



Microbiology

“STUDY OF THE PREVALENCE OF INTESTINAL PARASITES IN A LOW SOCIOECONOMIC AREA OF NORTH INDIA.”

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ABSTRACT

Objective To determine the prevalence of intestinal parasites in low socio economic area of north of India.

Method 128 subjects from a village were studied. Stool samples from all subjects were collected over a period of three months and were examined.

Results The overall prevalence rate of various parasitic infections was 92.18%, with only 10 of 128 subjects not excreting parasites in their samples. The commonest parasites identified were *E. coli* infections in 31 (24.2%) subjects, *Cyclospora sp.* in 29 (22.6%) subjects and *Giardia* in (21.0%) subjects. The prevalence of intestinal parasitic infection was relatively higher in females than males. In comparison to the elderly, children and teenagers were found to have a higher number of parasites.

KEYWORDS : Parasite prevalence, Intestinal parasites, Low socioeconomic areas, India

INTRODUCTION

Gastrointestinal parasites are frequent in poorer countries. Although these parasites have a low mortality rate, they affect a vast number of individuals, causing symptoms such as recurrent diarrhoea, malnutrition, numerous physiological abnormalities, and nutrition and mental development disorders.^{1,2} *Ascaris lumbricoides*, hookworms (*Necator americanus*), *Trichuris trichiura*, *Strongyloides stercoralis*, *Entamoeba histolytica*, and *Giardia intestinalis* are frequent parasites found in most of the narrative literature.³ Faecal contamination of water, soil, and food is how they spread.⁴ Poor hygiene and household duties might also cause them. Intestinal parasite infections are one of the most prevalent and long-lasting infections in humans. The primary goal of this study was to look into the prevalence of intestinal parasites and the endemic level of several intestinal parasites in a community with a low socioeconomic background in northern India.

MATERIALS AND METHODS**Source of samples**

This study was conducted in a village over a period of three months, with the cooperation of the local community, which has the record for each member in the area. The only sources of drinking water in this village are open and semiprotected wells. There are no toilets in any of the families, therefore the local fields are used. Informed consent was obtained from each individual before the study.

Collection of Samples

Each person who volunteered to participate in the study was instructed to collect faeces samples and place them in a sterile container that had already been labelled. The samples were then sent immediately and processed in the parasitology diagnostic laboratory within three hours of being collected. Total of 128 samples were collected, from which 16, 32, 39, 24, and 17 samples were from age groups of 0–10yrs, 10–20yrs, 20–30yrs, 30–40yrs, and 40–50yrs, respectively. Among those, 67 samples were from females and 61 samples were from males.

Examination for parasites

Intestinal parasites were examined under 10X objective, field by field covering the entire coverslip and confirmed by observing under 40 X magnification.⁵ Direct wet mounting, formol-ether concentration, and Ziehl–Neelsen and trichrome permanent staining were used to evaluate each specimen. The morphological traits of each detected egg or cyst were used to identify them, and an individual was categorised as positive if at least one egg or cyst was found.

RESULTS

Seven potentially pathogenic parasites (*E. coli*, *Cyclospora*, *Giardia*, *E. histolytica*, *Ascaris*, *Hymenolepis nana* and *Trichuris*), were identified (Table 1). Prevalence was estimated by dividing the number of infected individuals by the total number of subjects evaluated. The different proportions were examined and $P \leq 0.05$ was considered significant. 118 subjects out of 128 subjects had potentially harmful

parasites in their stool samples, and only 10 were apparently not colonized with potentially pathogenic parasites. The commonest parasites identified were *E. coli* in 31 (24.2%) subjects, *Cyclospora sp.* in 29 (22.6%) subjects and *Giardia* in 27 (21.0%) subjects.

Table 1: Type And Prevalence Of Intestinal Parasitic Infection, As Determined By Analysis Of Stool Specimens.

Parasite	Subjects in whom parasite was detected	
	n	percentage(%)
<i>E. coli</i>	31	24.2
<i>Cyclospora sp.</i>	29	22.6
<i>Giardia</i>	27	21.0
<i>E. histolytica</i>	17	13.2
<i>Ascaris</i>	9	7.0
<i>H. nana</i>	3	2.3
<i>Trichuris</i>	2	1.5

The prevalence of intestinal parasitic infection was relatively higher in females (55 out of 61) than males (63 out of 67). *E. coli* in particular was found to be more in numbers for both females (32%) and males (27%). However, *Ascaris lumbricoides* (8%) was similar in both males and females.

The prevalence of intestinal parasitic infection was also age dependent (Figure 1). In comparison to the elderly, children and teenagers were found to have a higher number of parasites.

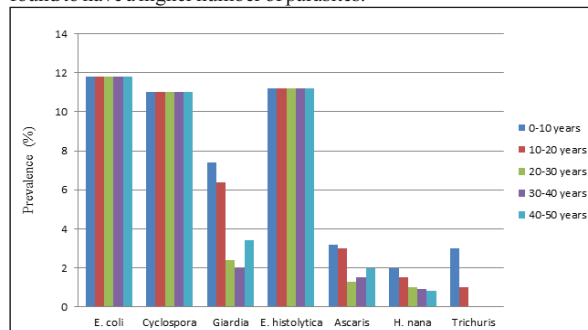


Figure 1: Age-specific percentage prevalence of potentially pathogenic parasites

DISCUSSION

Approximately half of the world's population suffers from nutritional stress and parasitic disorders caused by protozoan parasites or

helminthes. A parasitological investigation of 128 stool samples collected in the low socioeconomic region of north India was included in this study. The toilets in these areas were discovered to be filthy and difficult to clean, adding to the high parasite infection rate. Furthermore, good hand washing, which should normally prevent the spread of some parasites, is likely to be insufficient in conditions where water supply requires a lot of human effort and water is used rarely. As a result, more transmission occurs through direct and indirect contact.

The high frequency rate of *Entamoeba* species shows that infection transfer between people via food or water is widespread, and thus there is a high level of contamination by human faeces.⁶ Parasitic infection by *Cyclospora* sp. showed the second highest frequency.

It should also be emphasised that the patients in this study's age group (10–20 years) were highly infected with intestinal parasites (except *Trichuris*).

In relation to gender, females reported a higher prevalence of the intestinal parasites than male subjects. Efforts should be stepped up to ensure adequate clean water and public education on improved personal and environmental cleanliness, since this will go a long way toward reducing the morbidity and death associated with intestinal parasitism.⁷

CONCLUSION

The high prevalence rate of intestinal parasites in low socioeconomic areas of northern India has been assessed in this study. A total of 118 of the 128 samples taken were found to be positive cases. Children and teenagers were found to have more parasites than the elderly in the age prevalence profile. At both the household and community levels, appropriate and precise sanitation management systems must be improved and executed. More research is needed to quantify the impact of these intestinal parasites.

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