

## Original Article

# PREVALENCE OF INTESTINAL PARASITES INFESTATION IN SURAT CITY OF SOUTH GUJARAT: A HOSPITAL BASED STUDY

Mandakini M Patel<sup>1</sup>, Prashant R Patel<sup>2</sup>, Bhavna Gamit<sup>3</sup>, Jigna Modi<sup>4</sup>, Suresh Padsala<sup>5</sup>

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**Author's Affiliation:**

<sup>1</sup>Add. Professor; <sup>2</sup>Asst. Professor; <sup>3</sup>Assoc. Professor; <sup>4</sup>Asst. Professor (Stem Cell); <sup>5</sup>Tutor, Pathology, Government Medical College, Surat

**Correspondence:**

Dr. Prashant R. Patel  
Email: drprashant\_patel@yahoo.co.in

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## INTRODUCTION

Parasitic infections are a major public health problem worldwide with one quarter of world's population is suffering from it.<sup>1</sup> The developing countries are more prone to intestinal and extra-intestinal parasitic diseases.<sup>2</sup> In India prevalence of intestinal parasites reported from different workers showed wide variation in incidence due to different time, place and method used.<sup>3</sup> The frequency and incidence of Intestinal parasites also varies with age, sex and geography.<sup>4</sup>

Amoebiasis, Giardiasis, Ascariasis, Hookworm infection, and Trichuriasis are among the most common intestinal parasitic infection worldwide.<sup>5,6</sup> These infections are responsible for high levels of morbidity and mortality, nutritional deficiencies including iron-deficiency anemia, seizures, portal hypertension,

chronic diarrhea and impaired physical development in children.<sup>5,6</sup> But there is paucity of information of prevalence of different intestinal parasitic infestations in pediatric and adult age groups in our region. So it is important to know exact burden of intestinal parasitic infections in community.

This study was undertaken to comprehend the prevalence of parasitic infections and to know whether age and sex influence the prevalence or infections among the patients attending a tertiary care teaching hospital of South Gujarat.

## MATERIAL & METHOD

The study was carried out from period of January 2012 to June 2012 on stool samples which were received in

## ABSTRACT

**Introduction:** Pathological intestinal infection by parasites causes malnutrition, decreased immunity, protein loss, mucosal loss in infants and lymphatic leakage and local hemorrhage. In developing countries parasitic infections are more prevalent than bacterial infection and causes significant morbidities. This study was undertaken to comprehend the prevalence of parasitic infections.

**Material and Methods:** Both outdoor as well as indoor patients taking treatment in New Civil Hospital, Surat were included in present study. Naked eye physical examination, microscopic examination was carried out. Parasites were identified in the received stool samples. All data were entered into excel spreadsheet 2007. The percentages of the parasites presents were calculated to find out prevalence of parasite infestations and data were analyzed for interpretation.

**Results:** Total 1170 samples were included in present study, out of which 65 (5.56%) were positive either for protozoal or helminthic infections. Helminth Infestation found in 45 (65.21%) cases while Protozoal infestation found in 24 (34.79%) cases while 4 (6.15%) cases showed mixed infection of helminth and protozoa. Children under 18 years of age (6.23%) were more commonly affected than adults (4.92%). The most common parasite encountered in present study was Giardia Lamblia (28.99%) followed by Hymenolepys Nana (20.29%).

**Conclusion:** The present study showed low prevalence of intestinal parasites might be due to improved sanitary practices, personal hygiene, safe drinking water and health awareness. Children showed higher prevalence for intestinal parasites in comparison with adults. Prevalence of helminthes was higher than protozoa in present study.

**Key Words:** Intestinal Parasites, Protozoa, Helminthes, Stool Examination.

our laboratory. Both outdoor as well as indoor patients were included in present study. Total 1170 samples from the patients with bowel complain were included in study. The stool samples were collected in disposable sterile container. Samples were examined within one hour after collection. Naked eye physical examination was carried out in each stool sample. Smear preparation was done by using normal saline and Lugol's iodine.<sup>7,8</sup> Concentration method by using salt solution was also used whenever required. Examined under low power and higher magnification (oil emersion lens).<sup>7,8</sup> Parasites were identified present in the stool samples received. All data were entered into excel spreadsheet 2007. The percentages of the parasites were calculated to find out prevalence of parasite infestations and data were analyzed for interpretation.

**RESULTS**

Total 1170 samples were included in present study, out of which 65 (5.56%) were positive either for protozoal or helminthic infections. Total 678 males and 492 females were included which showed 5.16% and 6.09% positive cases respectively. Helminth Infestation found in 45 (65.21%) cases while Protozoal infestation found in 24 (34.79%) cases while 4 cases showed mixed infection of helminth and protozoa. Prevalence of intestinal parasites in school children (<18 Yrs) was 6.23% and in adults it was 4.92%. The highest prevalence was found in age group 11-20 years (9.72%) followed by age group of ≤ 10 years (5.16%). The prevalence of parasitic infestation was more common in females (6.09%) as compared to that in males (5.16%).

