

## Age Wise Prevalence Of Total And Specific Intestinal Protozoan Parasites Of Saharsa Municipality, North Bihar

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**ABSTRACT:** Saharsa town is the headquarter of Koshi Division of Bihar lying in koshi belt witnesses higher percentage of incidence of intestinal parasites. The town has no drinking water supply and people mostly use drinking water from low-deep hand pump. The perennial water logging in mohallas, insanitary disposal of human excreta and use of drinking water from low-deep hand pumps prevailing in the town favours the infestation of intestinal parasites.

**MATERIAL AND METHODS-**Single faecal sample of 5105 human population (2840 males 55.65% and 2265 females 44.37%) of Saharsa Municipality were collected on random sampling basis and examined under the clinical microscope usually by direct smear method stained with Lugol's Iodine and formal ether Concentration method (Allen and ridley- 1972; Ridley and Hawgod – 1956) in which 1903 stool samples were infection free (NDA 37.27%) and 3202 (62.73%) were positive for intestinal Parasites. The data obtained were subjected to statistical analyses based on Normal Distribution.

Samples were collected from different age group of the society. They will be subjected to statistical Analyses based on Normal distribution and the "Normal Variants" will be worked out and meaningful inference will be drawn.

**RESULTS AND FINDING-**With respect to the age, the prevalence rate of infestations with total specific protozoan parasites in different age groups in both sexes of studied population are represented below.

### Age group – I (0 – 12 Months)

#### **Prevalence of total and specific protozoan parasites:**

In the infant group, out of 37 single faecal samples studied, the prevalence rate of infection with *Entamoeba histolytica* was very low, where as in case of *Entamoeba coli* it is negligible.

Through, the prevalence rate of the total protozoan parasites in female infants was higher (10.00%) than the male infants (7.46%), in this case it was found to be non significant ( $\chi^2_{1df} = 0.275$ ).

### Age group – II (1 – 14 Years)

#### **Prevalence of total and specific protozoan parasites:**

In children, above 1 year but below 15 years (total 992 child), the total parasites infections with protozoan parasites were prevalent in 241 (24.22%) samples.

In case of protozoan parasites the prevalence rate of infection with *Entamoeba histolytica* was 5.25% and *Entamoeba coli* was 1.73%. With respect to sex, the number of samples of male children was 556 and that for female was 436. The prevalence rate of total intestinal protozoan parasitic infestation was higher in female children (i.e. 27.85%) than the male ones (i.e. 22.03%). The difference between sexes was thus found to be highly significant ( $\chi^2_{1df} = 16.228$ ,  $P < 0.01$ ). Specific protozoan parasitic infestations with different species of parasites in 556 infected samples of the male children were *Entamoeba histolytica* 4.20%, and *Entamoeba coli* 1.58% (Corrected Prevalence; Foust & Russell, 1964).

The frequencies of infestations as specific protozoan parasites in 436 infected samples of the female children were *Entamoeba histolytica* 7.01% and *Entamoeba coli* 1.98% (Corrected Prevalence; Foust & Russell, 1964).

As regards specific parasites, infestations with *Entamoeba coli* was though more prevalent among the female children (1.98%, Corrected Prevalence; Foust & Russell, 1964) than the male ones (1.58%, Corrected Prevalence; Foust & Russell, 1964) not significant difference due to sex was noticed ( $\chi^2_{1df} = 0.818$ ).

Infection with *Entamoeba histolytica* was also recorded to higher among the female children (7.01%) over those of male ones (4.20%). So in this case the difference due to sex was found to be highly significant ( $\chi^2_{1df} = 13.983$ ,  $P < 0.01$ ).

### Age group – III (15 – 24 Years)

#### **Prevalence of total and specific protozoan parasites:**

In case of persons of the age group between 15 years and 24 years (total no. 1158), the prevalence rate total protozoan parasites were in 261 (22.51%) samples.

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Among protozoan parasites, Entamoeba histolytica was most prevalent one 6.99% followed by Entamoeba coli 4.69%.

As regard sex in this group, 601 samples were male and 557 female.

The total protozoan parasites was slightly more prevalent in the female group (22.89) then the male ones (22.14%) and this difference was observed to be non – significant ( $X^2_{1df} = 0.324$ ).

Species wise infestation with different parasites in the males (total no. of infected samples 133, i.e. 22.14%) were Entamoeba histolytica 49 (8.11%) and Entamoeba coli 20 (3.40%), (Corrected Prevalence; Foust & Russell, 1964).

In case of females (total no. of infected samples 128, 22.89%) however, species – wise prevalence of parasites were Entamoeba histolytica 5.83% and Entamoeba coli 6.02% (Corrected Prevalence; Foust & Russell, 1964).

Under this age group male shows higher prevalence rate with Entamoeba histolytica (8.11%). The female population in this age group showed lower prevalence (5.83%).

In case of Entamoeba histolytica the difference in the prevalence rate between sexes was found to be highly significant ( $X^2_{1df} = 8.721$ ,  $P < 0.01$ ).

Entamoeba coli infestation was remarkably higher in the female subjects (6.02%; Corrected Prevalence, Foust & Russell, 1964) then the male ones (3.40%; Corrected Prevalence, Foust & Russell, 1964). In this case Entamoeba coli showed highly significant sex difference ( $X^2_{1df} = 16.801$ ,  $P < 0.01$ ).

#### **Age group – 1V (25 – 39 Years)**

##### **Prevalence of total and specific protozoan parasites:-**

Under the fourth group of population studied between the age group 25 years and 39 years (total no.–1845). The total protozoan parasites were prevalent in 373 (20.22%) samples.

The prevalence rate of infection with Entamoeba histolytica was highest i.e. 7.19% followed by Entamoeba coli 4.37%.

