

Prevalence Of Parasitic Infestations In School Going Children

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Abstracts: Background and Aim: Over two billion people worldwide are affected by intestinal protozoans and helminths. Intestinal helminthic infestations are most common among school-age children and tend to be of high intensity in this age group. These diseases can affect child development, educational achievement, reproductive health, and social and economic development. Aim of the study was to find out the prevalence of parasitic infestation in school going children between 5 years to 12 years of age. Methodology: Macroscopic examination of stool samples was followed by direct saline (0.9%) preparation & for ova iodine preparation. Mounted wet saline (0.9%) and iodine preparations were examined under microscope using x10 and x40 objective lens. Concentration method with saturated salt solution was done in all the samples collected. Statistical analysis has been used. Results and Conclusion: Out of all 85 students enrolled in this study, 4 were observed with different parasitic structures in their stool. The common parasitic infection in this study was Cyst of Entamoebahistoltytica and eggs of Ancylostomaduodenale. [Makwana H NJIRM 2015; 6(6):39-42]

Key Words: Prevalence, School going children, E.histolytica, A.duodenale.

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Introduction: Over two billion people worldwide are affected by intestinal protozoans and helminths.¹ Intestinal helminthic infestations are most common among school-age children and tend to be of high intensity in this age group.² These diseases can affect child development, educational achievement, reproductive health, and social and economic development.³

Higher prevalence of these infestations is closely correlated to poverty, poor environmental hygiene and impoverished health services. Poverty, lack of awareness, failure to practice proper hand washing after defecation, unsafe drinking water and use of improper toilets are some of the reasons that are not totally eradicated from some parts of our country.

Like other developing countries, intestinal parasitic infestations are one of the major health problems in India.⁴ Helminthic infestations lead to nutritional deficiency and impaired physical development which will have negative consequences on cognitive function and learning ability.⁵ So their proper recognition is important to allow appropriate therapy and avoid complications.

This study was carried out in department of Pathology, C.U.Shah Medical College and hospital, Surendranagar, Gujarat.

Material and Methods: This study was conducted at the Department of Pathology, C.U. Shah Medical

College, Surendranagar, Gujarat from November 2013 to September 2014.

- Parental informed consent was obtained for all participants.
- To study the prevalence of intestinal parasitic infestations, stool samples were collected once from 85 children from schools randomly selected from rural areas of Surendranagar. All Students were in the age group of 5 to 12 years. They were provided wide mouthed specimen bottles with screw caps and with specific instruction to collect sample in the morning.
- All Specimens were immediately transported to laboratory. Macroscopic examination of stool samples was followed by direct saline (0.9%) preparation& for ova iodine preparation. Used saline was ready to use commercially available saline and used lugol's iodine was prepared as follow :

Lugol's iodine solution is too strong and it must be diluted about five times in distilled water. Such weaker solution may then be used for staining.

Lugol's iodine solution is prepared as follow:

Iodine crystal- 5gm
Potassium iodine-10 gm
Distilled water- 100 ml

Potassium iodide is dissolved in distilled water and iodine crystals are slowly added.⁶

For Saline preparation and Iodine preparation, with a platinum loop or tooth-pick, an abnormal portion of feces was picked up and emulsified in saline and Iodine respectively.

Mounted wet saline (0.9%) and iodine preparations were examined under microscope using x10 and x40 objective lens. Concentration method with saturated salt solution was done in all the samples collected.

Simple Flotation Technique (Maplestone, 1940). Wills' technique is of the same principle.

Materials required:

- Container of 15 to 20 ml capacity, having a flat bottom, vertical edges and a diameter of not more than 1 ½".
- Glass slides.
- Saturated salt solution.

Technique: One milliliter of faeces is taken in the container and a few drops of salt solution are added. It is then stirred with a small stiff piece of stick so as to make an even emulsion. After this more salt solution (15 to 20 ml according to the "container" used) is added till the "container" is nearly full. At this stage the "container" is placed on a level surface. The final filling is carried out by means of a dropper, until a convex meniscus is formed. A glass slide is carefully laid on the top of the container, so that its centre is in contact with the fluid. The preparation is allowed to stand for 20 to 30 minutes, after which the glass slide is quickly lifted, turned over smoothly so as to avoid spilling of the liquid, and a coverslip is placed and examined under the microscope.⁶

This method is better in detection of ova and cysts.

Inclusion criteria: Children between age 5 and 12 years of age and who are school going.