**Table 1: Total positive cases in various age groups**

| Age Group    | Sample      | Positive sample |
|--------------|-------------|-----------------|
| ≤ 10         | 426         | 22 (5.16%)      |
| 11-20        | 185         | 18 (9.72%)      |
| 21-30        | 221         | 13 (5.89%)      |
| 31-40        | 150         | 8 (5.33%)       |
| 41-50        | 105         | 2 (1.9%)        |
| 51-60        | 54          | 2 (3.7%)        |
| >60          | 27          | 0 (0%)          |
| <b>Total</b> | <b>1170</b> | <b>65</b>       |

**Table 2: Prevalence of various Parasites in Positive cases**

| Parasites               | Cases (N=69) | Percentage of positive cases (n=1170) |
|-------------------------|--------------|---------------------------------------|
| Hymelolepys Nana        | 14 (20.29%)  | 1.20%                                 |
| Giardia Lamblia         | 20 (28.99%)  | 1.70%                                 |
| Ancylostoma Duodenale   | 10 (14.49%)  | 0.85%                                 |
| Ascaris Lumbricoides    | 11 (15.95%)  | 0.95%                                 |
| Strongyloid Stercoralis | 9 (13.04%)   | 5.30%                                 |
| Entemoeba Histolytica   | 3 (4.36%)    | 0.26%                                 |
| Isospora Belly          | 1 (1.44%)    | 0.08%                                 |
| Enterobius Vermicularis | 1 (1.44%)    | 0.08%                                 |

**Table 3: Prevalence of different helminthic infection (N= 45)**

| Helminthes      | Cases       |
|-----------------|-------------|
| A. Duodenale    | 10 (22.22%) |
| A. Lumbricoides | 11 (24.45%) |
| S. Stercoralis  | 9 (20%)     |
| H. Nana         | 14 (31.11%) |
| E. Vermicularis | 1 (2.22%)   |

**Table 4: Prevalence of different protozoal infections (N=24)**

| Protozoa       | Cases       |
|----------------|-------------|
| E. Histolytica | 3 (12.5%)   |
| G. Lamblia     | 20 (83.33%) |
| I. Belly       | 1 (4.17%)   |

**Table 5: Dual infestation by helminthes and protozoa**

| Dual Parasitic infection      | Cases |
|-------------------------------|-------|
| A. Lumbricoid and G. Lamblia  | 2     |
| H. Nana and G. lamblia        | 1     |
| E. histolytica and G. Lamblia | 1     |

**DISCUSSION**

Intestinal parasitic infections are the major cause of morbidity and mortality (in Pediatric Patients) in developing countries like India. Various studies from rural, urban and semiurban regions have shown different prevalence rates ranging from 6.63% to 46.7%.<sup>9,10</sup> But in most of the studies sample size were small. In present study total 1170 samples were included from the patients attending our hospital. Majority of our patients came from urban areas. Low prevalence in present study (5.56%) might be due to improved sanitary practices, reduced slum areas, personnel hygiene, increased awareness, health education and seasonal variations. But in India few study reported prevalence higher than our study this might be due to improper waste disposal, unsafe water supply, seasonal and geographic variations.<sup>9</sup>

The prevalence of parasitic infestation was more common in females (6.09%) as compared to that in males (5.16%). Marothi et al showed similar results in their study with predominance of females.<sup>3</sup> Children less than 18 years of age showed higher prevalence (6.23%) than adults (4.92%). Most common affected age group was 11-20 years of age with 9.72% of cases. So prevalence of parasites is higher in children. Various studies from India showed higher prevalence rates ranging from 6.23% to 42.41% among children.<sup>11,12,5,9</sup>

The prevalence of dual infection was reported by different workers, Rameshwarppa KD<sup>13</sup> reported 19.9% cases, 8.40% cases were reported by Raghunathan L<sup>14</sup> and 0.80% cases with dual infection was observed by Chmpa H<sup>15</sup> in their study. One interesting thing in case of dual infection was that, over all prevalence rate was higher in their study (34.56% -Raghunathan et al, 27.6%- Rameshwarppa KD et al , and14.60%- Champa

et al). In present study dual infection was found in only 0.51% of case as overall prevalence rate was low in our study.

The helminthic eggs were found in 45 (65.21%) cases while protozoal cysts and trophozoites were found in 24 (34.79%) cases. Study by Davane MS reported helminthic and protozoal infection in 78.5% and 21.4% respectively.<sup>9</sup> But our results are in contrasts with few reports which showed higher prevalence of protozoal infection than helminthic infection.<sup>16,11</sup> The prevalence of helminthic infection was higher in some urban and semiurban regions due to lack of space in crowded urban surrounding and children use the same area on the road side for defecation which is very close to their livings.<sup>17</sup> while in rural areas occurrence of helminthic infection is less due to lots of clear space and children are not in contact with helminthic eggs and embryonated larvas or filliform larvas.<sup>17</sup>

The most common parasite encountered in present study was *G. Lambliia* (28.99%) followed by *H. Nana* (20.29%). In India different studies showed different intestinal parasites with high prevalence rate, Rayan showed higher prevalence of *E. Coli* (25.3%) followed by *G. Lambliia* (17.9%), Rameshwarappa KD showed higher prevalence of *E. Histolytica* (65.57%) followed by *A. Lumbricoides* (12.68%).<sup>17,13</sup> The difference in prevalence rate of individual parasites may be due to variations between geographic regions, communities, ethnic groups and seasonal variations.<sup>12</sup>

This study was limited to single observation in patients with clinical disease attending our hospital for treatment. Larger community based study might be necessary for the accurate understanding of burden of intestinal parasitic infection in this region.

## CONCLUSION

The present study showed low prevalence of intestinal parasites which suggest that is due to improved sanitary practices, reduced slum areas, personal hygiene, safe drinking water and health awareness. But integrated drug treatment and hygiene education is required in children and their parents as children showed higher prevalence for intestinal parasites in comparison with adults.

We have to also monitor the prevalence of it because living situations are changing fast with deterioration of environment in urban areas due to rapid migration from rural areas otherwise this infections will remains permanent source of health hazards.

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