

INTESTINAL WORM INFESTATION IN PRIMARY SCHOOL CHILDREN IN RURAL PESHAWAR

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ABSTRACT

Background: Worm infestation is a major public health problem in children of developing countries because of poor socioeconomic conditions and lack of good hygienic living. It causes not only nutritional deficiencies and anaemia but can lead to intestinal obstruction in the infested children. The purpose of this study was to determine the frequency of intestinal worms' infestation in children of rural Peshawar area.

Material & Methods: This cross-sectional community based study was undertaken in rural area of Peshawar. The study population included 200 primary school children of 5-10 years age group of both sexes. Stool examination for ova detection was performed at Department of Pathology, Khyber Medical College Peshawar on three consecutive days. The results obtained were analyzed using SPSS software.

Results: Out of 200 children examined, 132 (66%) were found positive for various intestinal helminths infestation. There were 6 different types of helminths found in the specimens examined. The highest frequency of 45.5% (91 cases) was noted for *Ascaris lumbricoides*. Relatively high frequency of 8% (16 cases) was also seen for *Hymenolepis nana*. Other helminths found were *Enterobius Vermicularis* 4% (16 cases), Hookworm 3.5% (7 cases), Whipworm 3.5% (7 cases) and Tapeworm 1.5% (3 cases).

Conclusion: A high percentage of primary school children from rural Peshawar have intestinal worm infestation and majority of them have *Ascaris lumbricoides*.

Key words: Worm infestation, Helminths, *Ascaris lumbricoides*.

INTRODUCTION

Intestinal helminthic infestation is one of the commonest cause of chronic infection in humans in developing countries.^{1,2} 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.³ The impure drinking water, low socio-economic state, poor sanitation coupled with low literacy rates of parents particularly the mothers are the main causes.⁴ Worms infestation is one of the major causes of childhood malnutrition, anaemia, stunted physical and mental growth, psycho-social problems. It also causes recurrent gastrointestinal and upper respiratory tract infection contributing to high morbidity and mortality in children. Despite of improved socio-economic conditions and elevated living standards, surprisingly it is still a public health problem even in developed countries, like United States.⁵ The reason for being a global public health problem is that helminthic infestation have largely been over looked by clinician, because although worms can cause severe clinical problems, patients rarely report at health centre due to its slow progress of the signs and symptoms.³ Helminthic

infections are more prevalent among school children aged 5-14 years.⁶⁻⁸ They constitute 12% of total disease burden in children.¹⁰ 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.^{11,12} It is of particular concern that these infestations have insidious constraint on cognition and learning abilities of the children.^{13,14}

Because of the high prevalence and serious adverse effects of intestinal parasitic infestation in children, many studies have been conducted in various cities of Pakistan like, in Karachi,¹⁵⁻¹⁷ Rawalpindi/ Islamabad,^{15,18} Lahore,¹⁹ Sargodha,²⁰ Northern Areas²¹ and Abbottabad.²² An intense deficiency was felt for a like study in Peshawar. The present study is an effort to estimate the frequency of intestinal helminthic infestation in the rural areas of Peshawar.

MATERIAL AND METHODS

This cross-sectional study deals with investigation of the frequency of intestinal worms' infes-

tation in children between the ages 5-10 years. Four primary schools from the union council Sheikh Mohammadi of rural Peshawar were selected as convenient sample. In order to include both sexes and avoid sex biases, four schools, two each for boys and girls were selected. Early morning specimens were collected from the children in provided wide mouth containers. A total of 200 children from the four primary schools were included in the study. Stool specimens were examined under direct light microscopy of smear in normal saline on three

consecutive days. The laboratory diagnosis of smear was based upon demonstration of ova. Data has been analyzed using SPSS software. Descriptive statistics i.e. percentages were used to describe the frequency.

RESULTS

Of the 200 children examined, 132 tested positive for various intestinal worms. (Table-1) The frequency of helminthic infestation was found to be 66%. There were six different types of helm-

Table-1: Stool examination results – worms’ prevalence.

Worms	Frequency	Percent	Cumulative percent
Nil	68	34.0	34.0
Round Worm	91	45.5	79.5
Pin worm	8	4.0	83.5
Hook worm	7	3.5	87.0
Whip worn	7	3.5	90.5
H. nana	16	8.0	98.5
Taenia saginata	3	1.5	100.0
Total	200	100	100.0

