



Study on Prevalence of Intestinal Parasitic Infections Among School Children

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ABSTRACT

Intestinal parasitic infection (IPIs) constitute the greatest single world-wide cause of illness and disease. Intestinal parasite infection is a world-wide public health concern. Poverty, low literacy rate, poor hygiene, lack of access to potable water and hot and humid tropical climate are the factors associated with high prevalence of intestinal parasitic infections in developing countries. This study forecasts an increasing prevalence of intestinal parasitic infections among school children in this area and emphasizes on the need to promote health education programmes about hygienic habits in schools to create awareness about health and hygiene. Regular deworming program in association to other preventive measures may help reduce the prevalence.

KEYWORDS : Intestinal Parasitic Infections and School Children

Introduction:

Intestinal parasitic infection (IPIs) constitute the greatest single world-wide cause of illness and disease. Intestinal parasite infection is a world-wide public health concern. Poverty, low literacy rate, poor hygiene, lack of access to potable water and hot and humid tropical climate are the factors associated with high prevalence of intestinal parasitic infections in developing countries. Approximately, 3.5 billion individuals have been infected with intestinal parasites, of these 450 million individuals developed diseases. Parasites are one of the important casual agents of diarrhea, loss of weight, abdominal pain, nausea, vomiting, lack of appetite, abdominal distention and Iron deficiency anemia. Intestinal parasitosis alone is one of the most common public health problems in all over India. The distribution and prevalence of the various intestinal parasites species depend on social, geographical, economical and inhabitant customs. Studies on human parasitic infections have demonstrated a common relationship between parasitic infections and lower socio-economic status of the region. So periodic epidemiological studies and transmission dynamics in parasitic infections will provide more accurate understanding. 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). In addition poverty, malnutrition, high population density, the unavailability of potable water, low health status and a lack of personal hygiene provide optimal conditions for the growth and transmission of intestinal parasites (Sayyari et al., 2005). Children are the most affected due to the heavy infections they harbour and because of their vulnerability to nutritional deficiencies (Luka et al., 2000). As a result of morbidity they are at increased risk for detrimental effects like poor growth, reduced physical activity, impaired cognitive function and learning ability (Nokes et al., 1992). The most important drawback of IPIs is that about 90% of infected individuals remain asymptomatic (Reed et al., 2001). Other barriers to decreasing the rates of parasitic infections include insufficient parasitic disease research, neglect of the problem in developing countries and a lack of follow-up treatments (Sayyari et al., 2005).

Our aim was to determine the prevalence of intestinal parasitic infections among school children and to identify the associated socio-demographic and environmental factors which will help in identifying the high risk group and in formulating appropriate control strategies.

Material and Methods:

This present study was conducted in the Department of Microbiology, Heritage Institute of Medical Sciences, Varanasi during the period from October 2014 to September 2015. A total 375 subjects were enrolled in this study out of these 165 were female and 210 were male. The samples were collected from school children of Eastern part of Uttar Pradesh in random basis. They were provided with clean, dry, screw capped and properly labelled plastic container for the collection of the stool sample.

Faecal samples were examined for the presence of parasites both macroscopically and microscopically. The samples were examined by standard parasitological examination which included wet mount (Saline mount and Iodine preparation method) and by formal-ether concentration method. They were observed under low and high power fields of microscope. Macroscopic examination of stool was done for presence of mucus, blood or any parasites.

Statistical Analysis:

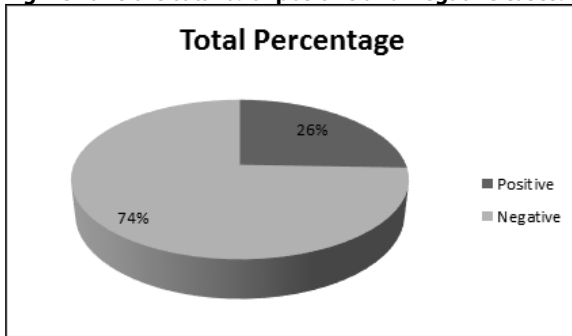
Numerical data obtained from the sample was organized and summarized from the sample with the help of descriptive statistics, like percentage and frequency. Microsoft excel was used for the interpretation of these results and graphical representation.

