



Incidence of Intestinal protozoa infections among School going children

Dr R.Venkatajothi

Former, Senior Lecturer, Department of Microbiology, Faculty of Medicine
AIMST University, Kedah Darul Aman, Malaysia.

*Corresponding author: drrvjothi10@gmail.com

Abstract

Objective:

Intestinal parasitic infections occurred worldwide and have been described as one of the major cause of illness and disease which commonly occurs in both humans and animals. The principal aim of this study is determining the prevalence rate of intestinal parasitic infections among School going children's and to estimate the group more affected.

Methods:

This cross sectional study includes 620 School going children. There are two fresh faecal samples were collected from each child, which were examined by direct wet mount, Formalin-acetone sedimentation technique and modified Acid fast staining.

Results:

In total, 108 (17.42%) of 620 children harboured at least one type of intestinal parasite and 512 (82.58%) of children haven't infections. The prevalence rate ranged in males (56%) was more than females (44%). The most prevalence rate was reported in age groups 4 to 7 years old, and the lowest prevalence was related to age group 8 to 11 years old. The pathogenic intestinal protozoa *Entamoeba histolytica* were the most predominant isolates followed by *Giardia lamblia* among School children.

Conclusion:

This study demonstrates significant burden of intestinal protozoa and highlights the need for preventive and intervention measures such as health education, good sanitation, personal hygiene, proper cooking of food, safe drinking water, uses of appropriate anti parasites drugs and use of foot wears especially by the rural area population.

Keywords: Intestinal protozoa, *Entamoeba histolytica*, *Giardia lamblia*, Children

Introduction

Intestinal parasites are widely prevalent in developing, under developing countries and it is estimated that as much as 60% of the world's population is infected with gut parasites, which

may play a role in morbidity due to intestinal parasitic infections. These infections are highly endemic in populations with low socio economic status, poor hygiene, oral faecal transmission,

favouring larval skin penetration, contaminated water supplies and high population densities⁸.

School children aged 4 to 12 years are at increased high risk of intestinal parasitic infections. Approximately 3.5 billion people are infected by intestinal parasites and around 450 million children are ill due to these infections¹⁴. Intestinal parasitic infections are causes public health problem, as they cause iron deficiency anaemia, growth retardation and other physical and mental problems. The modes of Transmission of parasitic infection are mainly through soil and water⁶.

These parasites are important underlying agents of gastrointestinal disorders such as dysentery, diarrhoea, lack of appetite, vomiting, abdominal distension and sometimes mentally related disorders⁴. Infection with pathogenic intestinal protozoa especially *Entamoeba histolytica* and *Giardia intestinalis* result in considerable gastrointestinal morbidity, malnutrition and mortality worldwide, particularly among young children in developing countries³. It has been estimated that *E. histolytica*, the causative agent of amoebiasis, kills between 40,000 and 100,000 people each year worldwide¹⁰. Amoebic diarrhea is responsible for high morbidity and mortality among children under the age of five in developing countries. Poor diet and unsafe water supply in households contributes to the prevalence of diarrhea.

Giardia intestinalis affects an estimated 28.5 million people in China every year. The prevalence of *G. intestinalis* has been estimated at 20–30% in developing countries². Giardiasis is transmitted by the fecal-oral through direct person-to person contact or indirect through ingestion of fecally contaminated water or food. It's characterized by diarrhea, abdominal cramps, bloating, weight loss, and malabsorption. *Cryptosporidium* is another major causal agent of diarrhoea, primarily affecting immunocompromised individuals such as those infected with HIV¹. *Blastocystis hominis* is a common intestinal protozoan and its pathogenicity is still not clear⁹. Lack of access to

clean water, sanitation and hygiene are strong drivers for infection with intestinal protozoa¹⁵.

The global deaths due to diarrheal diseases in developed countries had declined progressively due to advanced health technologies and reliable water supply. In Africa, the situation of diarrheal infections increasing highly, it is the second leading cause of death among the five major killer diseases of children^{11, 12, 13}. Therefore anyone can get intestinal parasitic infections, but it tends to occur more often in poor hygiene, illiteracy, poverty, insufficient water treatment, individuals who drink improperly, improper cooking, and with institutional facilities etc. Thus, the purpose of this study was to determine the prevalence rate of intestinal parasitic infections among School going children and to estimate the group more affected in the rural area of Dar-Es-Salaam in Tanzania.

