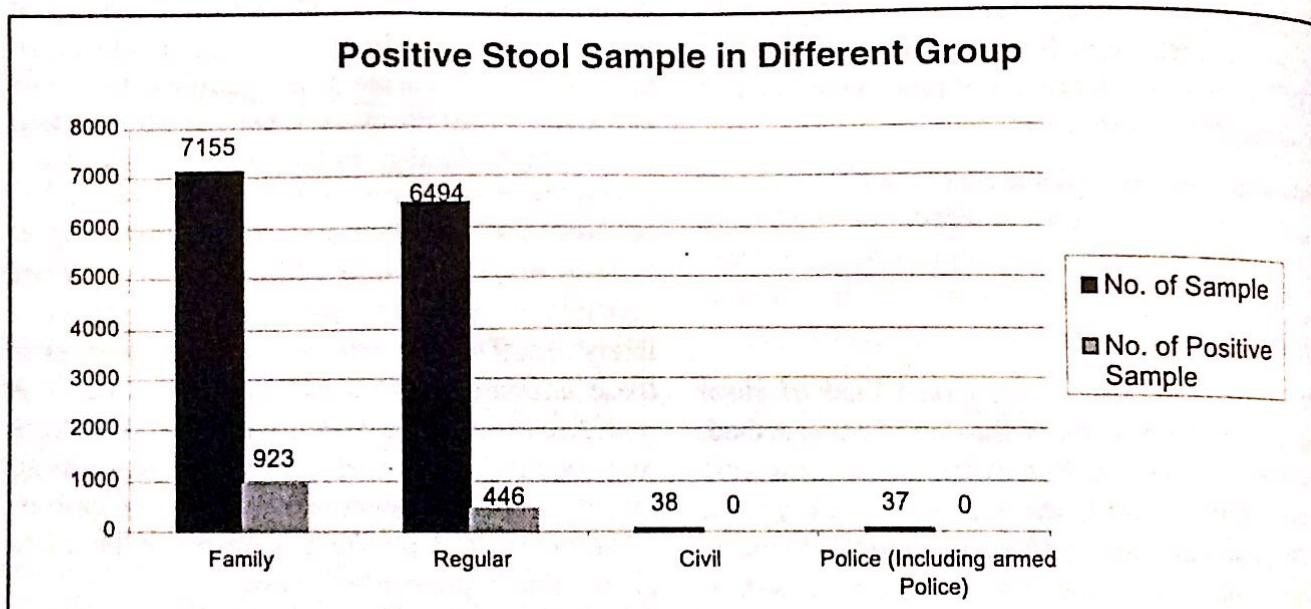


Chart No. 1: Showing Positive Stool Sample in Different Groups

Type of Employment	Total Number of Sample	Number of Positive Sample	Percentage Positive
Officers	700	58	8.28
Non officers	5794	388	6.69
<b>Total</b>	<b>6494</b>	<b>446</b>	

Table No. 2: Showing Parasitic Infestation in Different Groups of Regular Army

The above table depicts that as far as intestinal parasites are concerned, contrary to expectations, officers who have access to better facilities and are thought to be more hygiene conscious, than non-officers are more often victimized by parasites (8.28%).



