Original Research Article

FREQUENCY OF INTESTINAL WORM INFESTATION AMONG SCHOOL GOING CHILDREN IN KARACHI-PAKISTAN.

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ABSTRACT

In this study, the result findings of the current study indicated that out of 216 children including 120 male children and 96 female children participated in the study, 167 children were found positive with various intestestinal worms. The frequency of worm infestation was found 77.31%. Among them the positive worm infestation was more in female children (64%). Out of 167 positive subjects, *Ascaris lumbricoides* frequency 53.29% was highest among all other worms and was present in both single and mixed infestations. Similarly, a bit high frequency was also noted in case of for *Hymenolepis nana* 20%, *Trichuris trichura* 10% and lowest frequency was noted in *Taenia saginata* (0.59%). However, most of the positive cases showed single infestation as compared to only 06 cases (3.59%) of mixed infestation.

***Keywords*:** *Ascaris lubricoides*, Helminths, Intestinal parasite, Children infestations

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INTRODUCTION:

Intestinal worm infestation is one of the major childhood health problems in developing countries [1]. Developing countries spent about 3.76 % of total annual budget for health in year 2010 [2]. There are worldwide public health infection threats that affect over two billion people in under developed nations of the tropics and subtropics are affected by intestinal protozoans and helminthes [3]. Intestinal helminth infections are most common among school age children and tend to be high in the age group (5-15) [4]. Efforts to control parasitic infections in developing countries typically focus on periodic anthelminthic treatments targeted at specific risk groups, *eg*, schoolchildren. Nevertheless, re-infection in endemic areas is continuous [5]. Intestinal worrns which are known to be a potential health hazard and could be found in this area are as follows: [6,7,8].

1. Roundworm: Ascaris lumbricoides
2. Hookworm: Ancylostoma duodenale, Necator americanus, Ternidens deminutus

3. Whipworm: Trichuris trichiura
4. Pin worn: Enterobius vermicularis
5. Tape worn: Taenia saginata, Taenia solium, Hymenolepis nana
6. Threadworm: Strongyloides stercoralis.

In children, infection leads to profound alterations in intellectual, cognitive and physical growth. The disease is most prevalent among the lower social groups and also in children whose parents are mostly contact with the contaminated soil while working outdoors [9]. This practice encourages the penetration of the infective larvae present in the soil. Infection is by swallowing infective eggs in the case of *Ascaris lumbricoides*, *Trichuris trichuria* or by infective larva penetrating the skin in the case of hookworm and *Strongyloides stercoralis* [10].

MATERIAL AND METHODS

Area setting and subjects:

One hundred and sixty school going children between age group 5–12 years of both sexes were included in the study. Before conducting the study, an official written permission was taken from the head of the schools. For this purpose, five schools were randomly selected located in the area Landhi and adjacent area-Karachi-Pakistan. Parents were also kept into confidence regarding the study. The samples were collected in two months between Febuary -March 2012.

Collection of stool samples and Microscopic analysis:

Parents were asked and requested to reach school early and to bring early morning stool specimens in the container. Some other parameters were also studied side by side. Samples were taken randomly in children of 1-6 years old. The preformed questionnaire was lo filled up containing various variables including residential area condition (established or unestablished), age, gender, socioeconomic conditions, source of drinking water (boring system, govt. water supply or filtration plant), hygienic status. Single stool sample was taken as children were asymptomatic for worm disease. Stool specimens were examined under direct light microscopy of smear in normal saline and iodine preparation, concentration method was used wherever required. The laboratory diagnosis of smear for parasite infestation was based on demonstration of ova, cysts or trophozoites.

Table 1: Demographic characteristics of School going children included in the study:

Demographic Characteristics	
Gender	Male (n=120)
	Female (n=96)
Residential area	Established (n=146)
	Un established (n=70)
Socioeconomic status	Poor (n=50)
	Rich (n=166)
Hygienic condition	
	Satisfactory (n=184)
	Good (n=32)
Source of drinking water	Boring system (n=50)
	Govt. supply (n=143)
	Filtration plant (n=23)

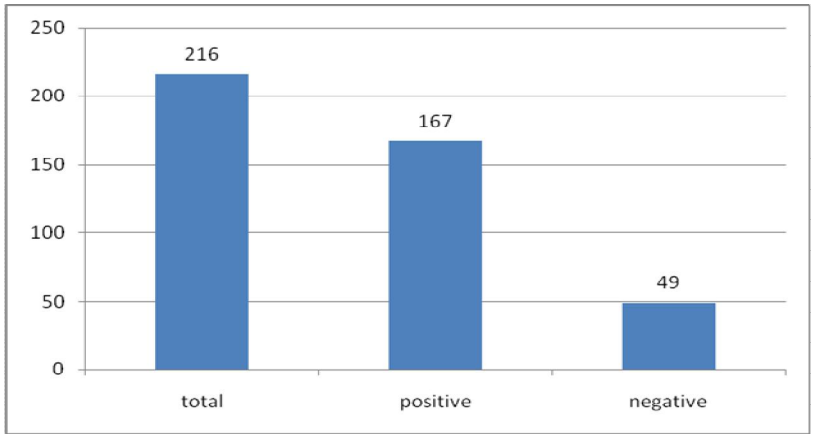


Figure 1: Number of positive and negative worm infestation cases among School going children:

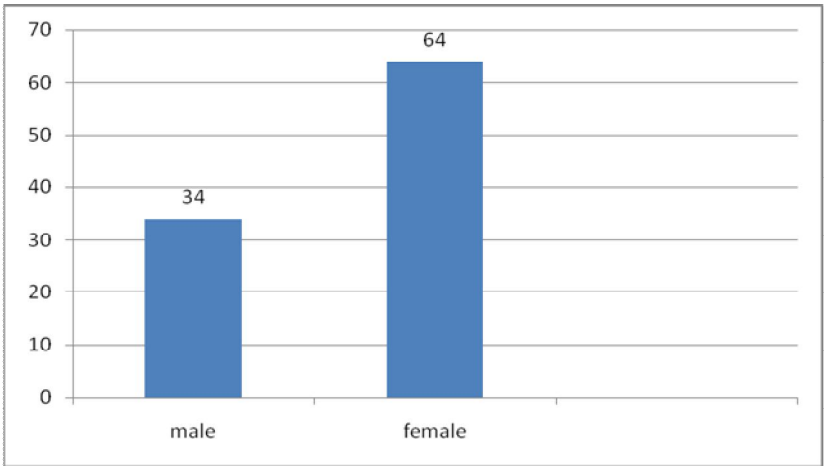
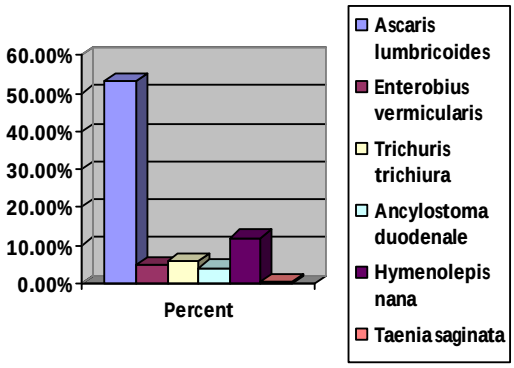


Figure 2: Percentage distribution of worm infestation cases among School going children in both male and female gender.

Table 2: Percentage distribution and frequency of various worm infestations among School going children:

Worms identified	Frequency	Percent
Ascaris lumbricoides	89	53.29%
Enterobius vermicularis	8	4.79%
Trichuris trichiura	10	5.98%
Ancylostoma duodenale	7	4.19%
Hymenolepis nana	20	11.97%
Taenia saginata	1	0.59%



RESULT AND DISCUSSION

Humans are the only significant hosts of intestinal worms hence transmitted by fecal pollution of the soil under favorable climatic condition, the larvae develops to its infective stage in the soil [11]. Despite chemotherapy and control measures, intestinal worms infection rank among the most wide spread of soil transmitted intestinal parasites that affect significant proportion of the world children [12]. The disease can affect child development, education achievements, reproductive health and economic development [13]. In the study undertaken, out of 216 children participated in the study, 167 children were found positive with various intestestinal worms while 49 were found negative as indicated in Fig 1. The demographic data reflects 120 male children and 96 female children were participated in the study. Among them, 146 belonged to established family background while 70 were not. Moreover, 50 children belong to poor families while; 166 reported to have moderate family background. As far as socioeconomic conditions were concerned, 184 children had satisfactory status and 32 had good status. In response to drinking water source, 143 rely upon regular water supply, 50 children reported boring water system while; 23 drink via filtration water source as indicated in Table 1. Among them the positive worm infestation was more in female 64% female children as mentioned in Figure 2. The frequency of worm infestation was found 77.31%.Out of 167 positive subjects, *Ascaris lumbricoides* frequency 53.29% was highest among all other worms and was present in both single and mixed infestations. Similarly, a bit high frequency was also noted in case of for *Hymenolepis nana* 20%, *Trichuris trichura* 10% and lowest frequency was noted in *Taenia saginata* (0.59%) as indicated in Table 2. However, most of the positive cases showed single infestation as compared to only 06 cases (3.59%) of mixed infestation as indicated in Figure 3. Our research findings endorse and support other studies conducted in other parts of the world as well as in Pakistan. Some studies show that the prevalence of worms infestation as 25% - 91% in some parts of the world [14]. It has been observed that worm infestation is not only confined to certain geographical areas of the world but is an emerging problem globally even an increasing number of cases being reported from Europe and the USA [15]. Worms infestation in some parts of the world were reported as 31.8% in Turky [16], in South Africa [17], 19.3% in Iran 47.2% [18] in Nigeria 49.7% [19] and 44% in Sudan [20].

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