



## PREVALENCE OF ASYMPTOMATIC INTESTINAL PARASITOSIS IN SCHOOL GOING CHILDREN IN BARABANKI DISTRICT

### Microbiology

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### ABSTRACT

**Introduction:-** Intestinal Parasitic infection among school going children is one of the important contributors of the overall disease burden worldwide. The objective of this study to determine the prevalence of parasitic infection in school going children in Barabanki district.

**Material And Methods:-** This study included 100 school going children. Stool samples had been collected from the neighboring schools in Barabanki district. The sample that was collected, was transported to the Department of Microbiology laboratory of Mayo Institute of Medical Sciences, Barabanki where direct wet mounts (normal saline and Lugol's iodine) were prepared and screened under 10x and 40x.

**Results:-** A total of 100 stool samples were examined out of which 44(44%) revealed the presence of parasites. Among these 44 samples 33 (75%) samples were infected with at least one parasite, 9 (20.45%) were infected with two parasites and 2 (4.54%) were infected with three and more parasites. Protozoan formed 16 (48.49%) of total infestation while helminthic infestations were seen in 17 (51.51%) samples. The total no. of positive cases with Intestinal parasitic infection was more in males 36/64(46.88%). Maximum number of positive cases were found in 11 - 15 years of age groups 38 (45.24%).

**Conclusion:-** Our study concludes that a knowledge of prevalence of asymptomatic intestinal parasitosis among school going children help in education with intestinal parasitic infection.

### KEYWORDS

Intestinal Parasitosis, School Going Children, Direct Wet Mount.

### INTRODUCTION:

Parasitic infection has been one of the major sources in infectious disease with increase in its significance<sup>[1]</sup>. Survey conducted by WHO in year 2017 suggested around 1.7 billion cases of diarrhea registered worldwide, with causative agent being parasites. This has resulted in 52, 5000 death occurs per annum globally; with greater predominance in developing countries<sup>[2]</sup>. Intestinal parasitosis is one of the major health problems in developing, as well as developed nations. Most cases of parasitic infections are asymptomatic but particularly intestinal infections presents with; diarrhoea, dysentery, dehydration, abdominal discomfort etc. According to the surveys of WHO, one out of every 4 cases of diarrhoea are due to parasites<sup>[3,4]</sup>. The most affected population includes school going children, between 5 to 15 years of age. It not only hampers the physical and mental development, but impairs social skills as well. A huge population of children affected due to lack of proper sanitation, unawareness and poor socio-economic conditions<sup>[5]</sup>. Few factors which harness the incidence in developing countries in contrast to developed countries are – access to safe drinking water, sanitation, and nutrition<sup>[6]</sup>. The distribution, severity, prevalence of parasitosis depends upon hygiene, socio-economic status, awareness, climate condition, environmental conditions etc. The predominant parasite reported in Barabanki district, state Uttar Pradesh are; Entameoba histolytica, Giardia, Ascaris, Trichuris Trichura, Taenia, H.Nana<sup>[7]</sup>. This study was planned to identify the parasites in wet mount smears of patients with asymptomatic intestinal parasitosis and prevalence of intestinal parasitic infections among school going children. This study will provide the latest data of 2019 of intestinal parasitic infection for further researches and educate and create awareness among the people regarding asymptomatic intestinal parasitosis.

### MATERIAL AND METHODS:

#### Study Design And Duration:-

The present cross sectional study has been conducted in Department of Microbiology in Mayo Institute of Medical Sciences, Gadia Barabanki during the period of June 2019 to July 2019.

#### Study Population, Size, Site:-

The following study included ,100 non duplicated stool sample collected from school going children aged between 5 to 15 years residing in the area under evaluation. These stool samples were collected from the neighboring school of Mayo Institute of Medical Science located in the district of Barabanki.

### METHODOLOGY:-

#### Data And Sample Collection:

Samples were collected after consent with proper demographic

information along with medical history and physical examination.

Sample was collected in a clean, sterile, wide mouthed containers provided to the students who were asked to provide fresh stool sample. The samples were collected and transported in cold box within two hours of collection back to laboratory, in the Department of Microbiology.

