Investigation of Intestinal Schistosomiasis among School Children in Nteje Town, Oyi Local Government Area of Anambra State

Anyaegbunam, Lucy C
Department of Biological Sciences,Chukwuemeka Odumegwu Ojukwu University, Anambra State,Nigeria
lcanyaegbunam@yahoo.com

Ilodiuba Maryblessing C
Department of Biological SciencesChukwuemeka Odumegwu Ojukwu University, Anambra State, Nigeria
maryblessing@yahoo.com

Abstract

Intestinal parasitic infections are important public health *challenges among underprivileged communities. An investigation of Intestinal Schistosomiasis was carried out in Nteje, Oyi Local Government Area of Anambra State between June and September 2014. Structured questionnaires based on knowledge, attitude and practices (KAP) was used to elicit information from 200 school children in 10 schools in the town. 34(17%) had knowledge of intestinal Schistosomiasis, 123(61.5%) collect water regularly from the water bodies and 107(53.5%) swim frequently in the water bodies. 200 stool samples were examined considering the physical appearance and by wt mount using physiological saline on slides and examined under the light microscope. 20(10.0%) were positive for the infection. In age related infection, 10-14 age group had the highest infection of 5.0% while in the infection according to sex, males had 8.0% prevalence and females 2.0%. In the infection intensity, 14(7.0%) had light infection and 6(3.0%) had moderate infection. The exposure of the school children to intestinal schistosomiasis in the study area can be attributed to low socio-economic status, poor environmental sanitation, poor parental care and ignorance. This parasitic infection will continue to be a threat to health if appropriate actions are not taken to check its transmission.*

Key words: Intestinal, Schistosomiasis. Swimmer's itch, attitudes, water bodies

INTRODUCTION

Schistosomiasis also known as Biharzia, is a water-borne parasitic disease that affects 200 million people and poses a threat to 600 million in more than 76 countries (WHO, 1993). It is caused by several species of trematodes (flatworms) belonging to the genus Schistosoma.

The disease is common among children in developing countries as they are more likely to play in infected water (Kvalsvig and Becker, 1988). Other high risk groups include farmers and fishermen. Infection is strongly associated with limited resource living conditions that favour freshwater exposure, that is the daily use of streams and ponds for activities such as washing, swimming, irrigation and unprotected sewage contamination (King, 2001).The disease may infect urinary tract (Urinary schistosomiasis) or intestines (Intestinal schistosomiasis).

The species of Schistosoma that infect man include, *Schistosoma mansoni* and *Schistosoma intercalatum* which cause intestinal schistosomiasis, *Schistosoma haematobium* causes urinary schistosomiaisis. *Schistosoma japonicum* and *Schistosoma mekongi* cause Asian intestinal schistosomiasis. *Shistosoma mansoni* is widely spread in many African countries including Nigeria (CDC, 2013).

In intestinal schistosomiasis, the common symptoms include thickening of the bowel wall, ulceration, inflammation, portal hypertension, abdominal pain, fever, diarrhea and bloody stool (Chen and Mott 1989). Other symptoms are generalized lymphadenopathy,(katayama fever), irritation and skin rash at the site of cercarial penetration (swimmer's itch). The severity and manifestation of intestinal schistosomiasis is dependent on the duration and intensity of infection, location of egg deposition and concurrent infection.

Cumulative impact of tissue damage can lead to organ failure and consequent severe morbidity and mortality (Warren, 1978). An estimated 12,000 to 200,000 people die annually from schistosomiasis (Thetiot *et al*, 2013).

This study tends to investigate the prevalence of intestinal schistosomiasis among school aged children in Nteje, Oyi Local Government Area of Anambra State. This is informed by their livelihood and personal habits which involved daily and frequent contact with contaminated water.

MATERIALS AND METHODS

Study Area

Nteje is the headquarters of Oyi Local Government Area of Anambra State (6.43ºE and 6.14ºN). It has 17 rural communities. The indigenes are predominantly Ibo, they are hardworking and successful farmers. The town is surrounded by many small water bodies which act as their source of water for domestic use and bathing. This however informed the investigation into the parasitic infection.

Collection of samples

For ethical consideration, the head of communities, principals and headmasters of the schools were approached and enlightened on the need and benefits of the work for permission. Also written informed consent was obtained from parents and guardians of the school children. Structured questionnaires on knowledge, attitude and practice (KAP) on intestinal schistosomiasis were administered to the school children. 200 randomly selected children were given sterile wide mouth containers with labels; name, age, sex, school and community. They were instructed to collect fresh stool sample at home and return for examination at the laboratory the following day.

Parasitological Techniques

The techniques applied include; direct macroscopic examination of stool sample for colour, appearance consistency, blood, mucus/pus and adult parasite.

Floatation technique as described by Chessbrough (2005) was used for faecal sample analysis. For each faecal sample, 2mg of it was placed on grease free clean slide and a drop of normal saline covered with cover slip and examined under light microscope. This was done under the supervision of an experienced medical laboratory technician. Diagnosis was on the basis of morphology. The number of *Schistosoma mansoni* eggs found in the stool samples were recorded as; scanty(1-3 eggs), few(4-10 eggs), moderate(11-20eggs), many((21-40), and very many(> 40) per preparation.

