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# PREVALENCE AND INTENSITY OF SCHOOL CHILDREN IN SHARAD RURAL PUBLIC SCHOOL, GANGAPUR, (M.S), INDIA.

**WAHULE V.K.[1], HIWARE C.J[2], PARDESHI P.R.[3], PAWAR R.T.[4]**
Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad- 431001, MS India.
*Corresponding Author: Email- 2drhiware@rediffmail.com, [3]pardeshi_zoo777@rediffmail.com, [4]drrajpawar@rediffmail.com

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**Abstract-**The prevalence of soil- transmitted helminth infection in school children of age 9-10 years from Sharad rural public school located at Gangapur, Aurangabad District, (M.S) India. Stool sample from 76 children were analyzed using kato-katz technique.79 (77%) children were infected by soil- transmitted helminths. The overall prevalence by species were *Ascaris lumbricoides* (41.66%), *Trichuris trichiura* (14.28%) Hookworm (66) respectively. Multiple infections were recorded in 08 (9.52%) of participants and 29 (16.3%) no infection at all. The prevalence in males (45.0) while that for females was (719). Differences in the levels of infection between the sexes were not significant. Educational standard reduce positive rates of infection. Data suggested that a moderately high prevalence across board for all soil- transmitted helminth in school children.
**Keywords**: Soil-transmitted helminths, prevalence, school children

**Introduction**

It was estimated that more than one billion people in the world are infected with soil- transmitted helminth, (STH) mainly *Ascaris lumbricoides*, *Trichuris trichiura* and Hookworm ( Crompton, 1999). The problem of STH is m;ore in children of school age(although it may affect other groups), and is often associated with cognitive function and learnilng ability, reduced physical activilty and poor growth (Stephenson et al 1998; Nokes et al; 1996). Mobility particularly acute iln children wh9o are most at risk with heavy infection. Heavy worm load result iln nutritional defilciency due to poor diet , and these are more pronounce durilng chld development and growth. STh causes mahor human illness (Hall et al 1982; Udonsi, 1983; Elkiwa, 1984). *Ascaris lumbricoides* has been associated with obstruction; of the large biliary and pancreatic ducts. Hookworm infection; is linked with iron deficiency anemia (Layrsee et al, 1983).

In India, studies on the evaluation of STH infections in different localities include those of Seal (1962) ) reported 45.03% of Hook- worm infection and 12.01% of *Ascaris* infection in total of 2136, Mohammed Yunus *et al.* (1997) found the overall parasitic infestation rate 42.2% out of 2939 stool sample examined, in which helminthic infestation as found to be 590 (20.1).

This study was undertaken to determine the prevalence of STH infections among school children in aurangabad,and epidemiologic factors relating to intestinal helminthiasis and suggest ways by which the level of infection can be reduced in Sharad Rural Public School, (M.S), India.

**Materials and Methods**

Eighty four school children, age 9-10 years in Sharad rural public school, Aurangabad district, Maharashtra state was randomly selected and investigated for their intestinal helminthic infections between December 2004 and December 2006.

**Collection and examination of faecal samples:**

The pupils were educated on the causes of intestinal helminthic infections among school aged children and they were convinced that every child ought to be free from such infections, thus the necessity of participating in the research work was appreciated by them. Thereafter, wide mouth corked sterile bottles were given to the pupils for the collection of their stool samples at home and structured questionnaires were distributed among the participating pupils for the collection of demographic information such name (optional), age, sex, type of toilet facility used, and number of individuals in the house, parents occupation, religion, foot were habits, pet/domestic animals reared, regularity of deworming etc. and accordingly labelled (ID). The pupils were taught how to collect stool samples and with the aid of their teachers, the questionnaires were correctly filled. The height and weight of the pupils were taken in the morning of the following day as they submitted their stool samples between 7.30 and 8.30 am. The stool samples were properly labeled and were carried in a cold box filled with Ice packs and transported to the private laboratory for analysis. The samples that could not be analysed immediately were preserved using 10% formalin until

they were examined (Cheesbrough M. District Laboratory Practice in Tropical Countries. Part 1 London: Cambridge University Press, 1998). Stool analysis was performed using the Kato-Katz technique. (World Health Organisation, Manual of Basic Techniques for a Health Laboratory, 2nd ed$^{n}$. Geneva: World Health Organisation, 2003).

