

Helminthiasis in Primary School Children of Allama Iqbal Town, Lahore

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ABSTRACT

Background: Helminthiasis is a common health problem in children globally specially in developing countries. Children at school age are more prone to develop such problems specifically when they are exposed to lower socioeconomic status, poor hygienic standards and environmental factors suitable for helminthic development.

Objective: To determine possible positive cases of intestinal parasitic infection among primary school children.

Study Design: A descriptive cross sectional study.

Place and Duration of Study: Study was conducted in four schools, two for boys and two for girls in Allama Iqbal Town, Lahore from 15th January 2010 to 15th April 2010.

Materials and Methods: The study population included 400 primary school children of grade 1 to 5 of both sexes. Stool examination was done at Medical Entomology and Parasitology Laboratory, Institute of Public Health, Lahore on three consecutive days of a week The results obtained were analyzed using SPSS 15.

Results: Amongst 400 stool specimens examined of primary school children, 194 (48.5%) were found positive for various intestinal helminthes. Six different types of helminthes were identified. The commonest species found was *Ascaris lumbricoides*, 33.25% whereas *H. nana*, 6.25%, *A. duodenale* 2% , *E. vermicularis* 2.25%, *T. trichiura* 2.75% and *T. saginata* 2% were detected. No mixed infection was found.

Conclusion: This study revealed that helminthiasis is a significant health problem among studied primary school children of Allama Iqbal Town, Lahore.

Key Words: Helminthiasis, *Ascaris lumbricoides*, Prevalence

INTRODUCTION

Intestinal parasitic infections, especially helminthes, are common health problems of children. Children at school age are at risk of developing clinical manifestations because helminthic infection such as *Trichuris trichiura* and *Ascaris lumbricoides* reach maximum intensity at 5-14 years of age.¹ Indeed children of an endemic community can be expected to have intestinal parasitic infection soon after weaning and high risk of re-infection in the rest of his or her life. It is estimated that for children 5-14 of age in low socioeconomic countries, infested worms account for 12% of the total disease burden.² This can be due to socioeconomic and environmental factors.³ The impure drinking water, low socioeconomic state, poor sanitation coupled with low literacy rates of parents particularly the mothers are the

main causes.⁴ The magnitude of the problem varies amongst countries as well as in areas within countries.⁵⁻⁶ It also causes recurrent gastrointestinal and upper respiratory tract infection contributing to high morbidity and mortality in children. Despite of improved socioeconomic conditions and elevated living standards, surprisingly it is still a public health problem even in developed countries, like United States.⁷ The hookworm infestation is a leading cause of iron deficiency anemia, whipworm infestation in children causes growth retardation and anemia while heavy infestation with both roundworm and whipworm causes protein energy malnutrition.^{8,9} It is of particular concern that these infestations have insidious constraint on cognition and learning abilities of the children.^{10,11}

MATERIALS AND METHODS

This descriptive cross-sectional study was carried out between 15th January, 2010 and 15th April, 2010 in Allama Iqbal Town, Lahore. The city is situated at an altitude of 688 feet above sea level. The area is densely populated with population of 10 million people¹² and Allama Iqbal Town is located in the southwest of Lahore.

The study population included 400 primary school children of grade 1 to 5 of both sexes from four schools which were randomly selected. In order to avoid sex and status biases two schools from private and two from government sector and similarly two schools for boys and two for girls were chosen. Stool examination was done at Medical Entomology and Parasitology Laboratory, Institute of Public Health, Lahore on three consecutive days of a week.

Sample collection: Early morning specimens were collected from children in provided wide mouthed containers and were examined within one hour. After physical examination, smear preparation was done by using formal ether concentration technique.¹³ The prepared smears were examined under light microscope using x40 magnification.

Statistical Analysis: A computer programme (SPSS 15) was used for data analysis.

RESULTS

Table 1: Stool examination results – worm prevalence (n – 400)

Worm	Frequency	Percent
Nil	206	51.50
Ascaris lumbricoides	133	33.25
Enterobius vermicularis	9	2.25
Ankylostoma duodenale	8	2.00
Trichuris trichiura	11	2.75
Hymenolepis nana	25	6.25
Taenia saginata	8	2.00

The results of the stool examination by means of the formal-ether concentration technique showed that out of the 400 children examined, 194 tested were positive for intestinal worms which is 48.5% of the total specimen. Six different types of helminths were identified during the study. Ascaris

lumbricoides with 33.25% prevalence showed highest frequency and Hymenolepis. nana showed comparatively higher frequency which was 6.25%. Whereas, Trichuris trichiura, Ankylostoma duodenale, Enterobius vermicularis and Taenia saginata were present in frequencies of 2.75%, 2%, 2.25% and 2% respectively. The fact is of prime importance that none of the cases showed mixed infection (Table 1).