#### PROCESSING:-

- I. Macroscopically
- ii. Microscopically

#### Macroscopic Examination:

Examine stool for consistency, blood, mucous, color, adults and larva of parasites.

#### Microscopic Examination:

#### Wet mount:

Wet mount was prepared by adding a drop of saline and then well mixed with concentrated stool sample on one end of the glass slide and further staining it with Lugol's iodine. Slides were screened under 10X and 40X magnifications for pus cells, trophozoites, ova, cysts, oocytes / larvae of parasites.

#### Statistical Analysis:

Statistical analysis was done by using frequencies and percentage.

### RESULTS-

A total of 100 stool samples were examined out of which 44(44%) revealed the presence of parasites. Among these 44 samples 33 samples were infected with at least one parasite, 9 were infected with two parasites and 2 were infected with three and more parasites.

Protozoan formed 16 (48.49%) of total infestation while helminthic infestations were seen in 17 (51.51%) samples. The most common pathogenic intestinal parasite was Entameoba histolytica (27.27%), followed by Giardia (21.21%) and Ascaris (21.21%).

Among the intestinal protozoa, Entameoba histolytica was most common parasite being present in (27.27%) cases followed by Giardia (21.21%). Among the helminths Ascaris (21.21%) followed by Taenia (15.15%), Trichuris Trichura (9.09%) and H.Nana (6.06%) were the common parasites.

Among the study population 64 were males and 36 were females. The total no. of positive cases with (IPI) was more in males 36/64(46.88%),

as compared to females 14/36(38.89%). Maximum no. of positive cases in males (71.05%) were in the age group 11 to 15 years & in females (42.86%) be in 05 to 10 years.

Existence of two different parasites in the same sample was observed most commonly with *Giardia* + *Entamoeba histolytica*(5) followed by *Taenia* + *Ascaris*(1), *Entamoeba* + *Taenia*(1), *Giardia* + *H.Nana*(1).A single sample harbour only *Trichomonas* with *Ascaris*, *Entamoeba histolytica* and *Giardia*.

#### TABLES AND CHARTS:

**Table No. 1- Single Parasitic Distribution Among Total Positive Samples**

| Parasites                    | No. and %         |
|------------------------------|-------------------|
| <i>Entamoeba histolytica</i> | 9 (27.27%)        |
| <i>Giardia</i>               | 7 (21.21%)        |
| <b>Protozoan</b>             | <b>16(48.48%)</b> |
| <i>Ascaris</i>               | 7 (21.21%)        |
| <i>Taenia</i>                | 5 (15.15%)        |
| <i>Trichuris Trichura</i>    | 3 (9.09%)         |
| <i>H. Nana</i>               | 2 (6.06%)         |
| <b>Helminths</b>             | <b>17(51.51%)</b> |
| Total                        | 33                |

**Table No.2- Gender Distribution Of Total Samples**

| Gender  | Total | Positive (%) |
|---------|-------|--------------|
| Males   | 64    | 30 (46.88%)  |
| Females | 36    | 14 (38.89%)  |
| Total   | 100   | 44 (44%)     |

**Table No. 3- Age Group Distribution Among Total Samples**

| Age Group | Total | Total Positive | Male Positive | Female Positive |
|-----------|-------|----------------|---------------|-----------------|
| 05 to 10  | 16    | 07 (43.75%)    | 04 (57.14%)   | 03 (42.86%)     |
| 11 to 15  | 84    | 38 (45.24%)    | 27 (71.05%)   | 11 (28.95%)     |

**Table No. 4- Multiple Parasitic Distribution**

| Multiple Parasites                                                                         | No. |
|--------------------------------------------------------------------------------------------|-----|
| Double Infection                                                                           |     |
| <i>Cyst Giardia</i> and <i>Entamoeba histolytica</i>                                       | 5   |
| <i>Taenia</i> and <i>Ascaris</i>                                                           | 1   |
| <i>Entamoeba histolytica</i> and <i>Taenia</i>                                             | 1   |
| <i>Giardia</i> and <i>H.Nana</i>                                                           | 1   |
| <i>Ascaris</i> and <i>H.Nana</i>                                                           | 1   |
| Triple Infection                                                                           |     |
| <i>H.Nana</i> , <i>Cyst Entamoeba histolytica</i> and <i>Cyst Giardia</i>                  | 1   |
| <i>Ascaris</i> , <i>Entamoeba histolytica</i> , <i>Cyst Giardia</i> and <i>Trichomonas</i> | 1   |

#### DISCUSSION-

Parasitic infection has a widespread geography varying according to areas, communities, region and season<sup>[8]</sup>.