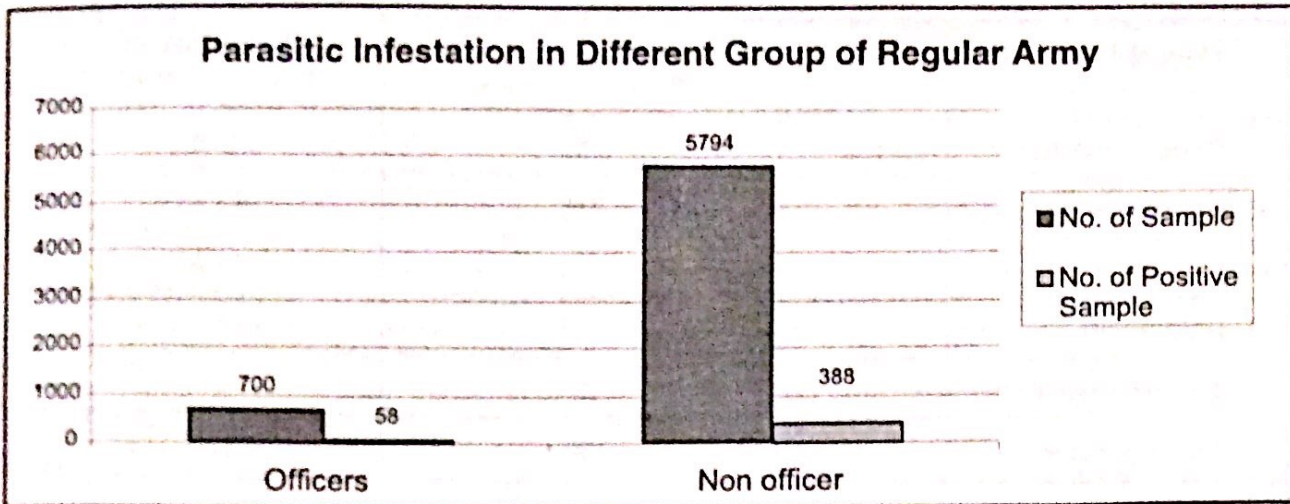


Chart No. 2: Showing Parasitic Infestation in Different Groups of Regular Army

Type of Parasites	Total Number of positive Sample	Percentage of Positive Sample
Protozoa	865	63.18
Helminths	480	35.06
Mixed	24	1.75
<b>Total</b>	<b>1369</b>	

Table No. 3: Showing Broad Groups of Parasites

The table no. 3 highlights that protozoal infestation (63.18%) is almost double of helminthic (35.06%) infestation.

