



## Original Research Article

# Significant Decrease in Prevalence of Intestinal Parasites among Patients Seeking Treatment in a Tertiary Care Hospital in Jammu: a Changing Trend

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## ABSTRACT

Infections will last as long as humanity. The parasitic infections are endemic worldwide and have been described as the greatest single worldwide cause of illness and disease. Globally two billion individuals are infected with intestinal parasites. To determine the prevalence of intestinal parasitism in patients attending Shri Maharaja Gulab Singh Hospital, Jammu, The stool samples were processed using saline and iodine mounts and examined microscopically for ova and cyst of parasites. Total of 3263 consecutive stool samples were processed as per departmental protocol within a period of 24 months (June 2013 to June 2015). The overall parasitism was 121(3.7%). Protozoa and Helminths were observed 110(90.9%) and 11 (9.1%) respectively. The most commonly found species among protozoa was *Giardia intestinalis* 89 (73.5%) followed by *Entamoeba histolytica* 21 (17.35%). *Hymenolepis nana* was the most prevalent helminth 5 (4.13%) followed by *Ascaris lumbricoides* 4 (3.3%), *Anchylostoma duodenale* 1(0.82%) and *Trichuris trichura* 1(0.82%). The dramatic decrease in prevalence of intestinal parasites especially in soil-transmitted helminths in patients attending hospital with respect to that observed about 35 years ago in a study conducted in the same hospital evidences the success of health education, improved sanitation and a healthy lifestyle.

### Keywords

Intestinal parasites, Soil-transmitted Helminths (STH)

## Introduction

Intestinal parasitic infections are among the most common infections world-wide. (Kang G et al 1998) Intestinal parasitic infection varies considerably from place to place in relation to the disease. (Luka SA et al 2000) According to the World Health Organization estimate; globally two billion individuals are infected with intestinal parasites (WHO 2002) and there are 800-1000 million cases of Ascariasis, 700-900 million of Hook

Worm infection, 500 millions of *Trichuriasis*, 200 million of *Giardiasis* and 500 million of *Entamoeba histolytica*. (Roma B et al 1997)

Unfortunately, there is limited updated data about current situation of Intestinal parasitic infections in our region. To the best of our knowledge, the available literature dates back to the year 1978 which studied

prevalence of Intestinal parasites in paediatric population in the same hospital (Suraj Gupte et al 1978).

Against this background, the present study was undertaken to investigate the prevalence of intestinal parasitic infections and associated demographic and environmental factors in Jammu City.

## Materials and Methods

**Study Area:** The study was carried out in the SMGS Hospital, Jammu City. Hospital is a tertiary care hospital which is affiliated to Government Medical College Jammu, having referral status.

**Study Population:** Study included the patients of Pediatric age group (0-18 yrs) attending the OPD and IPD whose stool examination was advised by clinician.

**Study period:** Study period was from June 2013- June 2015(24 months).

**Collection and Processing of Specimens:** Stool samples were collected from each patient into a clean wide-mouthed container. After doing the Macroscopic examination, Direct Microscopic examination was done. The samples were examined microscopically for ova and cysts of parasites using Saline and Iodine mounts on grease-free slides (K D Chatterjee 2009).

## Results and Discussion

A total of 3263 stool samples were received for stool routine examination. Male patients were more as compared to female patients (n=1879; 57.6%. and 1384, 42.4%) respectively. Male to female ratio of the subjects was 1.36:1.

Peak incidence was observed during the

months of, July, August and Sept while months Oct to February showed minimum incidence. The incidence started to rise from month of March and attained the peak in the month of August.

A total of 121(3.7%) specimens turned out to be positive(Table.1). Among the positive cases, proportion of those from male patients was higher 88(72.7%) as compared to that from female patients 33(27.3 %) (Table.2). Seasonal prevalence among positive patients was maximum in the month of Sep 22 (18.18 %) (Table.3).

Maximum percentage of Intestinal parasite found in Wet Mount was of *Giardia lamblia*, *Entamoeba histolytica*, *Hymenolepis nana*, *Round worm*, *Hookworm* and *Trichuris trichura* respectively (Table.4)

Intestinal parasitic infection of humans is an important threat to healthy living in developing countries(Kia EB et al 2008) The environment and the socio-cultural habits of the people could be attributable for the high prevalence of intestinal parasitic infections in the developing countries (Mbanugo et al 2002)

The epidemiology of Intestinal Parasites in India is changing nowadays. The present study results showed prevalence of intestinal parasitism to be 3.7% which is lower when compared with the study from Puducherry by Ragunathan *et al.*(2010), from Lathur by Davane *et al.*(1979) Various studies have shown that prevalence rate in India ranges from 12.5% to 66% with varying prevalence for individual parasites<sup>(Amin AB etal 1979, Ramesh GN etal 1991, Singh S etal 1993)</sup> The wide variation in the prevalence of intestinal parasites may be due to variations in factors like quality of drinking water supply, sanitation and other environmental conditions.