All the slides were read by one medical doctor specialized in parasitology and consistency of the reading was assured by second readings performed in 20% of the slides randomly selected. Intensity of infections for each worm was defined according to the thresholds proposed by WHO Experts Committee in 1987.

The following data were collected for each child: weight, height, infection for *A. lumbricoides, T. trichiura* and hookworm.

**Results**

The study revealed an overall prevalence of soil transmitted helminth infections of 65.47% (Table I). Of the population sampled (N = 84; 53 males & 31 females) *A. lumbricoides* accounted for 41.66%, *T. trichiura*, 14.28% and hookworm 0.0% (Table I). A total of 35 males and 20 females were positive for parasites. *A. lumbricoides* recorded the highest positive rates in all other groups. The mean egg count (EPG) recorded for the age group (9 – 10 years), 2418.66 (Table II).

The egg load for females in the 9 -10 years group was not significantly ($P > 0.05$) different from males. Statistical analysis showed no significant difference between the infection rates in both sexes ($P > 0.05$). Of the population sampled, 08 (9.52%) had multiple helminth infections, while 29 (16.3%) had no infection at all. According to the educational background, illiterates and semi illiterates recorded positive rates of 49.6%, 32.7%, 38.9% and 19.5% for *A. lumbricoides and T. trichiura*. The literate counterparts (civil servants) recorded positive rates of 18.18, *A. lumbricoides* (Table III). The difference in infection rate between the two groups was statistically non-significant ($P > 0.05$).

**Discussion**

The high prevalence of soil-transmitted helminthiasis in Sharad Rural Public School and the presence of *A. lumbricoides* and *T. trichiur*a are comparable with previous reports in Southern Nigeria (Adeyeba & Akinlabi, 2002; Etim *et al.,* 2002). The prevalence of ascariasis as the most common infection in this and other studies in Southern Nigeria has been observed (Ogbe & Odudu, 1990; Asaolu *et al.,* 1992; Mafiana *et al.,* 1998).

Arora et al. (1978) from Jammu and Kashmir studied the prevalence of intestinal parasitic infections and reported that 72.1% of the populations are suffering with some intestinal parasitic infection. Showakat Ahamad Wani *et al.* (2006), reported that the positive rate was 299 (78.27%) out of 382 children surveyed. Hidayatullah Tak et al (2007), obtained a prevalence rate of 78.27 %, 39.0 %, 23.82%, 15.18% and 39.26% for *Ascaris lumbricoides, T. trichura*, mixed infection, respectively, from primary school children aged 9-10 years, which is not comparable with this study.

Veeraman *et al.* (1979) reported the incidence of intestinal helminths, in which *Ascaris lumbricoides* was 46.69% and *Trichuris trichura* 3.09%. Swami *et al*. (1981) reported that the positivity rate was 870 (30.31%) out of 2870, stool samples examined.

In a related study, Ibidapo (1997) reported a prevalence of 33.3% in a cross section of Lagos population, while Otubanjo and Ebirikwe (1999) reported a prevalence of 24.5% among individuals in a rural community. High prevalence rates have been recorded for *T. trichiura* in Lagos and other southern Nigeria cities, while Mafiana (1995) and Abeokuta reported very low prevalence of 14.7% and 13.9% for *T. trichiura* and hookworm, respectively which is comparable to this study.

*A. lumbricoides* eggs are very resistant to harsh environmental conditions and air-borne. They may account for the ubiquitous nature of egg distributions and hence very high prevalence in this age group. While infections with *T. trichiura were negligible* and hookworm were absent among children, *T. trichiura* infection was the second most prevalent STH in this study with a value of 14.28%.

This study showed that the nature of the occupation of individuals influenced the infection rate. Farmers recorded high positive rates for all the STH parasites and this was similarly observed by Phiri *et al.* (2000). The high prevalence of the faeco – orally transmitted intestinal helminths (*A. lumbricoides* & *T. trichiura*) reported among the age group in this study is closely related to their habits. This is generally the school age. Lollies, food and snacks are freely purchased from hawkers and frequently shared among friends. .

Etim *et al.* (2002) and Olsen (2003) noted that un-clean hands played a vital role in the transmission of ascariasis among school children because of the dirty environment in which they played and contaminated hands were dipped into the mouth quite often. Poor sanitation, under-nutrition, inadequate personal and domestic hygiene contributed immensely to the none effectiveness of educational standard in reducing positive rates of STHs infections in this study.