Objectives of the Study

The objective of this study was to analysis the prevalence of intestinal parasitic infection among School going children and to estimate the group more affected in the rural area of Dar-Es-Salaam in Tanzania.

Materials and Methods

This Cross sectional study was conducted in Luqman Islamic Seminary Secondary School children in rural area of Dar-Es-Salaam in Tanzania were taken up intestinal parasitic identification. This study includes 620 School going children (330 Boys and 290 Girls) and their age groups are 4 to 11 years old (**Table 1**). Two fresh faecal samples were collected from each child in wide mouthed plastic containers with identification numbers and names. Microscopic examination of the stool samples for trophozoites, cysts, ova of intestinal were examined immediately by direct wet mount using Saline and Iodine. The samples further proceed to concentration techniques by Formalin-acetone sedimentation method and modified Acid fast staining using alcohol fixed smear would be done for identifying for *Cryptosporidium* parasites⁷.

Table 1. Gender among School children

| S. No | Gender | Total Children n = 620 | Percentage (%) |
|-------|--------|---------------------------|----------------|
| 1. | Boys | 330 | 53% |
| 2. | Girls | 290 | 47% |

Results and Discussion

This cross-sectional study was performed on 620 School going children. Of the 620 cases, 330 (53%) were males and 290 (47%) were females. The prevalence rate of gut parasite infection was 108 (17.42%) and 512 (82.58%) of children haven't infections (Table 2). The most prevalence rate was reported in age groups 4 to 7 years old, and the lowest prevalence was related to age group 8 to 11 years old (Table 3). The prevalence rate ranged in males (56%) was more than females (44%) (Figure 1). In this study showed

intestinal parasite *Entamoeba histolytica* were the most predominant isolates found in both boys (31%) and girls (26%), followed by *Giardia lamblia* were found (13%) boys, (8%) girls and *Entamoeba coli* were found (56%) boys, (66%) girls students (Figure 2 & 3). *Entamoeba coli* is a non-pathogenic species of *Entamoeba* that frequently survive as a commensal parasite in the human gastrointestinal tract. Hence, *Entamoeba histolytica* were the most predominant isolates followed by *Giardia lamblia* among School children.

Table 2. Prevalence and intensity of intestinal parasites among School children

| S. No | Contents | Total Numbers | Percentage (%) |
|-------|---------------------------------|---------------|----------------|
| 1. | Total case study | 620 | 100% |
| 2. | Presence of intestinal protozoa | 108 | 17.4% |
| 3. | Non intestinal protozoa | 512 | 82.6% |

Table 3. Parasitic positivity with the age (n = 108)

| S. NO | Student Age Group | Total Boys n = 61 | Total Girls n = 47 |
|-------|-------------------|----------------------|-----------------------|
| 1. | 4 - 5 | 31 | 26 |
| 2. | 6 - 7 | 19 | 15 |
| 3. | 8 - 9 | 8 | 5 |
| 4. | 10 - 11 | 3 | 1 |

Figure 1.

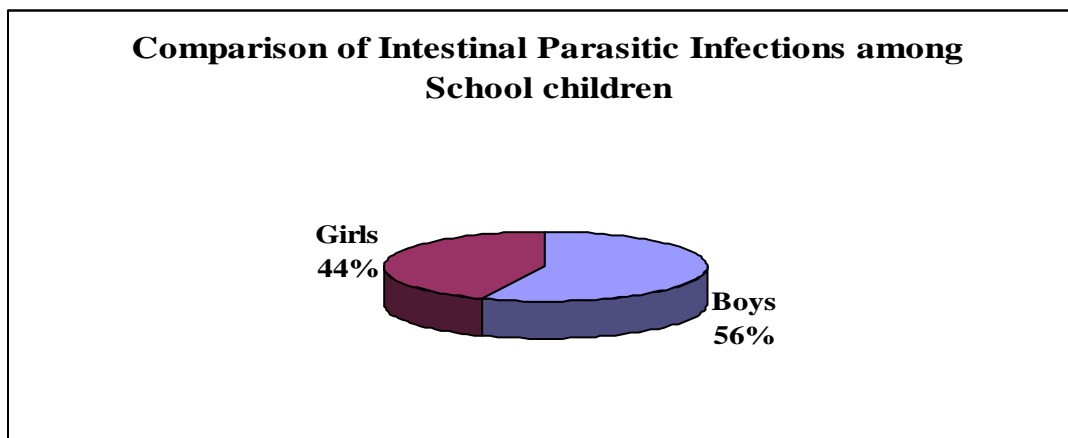


Figure 2.