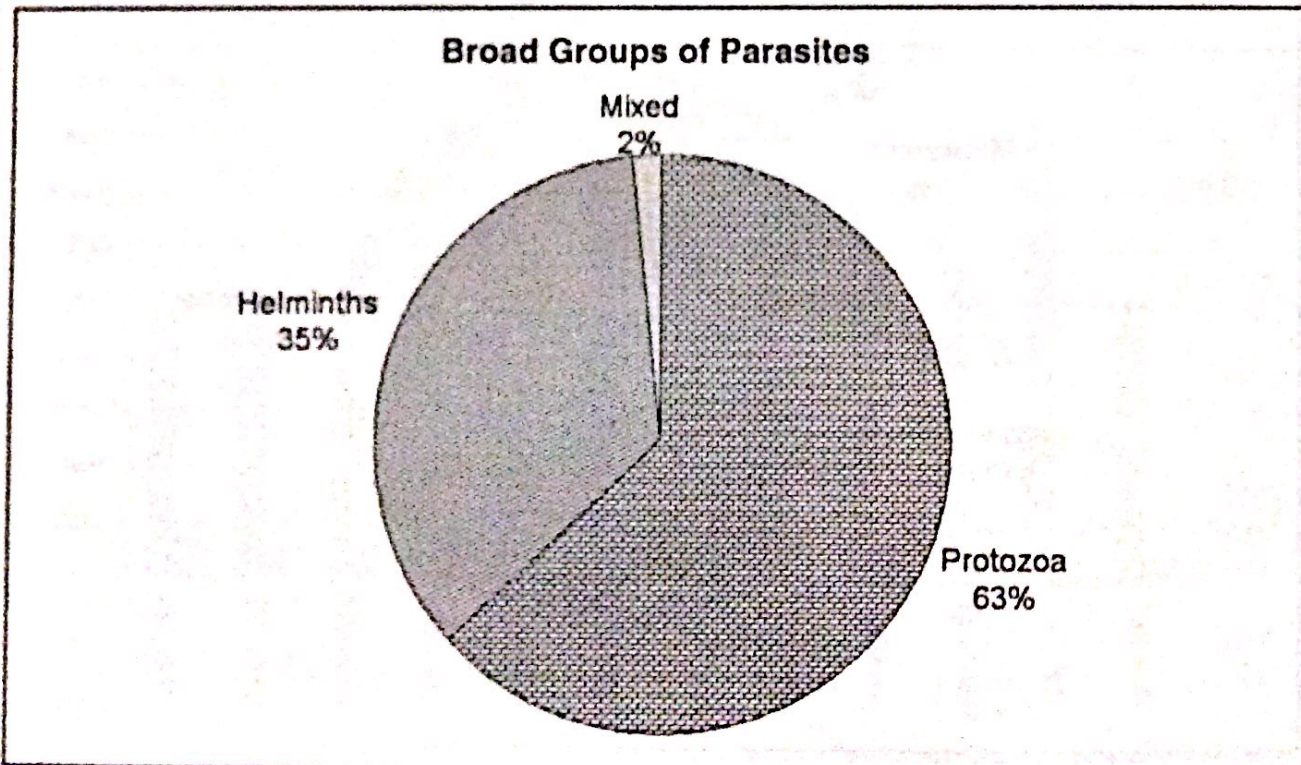


Chart No. 3: Pie Chart Showing Broad Group of Parasites



Type of Parasites	Total Number of Positive Sample	Percentage of Positive Sample
Giardia lamblia	653	47.69
Entamoeba histolytica	212	15.48
Roundworm	194	14.17
Hookworm	183	13.36
Trichuris Trichuria	52	3.79
Taenia species	50	3.65
Mixed infestation	24	1.7
Strongyloides stercoralis	1	0.07
<b>Total</b>	<b>1369</b>	<b>100</b>

Table No. 4: Showing Types of Parasites in Stool Sample

Table no. 4 reveals that maximum intestinal parasitism is by protozoa, G. lamblia (47.69%) and E.histolytica (15.48%). Amongst helminths, roundworms and hookworm are the most prevalent (14.17 & 13.63% respectively).