Dry environmental conditions encountered during the survey period (February – May) might have contributed to low positive rates for *A. lumbricoides and T. trichiura,* since the ova of these parasites are shown to be liable to destruction due to their fragility (Ukoli, 1984). Guayatt (2000) noted that anemia arising from STH infection is often associated with reduced work output and also impaired cognitive ability, with effects on school attendance among children. Globally, a lot of efforts are made to reduce STH infections (Gwatkin & Guillot, 2000; Montressor *et al*., 2002)

For Aurangabad, it is suggested that regular treatment of school age children and others at risk groups such as pre-school children, pregnant women and special occupation groups may help avoiding the worst effects of

infection, even if there is no improvement in safe water supply or sanitation.

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*Table I: Prevalence of Soil-transmitted helminths in School childrens.*

| (Years) | No. examined | No Infected (%) | *A. lumbricoides* (%) | *T. trichiura* (%) | Mixed infection |
|---|---|---|---|---|---|
| 9-10 | 84 | 55 (65.47) | 35 (41.66) | 12 (14.28) | 08 (9.52) |

*Table II: Mean egg load (Epg) and levels of infections with helminths at Aurangabad District.*

| Age in years | | Sex | Mean/SD |
|---|---|---|---|
| 09-Oct | Mean egg Count Egg Per Gram (EPG) | Male | 2435.66±59.50 |
| | | | 7307 |
| | Mean egg Count (EPG) | Female | 2401.66±41.04 |
| | | | 7205 |
| | Total number | | 55 |
| | Cumulative Mean EPG | | 2418.66±24.041 |
| | Multiple Infections (%) | | 08 (9.52) |
| | No Infection at all (%) | | 29 (16.3) |

*Table III: Prevalence of intestinal parasites in relation to education and occupation of school children' at Aurangabad District.*

**A**

| Sr. No. | Educational Background of parents | No. Examined Children | | | No. Infected Children | | | *A. lumbricoides* (%) | *T.trichiura* (%) | Mixed infection |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | T | M | F | T | | | |
| 1 | Illiterate/ Semi-Illiterate | 16 | 10 | 26 | 14 | 08 | 22 | 13 (50.0)* | 05 (19.23) | 04 (15.33) |
| 2 | SSC/ HSC | 12 | 07 | 19 | 08 | 07 | 15 | 10 (52.63) | 03 (15.78) | 02 (10.52) |
| 3 | Diploma/ Degree/above | 06 | 03 | 09 | 02 | - | 02 | 02 (22.22) | -- | -- |

**B** Occupation of parents

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Farming | 13 | 06 | 19 | 10 | 04 | 14 | 08 (42.10) | 04 (21.05) | 02 (10.52) |
| 2 | Civil Servant | 06 | 05 | 11 | 01 | 01 | 02 | 02 (18.18) | -- | -- |

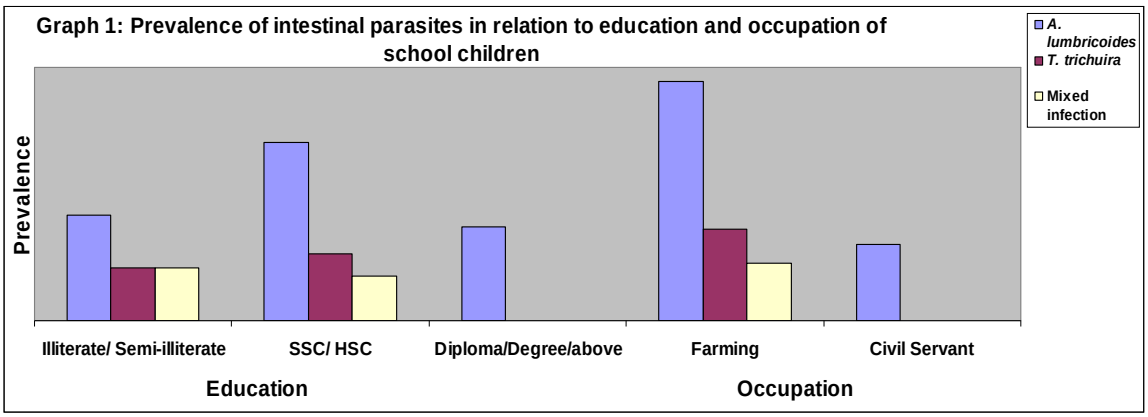


Fig. 1.