Results and Discussion:

In the present study a total of 375 stools samples were collected in a clean, dry screw capped plastic container. The specimens were examined by wet mount (Saline mount and Iodine preparation method) and by formal-ether concentration method. Out of total 375 school going children included in the study, 210 were male and 165 were female. 96 (25.6%) were positive for one or more parasites shown in (table-1 & fig-1). Significantly highest infection rate was observed in the children aged between 5-10 years 78 (20.8%), followed by 11-15 years 18 (4.8%) in table 2. The prevalence of parasitic infection was significantly higher in male children 70 (18.6%) than female children 26 (6.9%) ($P < .001$) shown in table 3. Ethnically, prevalence of intestinal parasitic infection was found to be highest in poor Socio-economic class 22 (22.91%) followed by low socio-economic class 28 (29.16%) and General Socio-economic class 46 (47.91%) in table 4. Altogether 5 species (2 protozoan and 3 helminths) of intestinal parasites were detected. Out of total parasites detected, 55 (14.66%) protozoan, 25 (6.66%) were helminths and 16 (4.26%) were mixed type. *Giardia intestinalis* 44 (11.73%) and Hook worm 17 (4.53%) were the commonest protozoan and helminths respectively. The other parasites detected were *A. Lumbricoides* 5 (1.33%), *H. Nana* 3 (0.8%) and *Entamoeba histolytica* 11 (2.93%) in table 5. Mixed (both protozoa and Helminths) was detected in 16 (4.26%) children.

Table 1: prevalence of intestinal parasitic infection in students:

Number of students	Results	Percentage (%)
96	+ve	25.6
279	-ve	74.4
Total =375		100

Fig-1 Shows the total % of positive and Negative cases.**Table 2: prevalence based on age group:**

Age group	Total (n)	Positive (n)	Percentage (%)
05-10 yrs	179	78	20.8
11-15 yrs	196	18	4.8

Table 3: prevalence of intestinal parasitic infection in male and female:

Gender	Total (n)	Positive(n)	Percentage (%)	p-value
Male children	210	70	18.6	0.001
Female children	165	26	6.9	
Total	375	96	25.6	

Table 4: prevalence of intestinal parasitic infection based on Ethnic group:

Socio-economic class	Total (n)	Positive (n)	Percentage (%)	P-value
General	175	46	47.91	0.001
Low	125	28	29.16	
Poor	75	22	22.91	
Total	250	96	100	

Table 5: Frequency of intestinal parasite detected:

Types of parasite	Total positive (n)	Percentage (%)
Protozoa	55	14.66
G. intestinalis	44	11.73
E. histolytica	11	2.93
Trichomonashominis	0	0.0
Blastocystishominis	0	0.0
Helminthes	25	6.66
Hook worm	17	4.53
lumbroides	5	1.33
H. nana	3	0.8
Mixed (both protozoa and Helminths)	16	4.26
Total parasites	96	25.6

In the one year study period (from October 2014 to September 2015), nearly one fourth 96(25.6%) samples were positive for one or more parasites. This findings was in agreement with the recent studies conducted among school going children in dandelhdura district (31.1%) Tiwari et al, 2013.16 There was no significant difference in prevalence of intestinal parasites according to age and gender of the school children (data not shown). Especially the prevalence of intestinal protozoa found in this study was higher than previous studies conducted in this area (Bansal, et al.17, 2004, Khurana, et al., 2005).18 This is in contrast with the few reports conducted in other parts of India (Awasthi and Pande, 1997, Fernandez, et al., 2002, Wani, et al., 2007)19,20,21 where a higher prevalence of helminthic infections than protozoan infections was reported. In India, the highest prevalence of intestinal parasitic infections (91%) in school going children was reported in rural settings in and around Chennai, South India (Fernandez, et al., 2002).20 Protozoan parasitic infections were significant-

ly higher (81.2%) than the intestinal helminthic infections (18.8%), which is in contrast to reports in other parts of the world (Steketee, 2003, Rodriguez-Morales, et al., 2006).22,23

Conclusion:

These findings suggest that the incidence of intestinal parasitosis is as high as 25.6%. The prevalence of parasitic infection was significantly higher among male children than girl children. Ethnically, prevalence of intestinal parasitic infection was found to be highest in poor Socio-economic class followed by low socio-economic class and General Socio-economic class. This study forecasts an increasing prevalence of intestinal parasitic infections among schoolchildren in this area and emphasizes on the need to promote health education programmes about hygienic habits in schools to create awareness about health and hygiene. Regular deworming program in association to other preventive measures may help to reduce the prevalence.

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