

Prevalence of Intestinal Parasite Infection in Primary School Children in Elengaz Area, Khartoum, Sudan

Abdelsafi A Gabbad¹, Mohammed A Elawad²

^{1,2}Umm Alqura University, SAUDI ARABIA.

¹ safigabbad@yahoo.com, ² wadelawad32@yahoo.com

ABSTRACT

A cross sectional study was carried out in Elengaz area, Khartoum the capital of Sudan to identify the prevalence of intestinal parasite infection in primary school children. Out of total number 3842 children, 500 were selected from four different primary schools. Stool specimens were collected and examined by direct microscopy, concentration method of Wills and direct centrifugal floatation (D.F.C method of Clyton Lane). The overall prevalence of intestinal parasite infections was 64.4%. The common intestinal parasites were *Giardia lamblia*, *Hymenolepis nan*, *Taenia saginata*, *Entrobilus vermicularis*, *Schistosoma mansoni* and *Entamoebia histolytica*. Most of infected children were suffering from single infection and two types of parasite. Many cases were being subclinical cases while the rest of infected children suffered from different clinical features associated with intestinal parasites such as nausea, abdominal pain, diarrhoea, flatulence, mucus, constipation, perianal itching and bloody stool. The prevalence of intestinal parasite infection was high in primary school children, however a considerable number of cases were asymptomatic.

Keywords: Intestinal, parasite, children, primary, school

INTRODUCTION

Intestinal parasites constitute major health problems, especially in the tropical and sub-tropical regions (Damen, et al., 2011). In developing countries, it is estimated that some 3.5 billion people are affected, and that 450 million are ill as a result of these infections, the majority being children (Teklu et al., 2013). In other estimation about one quarter of the world's population is infected and about 80% of all deaths annually are due to infectious and parasitic diseases in developing countries (Faten, 2008). The reason behind the high prevalence of these infestations is closely correlated to poverty poor environmental hygiene and impoverished health services (Rashid et al., 2011). Intestinal parasite infestations are more frequent among school age children, and they tend to occur in high intensity in this age group (Sehgal et al., 2010).

Due to this finding many studies on intestinal parasites were conducted in school children.

The prevalence of intestinal parasites is more in displaced camp due to poor sanitation, primitive standard of living and personal habits of cleanliness (Mamoun et al., 2009).

The main intestinal parasites that infect man are *Entamoeba histolytica*, *Balantidium coli*, *Giardia lamblia*, *Isospora belli*, *Cryptosporidium species*, *Taenia saginata*, *Taenia solium*, *Hymenolepsis nana*, *Dipylidium caninum*, *Diphyllobothrium latum*, *Fasciolopsis buski*, *Metagonimus yokogawai*, *Heterophyses spp*, *Ascaris lumbricoides*, *Trichuris trichiura*, *Entrobilus vermicularis*, Hook worms, *Strongyloides stercoralis* and *Schistosoma mansoni* (Mamoun et al., 2009).

Intestinal parasite infections lead to several complications, however, most of cases were being asymptomatic carriers and usually tend to be chronic. Helminthic infestation lead to

nutritional deficiency and impaired physical developments which will have negative consequences on cognitive function and learning ability (Rashid et al., 2011).

MATERIALS and METHODS

Study Area and Study Population

Elegaz area is located in the south part of Khartoum the capital of Sudan. It is a vulnerable area lacks adequate health services such sanitation, network of safe drinking water, and proper solid waste disposal. Children in four primary schools in the area were the study population. Using certain statistical equation, 500 children out of total number 3842 were determined as sample size and selected from class rooms by systematic random sample.

Interview

Children were interviewed and asked about the symptoms that they feel.

Specimen Examination

Specimens of faecal matter were collected in early morning and transferred to Department of Parasitology, National Health Laboratory at Khartoum. The specimens were examined using direct microscopy examination, concentration method of wills and direct centrifugal floatation (D.F.C method of Clyton Lane).