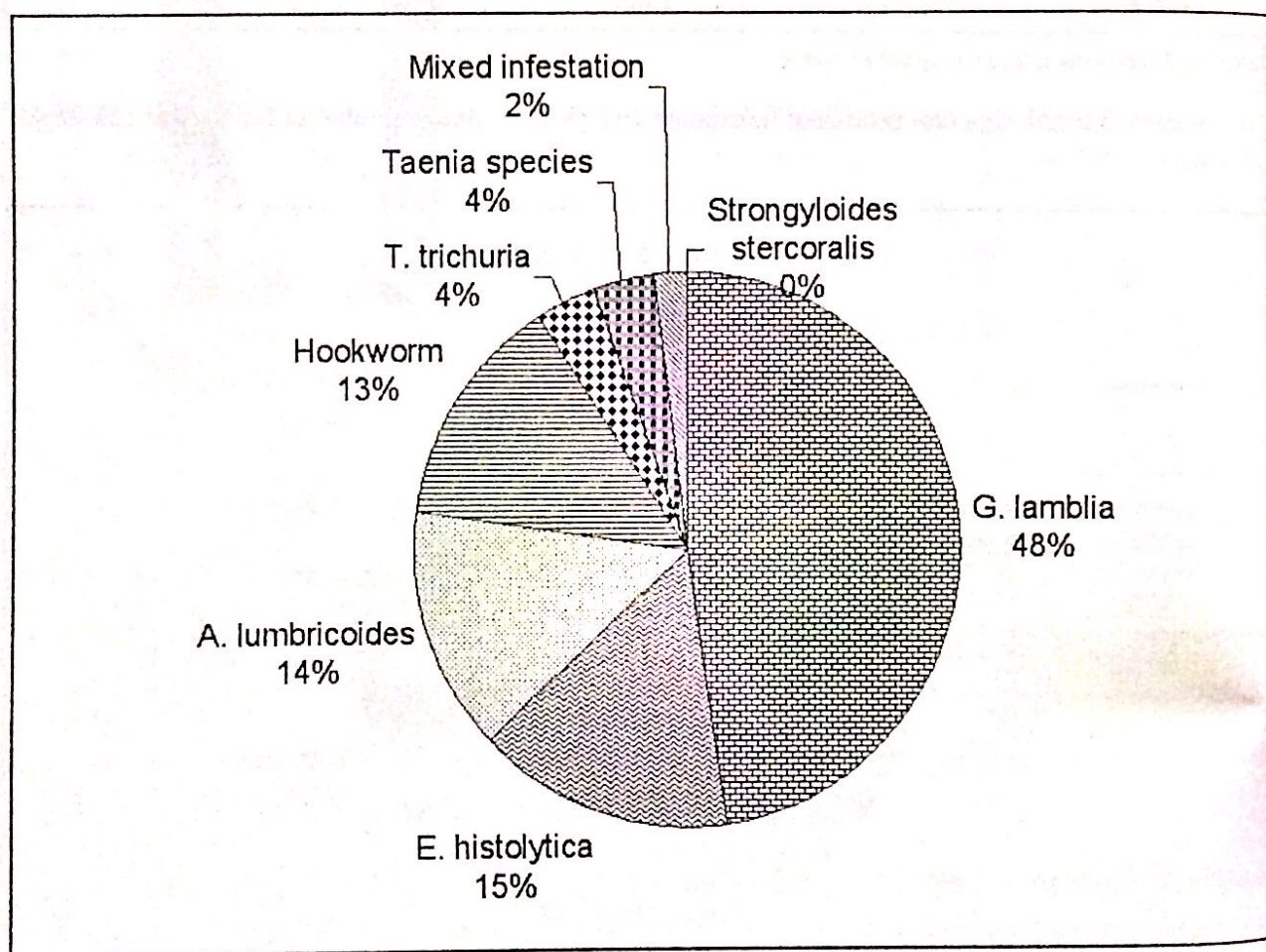


Chart No. 4: Pie Chart Showing Types of Parasites in Stool Sample



Months	Number of Samples	Number of Positive Sample	Percentage of Positive Sample
Kartik, 2060	957	140	14.62
Mansir 2060	988	97	9.81
Poush 2060	583	123	21.09
Magha 2060	1119	114	10.18
Falgun 2060	680	99	14.55
Chaitra 2060	818	63	7.7
Baishakh 2061	1377	168	12.2
Jestha 2061	1659	119	7.17
Asadh 2061	1429	152	10.6
Shrawn 2061	1577	99	6.27
Bhadra 2061	1596	115	7.2
Ashoj 2061	941	52	5.52
<b>Total</b>	<b>13724</b>	<b>1369</b>	<b>100</b>

Table No. 5: Showing Distribution of Stool Sample in Different Months and Positivity of the Sample

Table No. 5 verifies stool examination demands were more in months of Baishakh, Jestha, Asadh, Shrawn and Bhadra. However, positive results were seen more often in the months of Poush (21.09%), Kartik (14.62%) and Falgun (14.55%).