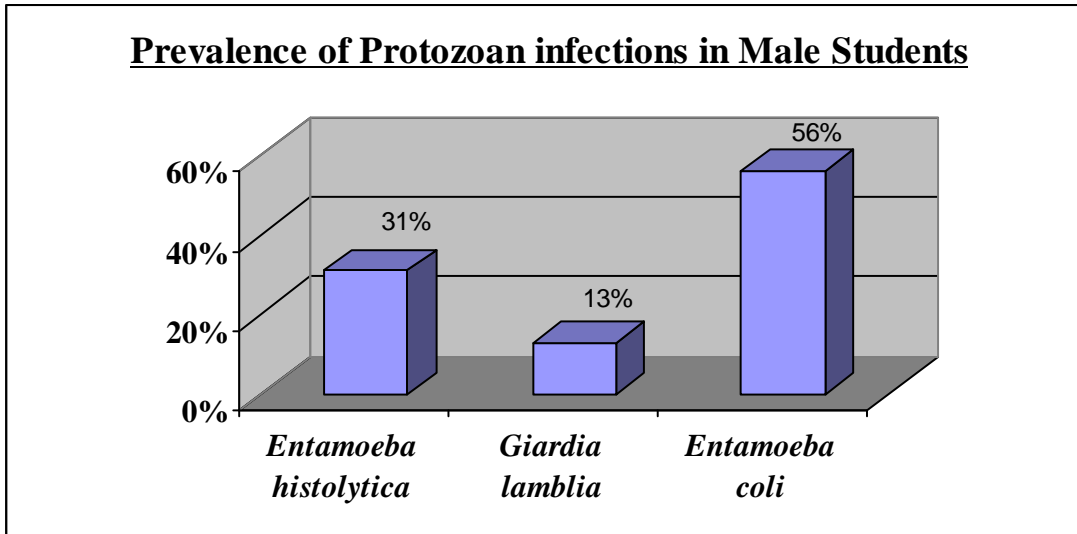
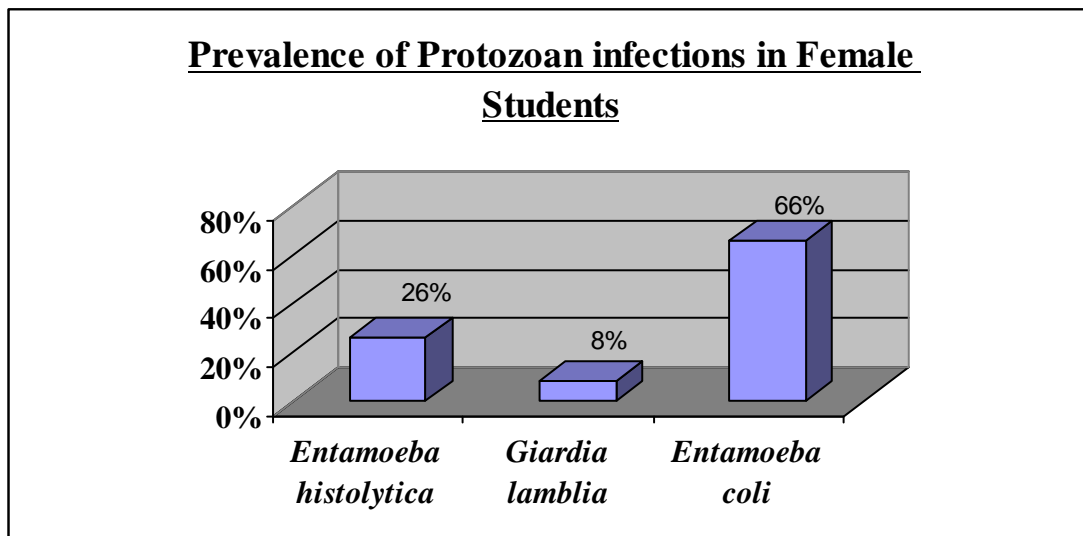


Figure 3.