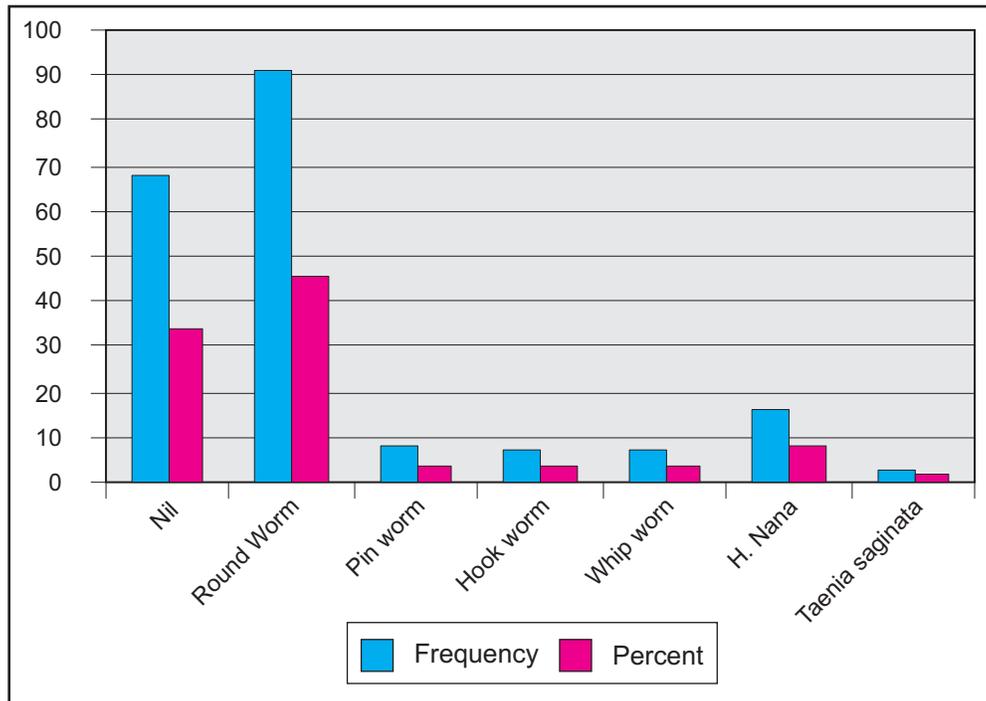


Figure: Stool examination result – worms’ prevalence.

inths found in the specimens. By far the highest frequency of 45.5% (91 cases) was noted for *Ascaris lumbricoides* forming the bulk of these infestations. Relatively high frequency of 8% (16 cases) was also seen for *H. nana*, *Trichuris trichura* and *Taenia saginata* (Figure-1). However all of the positive cases showed single infestation and no case of mix infestation was found.

DISCUSSION

Intestinal helminthiasis is common among children of developing countries particularly the rural areas like the one under study. After careful screening, we observed that the frequency of intestinal parasites is very high in our region. This study reaffirms the findings of similar other surveys carried out earlier confirming the very high rate of helminthic infestations in our population as a whole and children in particular. The most common species found in this study were *Ascaris lumbricoides*. They are found to infect a significant percentage of the individuals living in this community. The percentage of *Ascaris lumbricoides* was 45.5% with 4% suffering from pinworm, 3.5% from hookworm, 3.5% from whipworm and 1.5% from tapeworm. A relatively high (8%) prevalence was also found for *H.nana*. 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.

These findings are in accordance with the studies done in other parts of the world as well as the Islamic Republic of Pakistan. Some studies show that the prevalence of worms infestation as 25% to 91%²¹ in some communities of the world. In a study done in Nigeria shows 49.7% intestinal helminthes with *Ascaris lumbricoides* 64.4%, hookworms 10.9% and *Trichuris trichuria* in 1.1% cases studied. There were 41 (23.6%) children with polyparasitism, 33 of them were positive both for *Ascaris lumbricoides* and hookworms.²³ The overall soil transmitted helminthes infestation rate was 55.8% in Cape Town, South Africa.²⁴ Prevalence was influenced by school and age but not by gender. The prevalence of parasitosis in Kathmandu, Nepal was 66.6% (395/533) with no significant difference between boys and girls.²⁵ *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.²⁶ Worms infestation as reported is 31.8% in Turkey,²⁷ 19.3% in Iran,²⁸ 47.2% in Afghanistan and 44% in Sudan.²⁹ 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%.³⁰

In the urban slum of Karachi^{31,32} the prevalence of Intestinal parasitic infections was estimated to be 52.8% and 81% children from suburbs of Abbottabad have intestinal worm infestation and majority of them (48% of positive cases) have *Ascaris lumbricoides*.²² In a study by Nishiura et. al in the northern areas of Pakistan the prevalence of *Ascaris lumbricoides* was found to be 91%.²¹ The present study shows almost the same results (66%) for the prevalence and pattern of the worms' infection as shown in the above studies.

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.³⁵ 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.³⁶

It can be concluded from this study that intestinal parasitic infection is common among children of rural Peshawar. *Ascaris lumbricoides* is the common parasites in the region. In order to avert the harmful effects and complications of the this ignored problem prompt preventive measures should be taken for the eradication of high infestation rate, which should include public health education, clean water supply, sanitation facilities, promoting personal hygiene and periodic deworming of the children. In view of the WHO recommendations, 'In areas where prevalence of mild to moderate underweight children is greater than 25% and where parasites are known to be widespread, high priority should be given to deworming programme, data on prevalence of worms and trials of anthelmintic drugs are vital.

Conclusion: A high percentage of primary school children from rural Peshawar have intestinal worm infestation and majority of them have *Ascaris lumbricoides*.

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