#### Distribution of Stool Sample in Different Months and Positivity of the Sample

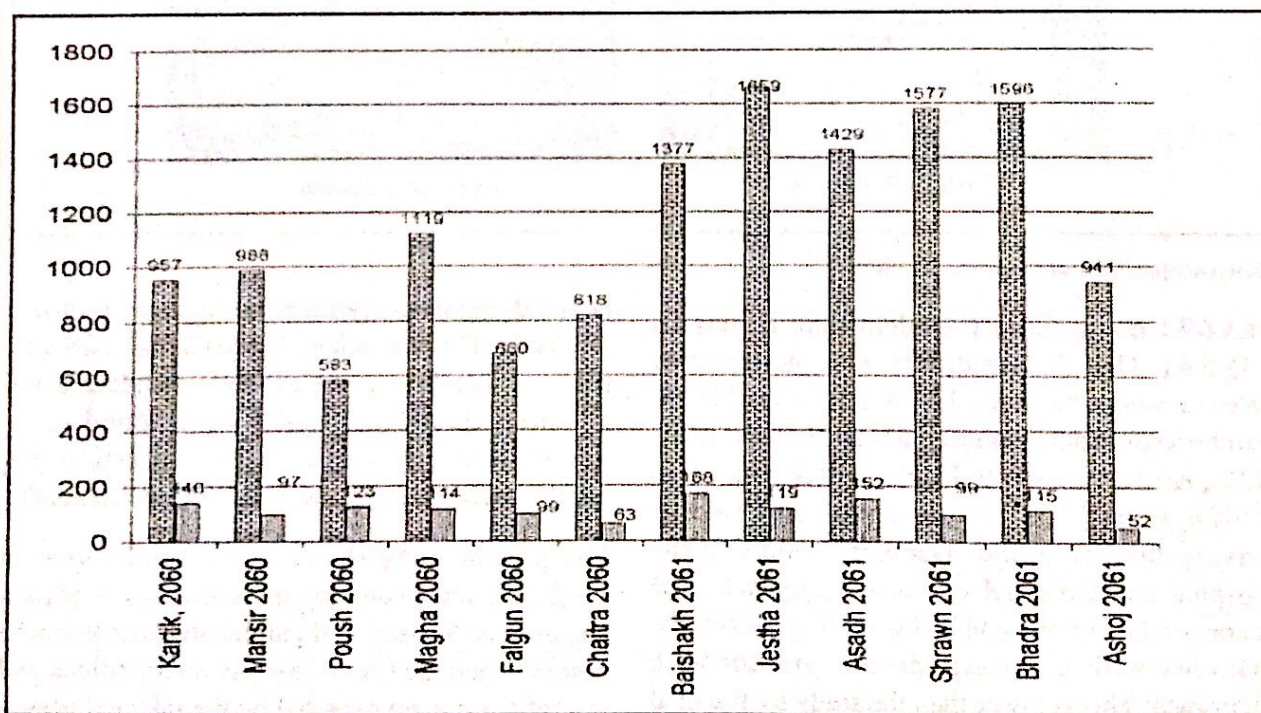


Chart No. 5: Showing Distribution of Stool Sample in Different Months and Positivity of the Sample

