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*Short Communication*

# Multiple Helminth Infection in Dibrugarh, Assam

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## ABSTRACT

Here we report the prevalence of multiple helminth infection among schoolchildren and in the community in Dibrugarh district of Assam, India. Stool samples were processed using direct and formal-ether concentration methods Multiple helminth infection was present in 15.3% school children and in 8.6% individuals from the community. School children are nearly twice as infested with multiple helminth as compared to those in the community. A school based deworming programme in this region can be beneficial.

***Keywords:*** Multiple helminth; schoolchildren; community; Dibrugarh Manuscript

## INTRODUCTION

The soil-transmitted helminth infections remain a significant health problem in developing countries. [1,2] The most common geo-helminths infecting human worldwide are *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworm. [1] Tuberculosis and malaria which are common in our state, is known to occur predominantly among populations infected with multiple parasitic infections. [3,4] An individual may be infested with a single species or sometimes with more than one species. Most of the population infected with helminths is seen to harbour more than one species. [5] Reports have been published with evidence that persons having multiple helminthic infections often harbour heavier infection and may suffer exacerbated morbidity. [6] School age children are said to have the most intense infection posing a serious threat to their health and development. [6] The prevalence of single helminth infection among schoolchildren and community has been previously reported. [7,8] Here we report the prevalence of multiple helminth infection among schoolchildren and in the community in Dibrugarh district of Assam, India.

## MATERIALS AND METHODS

### Study site and sample collection

The study was carried out in the period between February and September 2008.The schools were randomly selected and included both primaries as well as Middle English schools located in rural and urban areas in Dibrugarh district of Assam. A multistage sampling strategy was employed as described elsewhere. [6] One stool sample was collected from each child

after obtaining verbal consent from their parents.

For the community survey samples were obtained from a village located in Dibrugarh district of Assam, India in the month of July 2009. There were some 134 households with a total population of 688 (346 males and 342 females). All the families were contacted by the ASHA (Accredited Social Health Activist) and all members were invited to participate in the survey. The aim and procedures of the study were explained, and a verbal informed consent was obtained from the head of the household. The samples were deposited at the sub centre the following day and were brought to our laboratory within 2 hours.

A pre-labelled plastic container for stool sample collection was handed out to all participants and the method for collection was dictated during both surveys.

**Sample processing**

The stool samples were processed immediately after bringing to the laboratory using direct and formal-ether concentration methods. The ova of different helminths were identified based on their morphological appearance. The infected individuals were advised to attend the peripheral health centre for treatment.

***Data Analysis***

Data were entered into Statistical Package for Social Science (SPSS) version 13.0. for analysis.

## RESULTS AND DISCUSSION

School survey: A total of 1029 schoolchildren were included in the study of which 494 were males and 535 females. The study subjects were between 5 to 13 yrs of age with a mean of 8.73 years (SD±1.956). Multiple helminth infection was present in 158 (15.3%) children and was more in the 9-13years age group (17.8%). Males had a higher prevalence (16.8%) as compared to females (14.0%). The distribution pattern of the helminth ova seen with respect to age and gender is show in Tables 1. A total of 152 children were seen to be infected with two helminth ova, 5 with three numbers and 1 with four numbers.

Community survey: Fecal samples were obtained from 198 individuals including 100 males and 98 females from the community. Multiple helminth infestation was found in 17(8.6%) individuals from the community. In all of them two numbers of helminth ova were detected. The distribution is shown in the Table 2.

**Table 1: Age and gender wise distribution of schoolchildren with multiple helminth infestation (n=1029)**

| | Children with multiple helminth Number (%) |
|---|---|
| Age group | |
| 5-8yrs (n=501) | 65 (12.9) |
| 9-13yrs (n=528) | 94 (17.8) |
| Gender | |
| Males (n=494) | 83 (16.8) |
| Females (n=535) | 75(14.0) |

**Table2: Showing the distribution pattern of the soil transmitted helminth detected in schoolchildren and community**

| Type of helminth ova seen | Total No of persons infected (%) | |
|---|---|---|
| | School-children | Community |
| Ascaris lumbricoides+ Trichuris trichiura | 129 (12.5%) | 8(4.04%) |
| Ascaris lumbricoides+ Hookworm | 8 (0.8%) | 5(2.52%) |
| Ascaris lumbricoides+ Strongyloides | 4 (0.4%) | 2(1.01%) |
| Trichuris trichiura + Strongyloides | 2 (0.2%) | 1(0.5%) |
| Trichuris trichiura + Hookworm | 9 (0.9%) | 1(0.5%) |
| Ascaris lumbricoides+ Trichuris trichiura+ Hookworm | 2 (0.2%) | 0 |
| Ascaris lumbricoides+ Trichuris trichiura+ Strongyloides | 3 (0.3%) | 0 |
| Ascaris lumbricoides+ Trichuris trichiura+Strongyloides+ Hookworm | 1(0.09%) | 0 |
| Total | 158 (15.3%) | 17(8.6%) |

Soil transmitted helminth is common worldwide mostly found among those in the developing countries producing a global burden of disease in humans. [1,2,9] They have

been reported to effect the progression of disease like malaria, tuberculosis and HIV infection. [10-14] Multiple helminth infection in combination with malaria can result in severe anaemia thus a cause for adverse health consequences. [10] Effect of anaemia in children has also been described. [11] There is evidence that they can adversely affect the outcome of tuberculosis. [12] Investigations have suggested that deworming could have beneficial effect in reduction of anaemia and disease progression from above diseases. [13,14]

In the present study schoolchildren are nearly twice infested with multiple helminth as compared to those in the community (OR: 1.9). Since school age is the most important stage of one's development these infections could be a major hindrance in achieving their maximum physical as well as mental growth. [5] Studies have shown that deworming was beneficial and similar programme could be initiated in this region too. A multi species approach would be a cost effective method as suggested by others. [5]

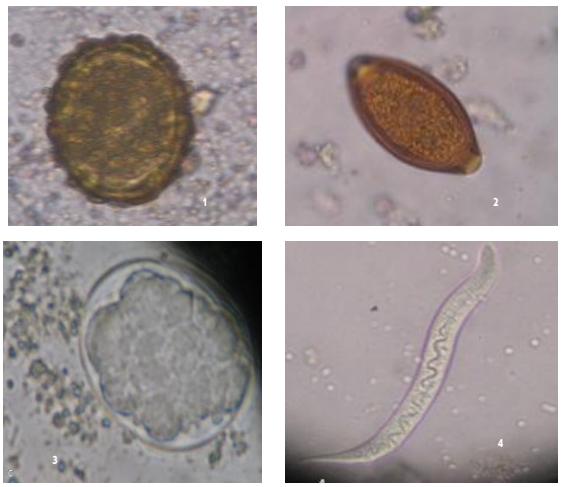

**Fig: Ova of *Ascaris lumbricoides* (1), *Trichuris trichiura* (2), hookworm (3) and larva of *Strongyloides* detected in stool samples in the present study**

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