Statistical analysis

The data obtained in the study were entered into excel spread sheet and analysed using SPSS window version 2007. Infection rates were stratified into no infection, light, moderate, heavy and very heavy intensities. Age and sex related prevalence were analysed using one way ANOVA statistical tool ($P<0.05$).

RESULTS

Among the 200 school children involved in the study 34(17%) have knowledge of intestinal schistosomiasis while 166(83%) had no idea. For predisposing factor, 162(81%) was their hands after defaecation, 123(61.5%) collect water regularly from the water bodies, 12(6.0%) had blood in their faeces and 26(13%) had itching sensation after swimming (Table 1). In the prevalence of intestinal Schistosomiasis among the children, 20(10%) were positive. The prevalence among the schools were as follows, Nteje Boys High school (2.5%), Community primary school(2,0%), Umunebo Primary and New Era (1.5%) respectively, while Central primary, National and State primary had 1.0% each (Table 2). In the age related prevalence, 10-14 years age group had 5.0%, 5-9years (4.0%) and 15-18years had the least(1.0%). The differences in prevalence among the age groups were not statistically significant ($P> 0.05$). The infection by sex was highly significant ($P<0.05$), males had 8.0% and females 2.0%. The intensity of the infection was based on the number of eggs of *Schistosoma mansoni* observed in stool samples examined, 180(90%) no infection, 14(7.0%) light infection, 6(3.0%) moderate infection. There were no heavy and very heavy infections (Table 5).

Table 1: Responses of the School Children on the Knowledge and Predisposing factors of Intestinal Schistosomiasis

Predisposing factors	**Responses**	
	Yes	No
Knowledge of Intestinal Schistosomiasis	34(17.0%)	166(83.0%)
Washing of Hands after defaecation	162(81.0%)	38(19.0%)
Use of water bodies for domestic needs	123(61.5%)	17(38.5%)

Swimming frequently in the water bodies	107(53.5%)	93(46.5%)
Observed blood in stool/faeces	12(6.0%)	188(94.0%)
Itching after swimming	26(13.0%)	174(87.0%)

Table 2: The Distribution of Intestinal Schistosomiasis among Children examined in the selected schools.

Schools(Primary)	**Number examined**	**Number infected**
Umuebo	20	3(1.5%)
Central school	20	2(1.0%)
State Primary	20	1(0.5%)
National Primary	20	2(1.0%)
Community Primary	20	4(2.0%)
Secondary Schools		
Marist Comprehensive	20	Nil
Sacred Heart	20	Nil
St Anthony	20	Nil
New Era	20	3(1.5%)
Boys High School	20	5(2.5%)
Total	200	20(10.0%)

Table 3: Age related Intestinal Schistosomiasis among the school children

Age(years)	Number examined	Number infected
5 – 9	72	8(4.0%)
10 – 14	54	10(5.0%)
15 – 18	74	2(1.0%)
Total	200	20(10%)

(P>0.05)

Table 4: Sex related Intestinal Schistosomiasis among School children in Nteje

Sex	**Number examined**	**Number infected**
Males	117	16(8.0%)
Females	83	4(2.0%)
Total	200	20(10.0%)

(P>0.05)

Table 5: Intensity of infection which is based on the number of eggs in infection

Level of infection	**Number of eggs**	**Number of children involved**
No infection	1 -3	180(90.0%)
Light Infection	4 – 10	14(7.0%)
Moderate Infection	11 – 20	6(3.0%)
Heavy Infection	21 – 40	Nil
Very Heavy Infection	> 40	Nil

DISCUSSION

Considering the WHO (1995) classification on Schistosomiasis prevalence rates of > 25% are moderate while infection rates < 25% as low, the 10% over all prevalence observed in the study area is low. The predisposing factors so observed has to do with ignorance, poor environmental conditions, poverty and water contact activities (Idris and Ajanusi 2002). The distribution of intestinal Schistosomiasis among schools selected for the study, public schools had more prevalence of the infection than private schools, these boarders around the explanation given by Akogu (1989) that public schools are known for poor sanitary conditions with children defaecating around the school compound and often swim in water bodies infected with cercariae.

The sex related infections shows that male children are more infected than females as was observed by Etim *et al* (2002). They males are known to play in dirty/filthy environment in addition to their geophagus habits. Females in some socio-cultural and religious customs are prohibited at menstrual age from bathing in certain streams and rivers {Ume *et al*., 2001). In the age related infection 5 – 14 tears were more exposed because of their playful activities, and eager to explore irrespective of the nature of the environment as found in Igbo land. The results obtained in this study clearly established the presence of Intestinal Schistosomiasis in the area. This calls for strategies towards the control of the disease intestinal schistosomiasis. This is because Schistosoma infections are associated with persistent inflammation, morbidity, chronic pain, diarrhoea and under nutrition which can be found with all levels of infection intensity This is supported by an updated, evidence-based disability weight for Schistosomiasis of 2 – 24% (Finkelstein et al., 2005) in the setting of the developing world 'poverty trap' in which a family invests its entire capital in order to survive.. This chronic parasitic infection is however relevant to personal and household level economic survival. From disease impact perspective, there is need for complete evaluation of effects of Schistosomiasis on all spheres of patient's performance and reproductive health. On the ground of this, there is need for public health enlightenment programmes, information about disease transmission and school based treatment for infected school children. For urgent interventions, Government/NGO to provide safe recreational water bodies for children and pipe borne water sources for household uses.

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