The total protozoan parasites were found to be more prevalent in the males under this age group (21.59%) then the females (18.78%). In this case, the difference was highly significant between the two sexes ( $X^2_{1df} = 8.457$ ,  $P < 0.01$ ).

The prevalence rate of infestation with different protozoan parasites 213 infected male samples were Entamoeba histolytica in 77 (7.84%) samples and Entamoeba coli in 56 (6.50%) samples (Corrected Prevalence; Foust & Russell, 1964).

In 160 infected female samples, the prevalence rate of infection with different intestinal protozoan parasites were Entamoeba histolytica 6.50% and Entamoeba coli 3.84% (Corrected Prevalence; Foust & Russell, 1964).

As regards specific parasites, the incidence of Entamoeba histolytica and Entamoeba coli infection were higher among the male human stool samples (7.84% and 4.87% respectively) than the female samples (6.50% and 3.84% respectively). Both these protozoan parasites show significant effect of sex difference ( $X^2_{1df} = 4.615$  and 4.374 respectively,  $P < 0.05$ ).

#### **Age group – V (40 – 59 Years)**

##### **Prevalence of total and specific protozoan parasites:-**

In the fifth group of population studied, consisting of persons between the age group 40 years and 59 years (total no. 932) the total protozoan parasites were prevalent in 171 (18.40%) samples.

Entamoeba histolytica was the most prevalent (8.20%) protozoan parasites followed by Entamoeba coli (4.24%).

With respect to sex, 538 samples were from the male subjects and 394 samples were from the female subjects. Though the prevalence rate of infestation with the total protozoan parasites were recorded to be higher among the male subjects (18.51%) over those of female ones (18.27%). In this case non-significant sex difference was noticed low ( $X^2_{1df} = 0.030$ ).

The frequencies of infections with specific protozoan parasites in 99 infected samples of males were Entamoeba histolytica 7.81% and Entamoeba coli 4.37% (Corrected Prevalence; Foust & Russell, 1964).

In females the frequency of infestations with specific protozoan parasites in 72 infected samples were; Entamoeba histolytica 8.86% and Entamoeba coli 4.00% (Corrected Prevalence; Foust & Russell, 1964).

Thus the male in this age group had remarkably higher prevalence rate with Entamoeba coli (4.37%) then the female (4.00%) but it did not reveal any significant sex difference ( $X^2_{1df} = 0.0276$ ).

Among the female population in this age group, the prevalence rate of *Entamoeba histolytica* infestation was higher 8.86% as compared to male ones 7.81% but insignificant sex difference was obtained  $X^2_{1df} = 1.212$ .

#### **Age group – VI (60 Years & above)**

##### **Prevalence of total and specific protozoan parasites:**

In the older people, the age group 60 years and above (total no.-138), the total protozoan parasites were prevalent in 24 (17.63%) samples.

In protozoan parasites *Entamoeba histolytica* was more prevalent with 5.42% infection than *Entamoeba coli* with 3.87% infection.

As regards sex, total no. of male faecal samples examined were 79 and total no. of female faecal samples examined were 59 under this age group. The prevalence rate of infestations with total protozoan parasites was higher among the female population (18.58%) than the male ones (16.89%). Statistically this case turned out to be non significant with respect to sex of the subjects ( $X^2_{1df} = 0.249$ ).

The prevalence rate of infestations in 13 infected samples of male of this age group was *Entamoeba histolytica* 5.51% and *Entamoeba coli* 4.13% (Corrected Prevalence; Foust & Russell, 1964).

Among 11 infested samples of female of this age group, the prevalence rate of *Entamoeba histolytica* and *Entamoeba coli* was 5.30% & 3.53% respectively (Corrected Prevalence; Foust & Russell, 1964).

As regards specific parasites, through the prevalence of *Entamoeba histolytica* and *Entamoeba coli* infestations were higher among the male subjects under this age group (5.51% and 4.13% respectively) as compared to female ones (5.30% and 3.53% respectively) but both species had insignificant effect on sex ( $X^2_{1df} = 0.010$  and  $0.380$  respectively (Table – 10 and Graph – 06).

##### **Effect of age on the prevalence of intestinal protozoan among different age group :**

To find out the effect of age on the prevalence of total and specific protozoan parasites among the individuals of the different age group of the studied population, the data obtained were subject to statistical analysis by chi-square test, which revealed following features:

(As the infant group was represented by meager number of samples, they were pooled together with children group, for the above purpose and henceforth they are referred to as “children group” in the present observation).

An analysis of the data obtained on the prevalence of the total protozoan parasites, children recorded the highest i.e. 23.67% infections. With advancement in age a significant decrease was obtained reaching to the lowest, i.e. 17.63% among the older people aged 60 years & above. A highly significant effect of different age group was found ( $X^2_{4df} = 42.838$ ,  $P < 0.01$ ).

The prevalence rate of infection with *Entamoeba histolytica* was found to be the lowest among the children group (5.12%) and with advancing age, parasites recorded to increase gradually among the persons up to 60 years of age, with the highest i.e. 8.20% in the age group V (40 yrs – 59 yrs). This was followed by another decrease in the older people beyond 60 years. Statistically, highly significant age group difference on the incidence of this parasites was noticed  $X^2_{4df} = 31.074$ ,  $P < 0.01$ .

The prevalence rate of infection with *Entamoeba coli* was found to be the lowest, i.e. 1.67% among the children group, but was found to increase highly significantly i.e. 4.69% among the persons of 15 - 24 age group. Thereafter with the advancement in age it was found decreasing. Statistically, it was found that different age groups seemed to exert highly significant effects on its incidence ( $X^2_{4df} = 64.361$ ,  $P < 0.01$ ).

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