All age groups are affected in epidemic areas but children are infected more frequently than adults. The results also illustrate that the infection occurred more in younger children below 7 years old than in older children. Further, the comparison result showed that male children have more susceptible to parasitic infections than the female children. Early identification of abdominal symptoms helps in the early detection of parasitic infection which helps in effective treatments those who infected parasitic infections. It's necessary to improvement of sanitation and provision of clean water. One of the important complications of intestinal parasitic infestation is malnutrition,

which in turn leads to underweight and also prone for many other infections.

According to this study and other studies that carried out on children, the prevalence of Ameobiasis, Giardiasis and intestinal parasite infections in School children could be due to the transmission of disease, and lack of awareness parents and teachers about the role of personal hygiene in controlling the disease. Hence, by learning the basics of personal hygiene and conduct periodic examinations of children and staff in Schools, incidence of parasitic infections Ameobiasis and Giardiasis can be controlled.

Conclusion

This study shows that intestinal protozoa are prevalent in high magnitude among School children. This study results also shows that pathogenic *Entamoeba histolytica* were the most predominant isolates found among School children, especially male children have most prone to parasitic infection than the female children. This study demonstrates the significant burden of intestinal protozoa and highlights the need for preventive and intervention measures such as educating School children about personal hygiene, health awareness in public, adequate water treatment, proper cooking, use of foot wears and use of appropriate anti parasites drugs. The impact of each measure can be maximized through a health education programme directed at School children in particular and at community in general.

References

1. Davies AP, Chalmers RM: Cryptosporidiosis. BMJ. 2009, 339: b416810.1136/ bmj.b4168.
2. Escobedo AA, Cimerman S: Giardiasis: a pharmacotherapy review. Expert Opin Pharmacother. 2007, 8: 18851902. 10.1517/14656566.8.12.1885.
3. Feng Y, Xiao L: Zoonotic potential and molecular epidemiology of Giardia species and giardiasis. Clin Microbiol Rev. 2011, 24: 110140. 10.1128/CMR.0003310.
4. Garcia, L.S.H. (2004) Diagnostic Medical Parasitology, 4th edition, ASM Press 2004.
5. Hellard ME, Sinclair MI, Hogg GG, Fairley CK. Prevalence of enteric pathogens among community based asymptomatic individuals. J Gastroenterol Hepatol 2000;15(3):290-3.
6. Jasti A, Ojha SC, Singh YI. (2007) Mental and behavioural effects of Parasitic infections: a review. Nepal Med Coll J. 9[1]: 50-6.
7. Mackie and McCartney Textbook of Practical Medical Microbiology, 14th edition.
8. Sayyari, A.A., Imanzadeh, F., Bagheri, Y.S.A., Karami, H. & Yaghoobi, M. (2005) Prevalence of intestinal parasitic infections in the Islamic Republic of Iran. East Mediterranean Health Journal 11, 377 - 383.
9. Stensvold CR, Lewis HC, Hammerum AM, Porsbo LJ, Nielsen SS, Olsen KE, Arendrup MC, Nielsen HV, Mølbak K: Blastocystis: unravelling potential risk factors and clinical significance of a common but neglected parasite. Epidemiol Infect. 2009, 137: 16551663. 10.1017/S0950268809002672.
10. Stanley SL: Amoebiasis. Lancet. 2003, 361: 10251034. 10.1016/S01406736 (03) 128309.
11. UNICEF. (2008). Annual health bulletin. Vol 13.
12. World Gastroenterology Organization Global Guidelines (2012). Acute diarrhea in adults and children: a global perspective.
13. World Health Organization (2013). The world health report 2005— Make every mother and child count. WHO Press. Geneva, Switzerland.
14. World Health Organization. Control of Tropical Diseases. Geneva, Switzerland. WHO. 1998.
15. Yoder JS, Harral C, Beach MJ: Giardiasis surveillance United States, 2006–2008. MMWR Surveill Summ. 2010, 59: 1525.

How to cite this article:

R.Venkatajothi (2017). Incidence of Intestinal protozoa infections among School going children. Int. J. Curr. Res. Med. Sci. 3(4): 54-58.

DOI: <http://dx.doi.org/10.22192/ijcrms.2017.03.04.008>

Access this Article in Online



Website:
www.ijcrims.com

Subject:
Medical Biochemistry

Quick Response Code