RESULTS

Table 1. The prevalence of intestinal parasite infection among primary school children in Elegaz area, Khartoum, Sudan

| <i>Infection</i> | <i>No</i> | <i>%</i> |
|------------------|-----------|----------|
| Infected | 322 | 64.4 |
| Not Infected | 178 | 35.6 |
| Total | 500 | 100 |

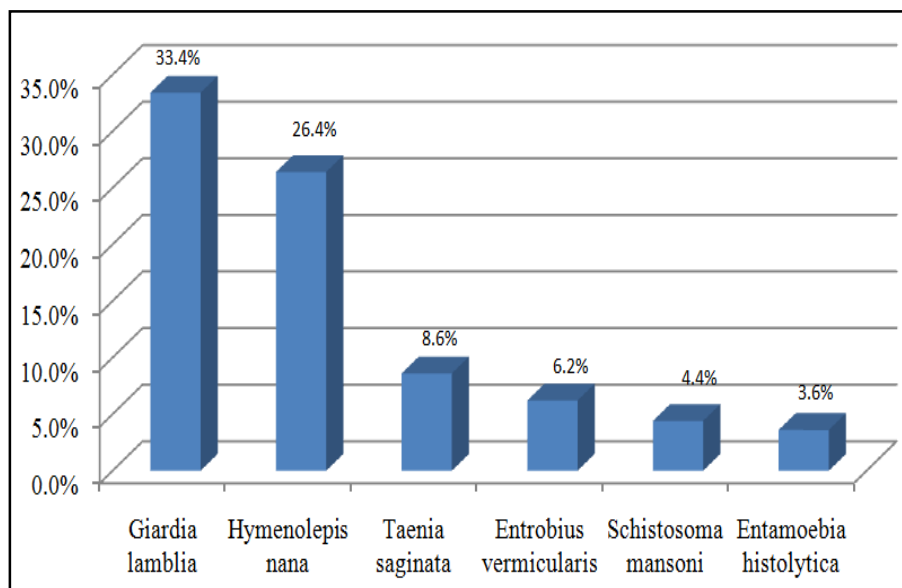


Figure 1. Common intestinal parasites in primary school children in Elegaz area, Khartoum, Sudan.

Table 2. Type of intestinal parasite infections in primary school children in Elengaz area, Khartoum, Sudan

| Type of Infection | No | % |
|-------------------|-----|------|
| Single Infection | 238 | 47.6 |
| Double Infection | 79 | 15.8 |
| Triple Infection | 5 | 1 |
| Not Infected | 178 | 35.6 |
| Total | 500 | 100 |

Table 3. Clinical features of intestinal parasite infections in primary school children in Elengaz area, Khartoum, Sudan

| Clinical Feature | No | % |
|------------------|-----|------|
| Nausea | 106 | 32.9 |
| Abdominal Pain | 105 | 32.6 |
| Diarrhoea | 70 | 21.7 |
| Flatulence | 50 | 15.5 |
| Mucus | 43 | 13.4 |
| Constipation | 20 | 6.2 |
| Perianal Itching | 20 | 6.2 |
| Bloody Stool | 18 | 5.6 |

The prevalence of intestinal parasite infection was 64.4% in table 1. The common intestinal parasites in primary school children in Elengaz area were *Giardia lamblia* (33.4%), *Hymenolepis nan* (26.4%), *Taenia saginata* (8.6%), *Entrobilus vermicularis* (6.2%), *Schistosoma mansoni* (4.4%) and *Entamoebia histolytica* (3.6%) as shown in figure 1. Table two illustrated that Most of infected children were suffering from single infection (47.6%), double infection i.e. two types of parasite (15.8%) and triple infection i.e. three types of parasite (1%). In table three, the common clinical features were nausea (32.9%), abdominal pain (32.6%), diarrhoea (21.7%), flatulence (15.5%), mucus (13.4%), constipation (6.2%), perianal itching (6.2%) and bloody stool (5.6%).