Exclusion criteria:

- Age < 5 years or age > 12 years
- Children between 5 to 12 years of age but who have taken bismuth, anti diarrheal drugs, mineral oil, some antibiotics like tetracyclines in last 10 days.
- Children who were subjected for Barium preparations in last 7 days.

Results: Out of all 85 students enrolled in this study, 4 were observed with different parasitic structures in their stool.

- So, the prevalence of intestinal parasite in the study was 4.71 %.
- Of the 4 stool samples positive, 2 samples were positive for Cysts of *Entamoebahistolytica* and 2 were positive for *Ancylostomaduodenale*.

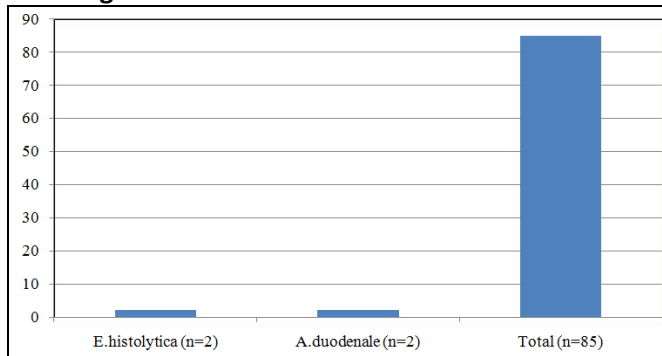
Table 1: Distribution of Intestinal Parasites

Intestinal Parasitic infection	School children (N=85)
Protozoa	
<i>E.histolytica</i>	02
<i>G.lambliia</i>	00
Helminths	
<i>A.duodenale</i>	02
<i>A.lumbricoides</i>	00
<i>H.nana</i>	00
<i>Taenia spp.</i>	00
<i>E.vermicularis</i>	00

- A total of 85 primary school-going children participated in the study. The prevalence of Intestinal parasites was 4.71%. Prevalence was high in lower and lower middle socio economic class and students with abdominal discomfort.

Table 2: Relationship of Intestinal Parasites with different study variables

Variable		Total Numbers	Positive	%	χ ²	p value
Age	5-8 years	34	01	2.94	0.21	0.64
	9-12 years	51	03	5.88		
Gender	Males	48	03	6.25	0.62	0.42
	Females	38	01	2.63		
Socio-Economic Status	Lower/Lower middle	73	04	5.48	0.69	0.70
	Middle	11	00	0.00		
	Upper/Upper middle	01	00	0.00		
Abdominal discomfort	Yes	63	04	6.35	1.46	0.22
	No	22	00	0.00		
Toilet used	Used	28	01	3.57	0.12	0.72
	Open field	57	03	5.26		
Hand wash	With soap	20	00	0.00	1.2	0.25
	Not washed	65	04	6.15		

Figure 1: Prevalence of Intestinal Parasites

Discussion: The prevalence of GI parasite infestation depends upon various socio economic factor like, hygiene, availability of clean drinking water poverty^[5] etc. In our study the prevalence of intestinal parasite, came out to be 4.71%.

Bansal et.al.⁷ and Khurana et.al.⁸ reported a prevalence ranging from 14.6% - 19.3%, Fernandez et.al.⁹ reported a maximum of 91% of prevalence of intestinal parasite in school going children in rural setting in and around chennai. Wani et.al.¹⁰ reported 46.7 % prevalence of intestinal infection among school children in Srinagar city. In another study conducted in rural as well as urban area of Kashmir the prevalence of intestinal parasite was as high as 71.2% Wani et.al.¹¹ Sehgal et.al.⁴ reported a prevalence rate of 42.8% from a low socio – economic area from Chandigarh. Studies from other countries namely Philippines, Cambodia and Turkey have reported a higher prevalence of intestinal parasites among school children.¹²⁻¹⁴

There was a significant difference in prevalence rate in our study as compared to the studies done in other parts of India. This might have been observed because of the antihelminthic treatment given in school going children as a part of deworming strategy, used by health centres and private practitioners or it may be due to improved hygiene and living standards of rural populations.

The common parasitic infection in this study was Cyst of *Entamoebahistolytica* and eggs of *Ancylostomaduodenale*. This is in line with other studies conducted by Awasthi et.al.¹⁵, Fernandez et.al.^[16] and Wani et.al.¹¹. This is also in line with other studies conducted from other parts of world like Philippines and Combodia which reported a higher prevalence of helminthes^{12,13}. Chandrashekhar et.al.¹⁶, Sehgalet.al.⁴, reported cyst of *Giardia* and cyst of

Entamoebahistolytica as the commonest isolate among school children.

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