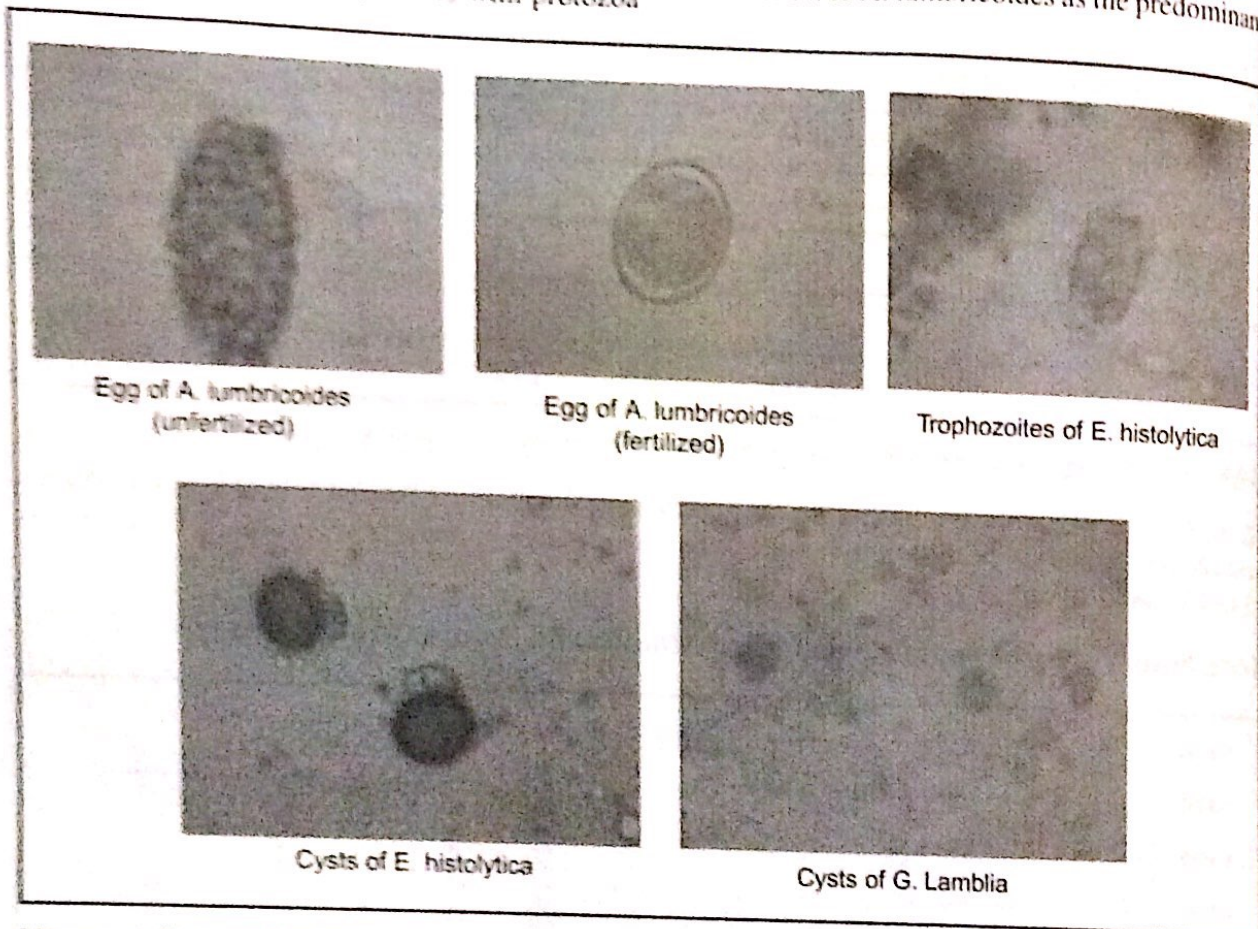


## Discussion and conclusion

This study of both out and inpatients showed 9.97% people to be infested by parasites. As the requisition forms were not completely filled, age, indication and geographic location could not be identified in this study.

Unlike the study of Shrestha B2 in healthy school children of rural area in Lalitpur district, which shows *A. lumbricoides* infestation in 73.45% and *T. trichuria* in 27.27%, present study reveals highest infestation by protozoa, *G. lamblia* (47.69%) followed by *E. histolytica* (15.9%) with protozoa

intestinal parasitic protozoa infection among hospital attending patients seeking detection of intestinal parasites in TU Teaching Hospital to be in the range from 3.3 - 13.6 %. Present study showed infestation only 14.17% by roundworm followed by hookworm (13.36%), followed by *Trichuris trichuria* (3.79%) and tapeworm (3.6%). This is lower than the study by Thapa, Devkota<sup>5</sup> and Blangero<sup>6</sup> (36%, 30.94% and 27.24%) of people with gastroenteritis infested with *A. lumbricoides*. This study is only in partial concurrence with study of Hedge GR, Patel JC<sup>7</sup> which showed *A. lumbricoides* as the predominant



Microscopic Pictures of various parasites

(63.6%) being more prevalent than helminths (35.5%). This finding differs with the report of Weiss<sup>3</sup> where he states 1 in 4 are infected by *A. lumbricoides* in developing countries (Southeast Asia 73%, Africa 12% Central and South America 8%). This is probably because of symptomatic patients having diarrhoea and dysentery report to the hospital and the usual etiological agents for the same are *G. lamblia* and *E. histolytica*. Generally, patients with ascariasis do not present with diarrhoea. This is lower than the study by Rai et al<sup>4</sup> (1994) which reported the annual incidence of

helminth and *E. histolytica* as predominant protozoa (13.24%). This is much higher to Chand A B<sup>8</sup> who reported that among the patients attending Kant Children Hospital, 27.94% were found to be infested with pathogenic parasites among which 16.91% were protozoa and 11.03% were helminths.

The present study showed mixed infestation in 1.7%. The most common infestation were giardia and ascaris (9 cases) and giardia and hookworm (6 cases). Since the Ova of ascaris lumbricoides and cyst of giardia are excreted by the infected person thus contaminating the soil, water and vegetable



etc. which when ingested by mouth through contaminated finger, will transmit the disease. Hygiene and sanitation, safe drinking water and proper drainage system should be provided to rectify the parasitic problems. The carriers are the possible source of infestation and hence proper treatment for them is required. They should be advised to treat the water prior to consumption by filtering or boiling or both.

This present study shows that parasitic infestation is a large and serious medical and public health problem in army personnel and their family members. Low level of sanitation, hygiene, water contamination, low standard of health education and bad drainage facilities should be rectified along with proper treatment of carriers to lower down the infestation rate.

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