DISCUSSION

Intestinal parasite infections are public health problem worldwide, particularly in developing countries. Children were bearing the brunt of infections. In the present study, the overall prevalence was 64.4% which is high percentage and may attributed to the primitive environmental condition of the area in addition to poor quality of life and behaviour. The situation is similar to different areas in the region, on example way in Ethiopia, Teklu et al (2013) found that overall prevalence of intestinal parasitic infections (single and multiple

infections) was 39.9% in a community-based study conducted in area where is located at 505 kms South of Addis Ababa. Also in a study carried out in primary school children in Bareilly District, the prevalence of intestinal parasite was 22.81% (Rashid et al., 2011). Prevalence of Intestinal parasites was 42.8% in primary school children in Chandigarh, North India (Sehgal et al., 2010). Also in primary school children in rural Peshawar, approximately 66% were found positive for various intestinal helminths infestation (Ikram et al., 2009). These and other studies give the evidence of spread of intestinal parasites among school children in different regions.

The findings of this study indicated that the common intestinal parasites in primary school children were *Giardia lamblia*, *Hymenolepis nan*, *Taenia saginata*, *Entrobilus vermicularis*, *Schistosoma mansoni* and *Entamoeba histolytica*, while Rashid et al (2011) reported the most prevalent intestinal parasites were *Ascaris lumbricoides*, *Giardia lamblia* and *Entamoeba histolytica*. Gashaw et al (2008) found the prevalent intestinal parasites were *A. lumbricoides*, *S. stercoralis*, *T. trichiura*, hookworm, and *G. lamblia*. *Giardia lamblia* was more frequent (33.4%) than other intestinal parasites. Tariq (2010) reported that in children in Thi- Qar , Southern Iraq, the prevalence of *Giardia lamblia* was 23.7%. These parasites are often associated with contaminated water and food.

Although the symptoms of intestinal parasite infections are a lot, many cases remained subclinical while they release parasitic stages in stool. Several reports have been published on parasitic infection in Saudi Arabia documented a prevalence rate from 9.4 to 47.4 in symptomatic and asymptomatic children (Faten, 2008). The clinical features associated with intestinal parasites were nausea, abdominal pain, diarrhoea, flatulence, mucus, constipation, perianal itching and bloody stool.

CONCLUSION

The prevalence of intestinal parasite infection in primary school children was high and many children were infected with more than one parasite, this finding is similar to other results in different areas. However a considerable number of cases were remaining subclinical.

REFERENCES

- [1] Damen, J. G., Luka, J. & Lugos, M. (2011). Prevalence of Intestinal Parasites among Pupils in Rural North Eastern, Nigeria. *Niger Med J*, 52(1), 4-6.
- [2] Faten, A. A. (2008). Is intestinal parasite infection still a public health concern among Saudi children. *Saudi Med J*, 29(11), 1630-1635.
- [3] Gashaw, A., Afework, K., Feleke, M., Moges, T. & Kahsay, H. (2008). Prevalence of Bacteria and Intestinal Parasites among Food-handlers in Gondar Town, Northwest Ethiopia. *J Health Popul Nutr.*, 26(4), 451-455
- [4] Ikram, U., Ghulam S., Sabina, A. & Muhammad, H. (2009). Intestinal Worm Infestation In Primary School Children In Rural Peshawar. *Gomal Journal of Medical Sciences*, 7(2), 132-136.
- [5] Mamoun, M. M., Abubakr, I. A. & ElMuntasir T. S. (2009). Frequency of intestinal parasitic infections among displaced children in Kassala Town. *Khartoum Medical Journal*, 2(1), 175-177.
- [6] Rashid, M. K., Joshi, M., Joshi, H. S. & Fatemi, K. (2011). Prevalence of Intestinal Parasites among School Going Children in Bareilly District. *NJIRM*, 2(1), 2230 – 9969.
- [7] Sehga, I. R., Gogulamudi, V. R., Jaco, J. V. & Atluri, V. (2010). Prevalence of intestinal parasitic infections among school children and pregnant women in a low socio-economic area, Chandigarh, North India. *RIF*, 1(2), 100-103.
- [8] Tariq, K. H. (2010). Prevalence And Related Risk Factors For Giardia Lambliia Infection Among Children with Acute Diarrhea In Thi- Qar , Southern Iraq. *Thi-Qar Medical Journal*, 4(4), 68-74.
- [9] Teklu, W., Tsegaye, T., Belete S. & Takele, T. (2013). Prevalence of intestinal parasitic infections among high land and low land dwellers in Gamo area, South Ethiopia. *BMC Public Health*, 13(February), 151.