DISCUSSION

Intestinal helminthic infections are quiet common in third world countries. The overall prevalence of intestinal helminths was 48.5% in our study which is low as compared to different studies conducted in Mexico (67%), Nigeria (54.7%) and Ethiopia (68.5% and 83.8%).^{3,6,14,15} In a study done in Nigeria shows 49.7% intestinal helminthes with Ascaris lumbricoides 64.4%, hookworms 0.9% and Trichuris trichiura in 1.1% cases studied. There were 41 (23.6%) children with polyparasitism, 33 of them were positive both for Ascaris lumbricoides and hookworms.¹⁶ The overall soil transmitted helminthes infestation rate was 55.8% in Cape Town, South Africa.¹⁷ Prevalence was influenced by school and age but not by gender. The prevalence of parasitosis in Kathmandu, Nepal was 66.6% (395/533 total no. of subjects) with no significant difference between boys and girls.¹⁸ Trichuris trichiura was the most common helminth detected, followed by hookworm, Ascaris lumbricoides and others. Studies carried out in various parts of India have reported a prevalence of intestinal parasitism upto 30-50% and anemia from 40-73% among school going girls.¹⁹ Worms infestation as reported is 31.8% in Turkey,²⁰ 19.3% in Iran,²¹ 47.2% in Afghanistan and 44% in Sudan.²² In a similar study done in Uganda shows that 55.9% of children were infected with hookworm, Ascanis lumbricoides or Trichuris trichiura. The prevalence of A. lumbricoides was 17.5%, T. trichiura was 7.3% and hookworm 44.5%.²³ In the urban slum of Karachi^{24,25} the prevalence of Intestinal parasitic infections was estimated to be 52.8% and 81% children.

The present study conducted in Allama Iqbal Town, Lahore has revealed that frequency of intestinal helminthes is significantly high in primary school children. The commonest species found in this study was Ascaris lumbricoides 33.25%. The other helminthic species found were 6.25% H. nana, 2.25% E. vermicularis, 2% A. duodenale, 2.75% T. trichiura and 2% T. saginata. A surprise

omission was failure to find any positive case for mix infection and this might be the reason why these children with such a high frequency of worm infestation had no health problem at all.

Ascariasis is the most common parasitic infestation in endemic areas and accounts for 50-60% of pediatric admissions in the surgical emergency department. Hepatobiliary and pancreatic ascariasis accounts for about 10% of such admissions.²⁶ Intestinal helminth infection may be one of the risk factors for the development of active pulmonary TB in addition to HIV infection. This finding may have important implications in the control of TB in helminth endemic areas of the world.²⁷

The above mentioned findings resemble with the studies carried out in other parts of Pakistan. In Rawalpindi-Islamabad incidence of positive intestinal helminthic cases was 64% in 1983²⁸ and 14.6% in 1992.²⁹ In Karachi positive stool samples were 30.04% in 1982³⁰ and 71.2% in 1986.³¹ The other studies conducted in Lahore city during seventies revealed that intestinal parasitic infection was a significant health problem. A study was carried out by Ansari and Sapru³² in conservancy staff of Lahore Municipal Corporation and rate of infestation was found to be 80%. Another study by Ansari and Naru³³ in 1967 revealed that frequency of intestinal parasitic infection in 216 children of Lahore orphanage was 64.75%. In 1995, a study was carried out on school children belonging to urban areas of Lahore. The frequency of infection was observed to be 61.83%.³⁴ The present study carried out in primary school children of Allama Iqbal Town, Lahore showed that although the frequency of helminthiasis is comparatively less i.e. 48.5% as compared to earlier studies but it is till significantly high.

It is concluded from this study that intestinal parasitic infection is common among primary school children of Allama Iqbal Town, Lahore. *Ascaris lumbricoides* is the common parasite of this locality mainly due to favourable environmental conditions for the development of said parasite and improper hygiene habits of the community members. In order to avert the harmful effects and complications of this ignored problem proper preventive measures should be undertaken for the control/ eradication of high infestation rate, which should include public health education, clean water supply, improvement of sanitary conditions, promoting

personal hygiene and periodic deworming of the children.

CONCLUSION

The rate of helminthiasis is significantly high in Allama Iqbal Town, Lahore and calls for proper measures as regards to community health education. This study has revealed that helminthiasis is still a public health problem of primary school children in developing countries.

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