In the present study, among the collected 100 samples 44 samples were positive harboring parasites (egg/cyst/trophozoites/larva) with the prevalence rate 44% during the two month study period. In similar studies conducted by *SANA J et al. Lucknow 2016*<sup>[9]</sup> (16.8%), *Charankit Singh et al. Kashmir 2019*<sup>[10]</sup> (42.41%), *Bhattacharya R et al. 2017*<sup>[11]</sup> (28.7%), prevalence rate were lower than the present study.

Among 100 samples collected, there were 64 males and 36 female participants. Prevalence rate of asymptomatic intestinal parasitic infection was found to be more in males (48.43%) than females (38.89%). Compared with other conducted studies are *Abdullah I et al. Kashmir 2015*<sup>[12]</sup> (male- 10.4%, female- 6.29%), *Tenali R K et al. Andhra Pradesh 2018*<sup>[13]</sup> (male- 63.64%, female- 36.36%), *Sneka P et al. Karnataka 2015*<sup>[14]</sup> (male- 75.40%, female- 24.50%). The findings of higher prevalence rate in male are more connected to infectious environment and outdoor activities.

Distribution into two groups based on age (5-10 yrs. and 11-15 yrs.) shows the former group (5-10 yrs.) with lower prevalence of 43.75% than the latter group (11-15 yrs.) group having a prevalence of 45.23%. Compared to similar studies by *Sana J. et al. Lucknow 2016*<sup>[15]</sup> (06-10 yrs. - 9.3%, 11-15yrs - 6.9%), *Tendukar Et al. Nepal 2015*<sup>[16]</sup> (05-10 yrs. - 20.3%, 10-15 yrs. - 16.3%), observation were different as our study showed a higher prevalence among the higher age group of 11-15 yrs. Variations might be due to indifferent sample size based on age, socio-economic conditions or absence of health consciousness.

Out of 100 samples, the protozoan infections are more prevalent than helminths and the most frequently encountered parasite was *Entamoeba histolytica* (27.27%) followed by *Giardia* (21.21%) and *Ascaris* (21.21%) which is similar to the studies done by *Yogita R et al.*<sup>[17]</sup> (*Entamoeba histolytica*- 9.8%, *Giardia*- 58%, *Ascaris*- 24%), *Randhir K et al.*<sup>[18]</sup> (*Entamoeba histolytica*- 1.34%, *Giardia*- 18.5% and *Ascaris*- 28.5%) and *Tenali R K et al.*<sup>[13]</sup> (*Entamoeba histolytica*- 31.76%, *Giardia*- 12.07%, *Ascaris*- 22.57%). Mixed parasitic infections were founded in 9 samples. *Trichomonas* was observed as a mixed infection along with *Ascaris*, *Cyst Giardia*, and *Entamoeba Histolytica*. Out of 44 positive samples, prevalence of monoparasitic infection is 75%, diparasitic 20.45% and 3 or more parasitic infection in a single sample is 4.54% having similarity with *Randhir K et al.*<sup>[18]</sup> (One parasitic sample- 86.6%, Two parasitic sample- 12.8%, and Three parasite-0.67%). Factors involving variation among the studies include; lack of sanitation, unhygienic condition, poverty, environmental condition, poor quality and source of drinking water<sup>[19]</sup>.

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**Conflict of Interest:** Nil

#### ETHICAL APPROVAL:-

The present study was started after getting ethical committee approval of Mayo institute of medical sciences Gadia, Barabanki.

#### AUTHOR STATEMENT:-

Intestinal parasitosis is a worldwide health problem in developing countries, topical and sub topical areas. It is more common in school going children. In the present study the prevalence rate is 44%. In which more prevalent parasite was *Entamoeba histolytica* followed by *Giardia* and *Ascaris*. Multiple parasitic infections were also observed in some samples. Males were more prevalent than females and most affected age group was 11 to 15 years of age group.

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