*Giardia* was the most common Protozoa identified in our study accounting for 73.5% of positive samples. *Giardia* gets transmitted by feco-oral route by drinking contaminated water as it is a common environmental contaminant of water supply. The water supply is really an important risk factor for the Giardiasis, and several large outbreak of Giardiasis have resulted from the contamination of drinking water supply with the human waste (Swapna Kotian et al 2014).

The most common helminths infestation seen in our study was *H. nana* 4.13%, This is in contrast to other studies in which *Ascaris* was the most common helminth (Singh C et al 2010, Panda S et al 2012). The most relevant finding in our study is the dramatic decrease in prevalence of Hookworm to 0.82% with respect to that observed about 35 years ago which was 14.2%. This finding is consistent with report from Vellore which shows decrease in prevalence from 22.8% to 7.8% (Deepthi Kattula et al 2014), Frederick Olusegun Akinbo et al that showed lower prevalence 3.9% than previous reports that were observed 34.6 %, 30.6%, 25%, 6.2%, 10.2%, 6.9% Decrease in prevalence of *Hookworm* infestation can be attributed to use of slippers, as the infection results from penetration of the skin by filariform larva walking barefoot in the fields

Among specimen obtained, majority were from males (57.6%). Only (42.4%) samples comprised of females. Singh *et al.* (1984) reported similar results in their study of a rural community in Varanasi, India, where in males exhibited a higher prevalence of intestinal parasitism than females. This is in contrast with the observations made by Chang et al who observed that gastrointestinal disorders were more common in females as compared to males.

The result in our study could be because of the difference in hospital healthcare seeking behaviour of Indian population mostly in rural area wherein females are generally tended to seek hospital healthcare only for life-threatening problems and for minor ailments they generally seek home remedies (Bentley P et al 1998)

Seasonal variability was observed in number of samples obtained during different months. Maximum number of cases were reported during July, August and September. Seasonal variability in prevalence of gastrointestinal disorders has been reported extensively in literature. It has been reported to be maximum during the rainy season because of the availability of favourable conditions for growth of microbes and possibility of opportunistic infections. Seasonal variation in prevalence has also been reported in developed and developing countries in temperate and tropical regions (Prieto PA et al 2009, Jagai JS et al 2012, Shenoy S et al 1998)<sup>1</sup>

Although our study was not aimed at analyzing factors influencing epidemiological trends, we consider the implementation of the resolution (WHA54.19) unanimously endorsed by delegates in 2001 at the World Health Assembly urging endemic countries to start seriously tackling worms, specifically schistosomiasis and soil-transmitted helminthes. Also improved environmental sanitation, good personal hygiene like washing hands before eating and after using the toilet, clean and safe preparation of food, use of slippers, agricultural and industrial hygiene has contributed to these results. Above all people's awareness about deworming and easy availability of Albendazole over the counter has contributed to lowering the prevalence.

**Table.1** Total No. of cases (%)

<b>Positive for intestinal parasite</b>	<b>Negative for intestinal parasite</b>
3.7	96.3

**Table.2** Sex distribution of cases

SN	Sex	No. of Subjects (n=3263)	No. of cases (n=121)	% (Out of Total in corresponding gender)	% (Out of Total positive)
1.	Males	1879	88	4.6	72.7
2.	Females	1384	33	2.3	27.3

**Table.3** Seasonal distribution of cases

SN	Month	No. of Subjects (n=3263)	No. of cases (n=121)	% (Out of Total in corresponding month)	% (Out of Total positive)
1.	Jan	110	5	4.5	4.1
2.	Feb	176	9	5.1	7.4
3.	Mar	300	12	4	9.91
4.	Apr	280	5	1.7	4.1
5.	May	97	3	3.09	2.47
6.	Jun	206	5	2.42	4.1
7.	Jul	365	12	30.6	9.91
8.	Aug	659	13	1.97	10.74
9.	Sept	548	22	4.01	18.18
10.	Oct	215	12	5.5	9.91
11.	Nov	156	12	7.6	9.91
12.	Dec	150	11	7.33	9.09

**Table.4** Type Distribution of Intestinal Parasite (%)

Parasite	%
<i>Giardia lamblia</i>	73.5%
<i>Entamoeba histolytica</i>	17.35%
<i>Ascaris lumbricoids</i>	3.3%
<i>Hymenolepis nana</i>	4.13%
<i>Trichuris trichura</i>	0.82%
<i>Anchylostoma duoedenale</i>	0.82%

In conclusion, our up-to-date knowledge of local intestinal prevalence, as provided in this study, confirm preventive chemotherapy as a valid measure to reduce the prevalence of soil-transmitted helminths, but also the

need for continuing the efforts in control strategies of protozoa, including health education and improving access to sanitation. India is launching a groundbreaking National deworming

program to treat all children at risk for parasitic worms across the country. The launch of the national deworming program will take place in eleven states on February 10, 2015 which has been declared National Deworming Day

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