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SCHISTOSOMA INTERCALATUM INFECTION IN SCHOOL- AGED CHILDREN IN OPUME COMMUNITY IN OGBIA LOCAL GOVERNMENT AREA OF BAYELSA STATE, NIGERIA

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ABSTRACT

A survey of the prevalence rate of *Schistosoma intercalatum* was carried out among school-aged children in Opume, Ogbia Local Government Area of Bayelsa State in 2016. A total of 450 stool samples were collected and examined to determine the prevalence of intestinal schistosome infections. The results showed that 30% of the children had *S. intercalatum*. Males had higher prevalence of 44.08%% than females, 13.17%. For infection rates according to age groups, the 9-11 years had the highest infection rate of 35.48%, followed by the 12-14 years, 30.70% and the least in the 3-5 years, 20.0%. These results are a pointer to the fact that *S. intercalatum* is endemic in Opume and its implications are discussed.

Keywords: Intestinal, Schistosomiasis, Opume, School-aged, Schistosoma

1. INTRODUCTION

Intestinal schistosomiasis which is also known as bilharzias is a water-borne parasitic disease caused by a blood fluke, and remains one of the most prevalent parasitic infections worldwide, second only to malaria in terms of economic and public health significance [1,2,3]. It is endemic in 76 countries and territories, and continues to be of considerable public health significance, primarily in the developing world. A recent systematic review suggests that 800 million people are at risk of becoming infected with intestinal schistosomiasis [3,4]. It is estimated that 207 million people are infected, of whom 120 million are asymptomatic and 20 million have severe disease [2, 5]. However, this parasitic disease is common in the developing countries and is of major health hazard because of its high prevalence rates, and its effect on both nutritional and immune status of the population [6]. Parasitic diseases, whether water-borne, vector-borne, soil- transmitted or those that result from some poor sanitary or social habits provide some of the many public health problems in the tropics.

There are four species of *Schitosoma* parasitizing humans, namely *Schistosoma mansoni, S. haematobium, S. japonicum* and *S. mekongi* [7]. The former three species except *S. mekongi* are the most important ones in terms of geographical distribution and number of people infected [5].

The intermediate snail hosts for schisotosomiasis which are mainly weak-shelled aquatic snail species susceptible to infection with the cercariae of *Schistosoma* belong to the family Planorbidae in the sub-class Pulmonata. Consequently, activities such as fishing, swimming, bathing, washing clothes or body parts, playing in water have been found to enhance the transmission of the disease.

2. MATERIALS AND METHODS

2.1 Study Area

The study was conducted among school-aged children in Opume in Ogbia Local Government Area, Bayelsa State. The village (Opume) is located in the South-Eastern part of Bayelsa State. The traditional occupations of the people are fishing, farming and the tapping of palm wine. Most houses lack toilet facilities and as such, defecation is done in the river, though some of them have pit latrines. Occasionally, the town becomes flooded after a heavy rainfall as a result of poor drainage system.

2.3 Parasitological Analysis

450 stool samples were aseptically collected from male and female children in the primary and the secondary schools in Opume, Ogbia Local Government Area, Bayelsa State. Freshly voided stools were collected in labeled press-top plastic containers between 10 am and 2 pm, local time when high egg output is usually detected [3, 8].

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Standardized questionnaires were used to obtained information about age and sex of the respondents. The samples were immediately stored in an ice-cooled container and transported to the laboratory at the Department of Biological Sciences, Niger Delta University, Bayelsa State for analysis.

Stool sample analysis was carried out by direct fecal smear method. A drop of normal saline was put on a microscopic slide; a small portion of each stool sample (about 1g) was added with the aid of applicator stick. This was then mixed thoroughly and covered with a coverslip for examination under the microscope. The presence of eggs with a curved lateral spine indicated positive result for *S. intercalatum*.

The data was analyzed using statistical analysis to test the significance difference between sex and age. Percentage infected based on the different age grade were subjected to chi square test at P=0.05.

3. RESULTS

A total of 450 stool samples were collected and examined to determine the prevalence of intestinal schistosome infections. The results showed that 30.0% of the children had *S. intercalatum* infections. Males had higher prevalence of 44.08% than females, 13.17% (Table 1).

Table 1: Prevalence of *Schistosoma intercalatum* in relation to sex among school-aged children in Opume, Ogbia L.G.A. Bayelsa State, Nigeria

Sex	Total number of examined children	Total number of infected children	% Infected
Males	245	108	44.08
Females	205	27	13.17
Total	450	135	30.00

Children in the 9-11 years age group of recorded the highest prevalence of 35.48% followed by the 12-14 years, 30.70%. The lowest infection was recorded in the 3-5 years age groups with 20.0%. Typically no significance difference (P>0.05) among the various age grade infected (Table 2).

Table 2: Prevalence of *Schistosoma intercalatum* in relation to age among school-aged children in Opume, Ogbia L.G.A. Bayelsa State, Nigeria

Age group	Total number of examined children	Total number of infected children	% infected
3-5	50	10	20.00
6-8	72	19	26.39
9-11	124	44	35.48
12-14	114	35	30.70
15-17	90	27	30.00
Overall	450	135	30.00

4. DISCUSSIONS

The result of this study showed that intestinal schistosomiasis, as represented by the presence of *S. intercalatum* infection, was relatively high in school-aged children in Opume community in Ogbia LGA of Bayelsa state. These findings were, however, closely related to those of other studies carried out in the state [9]. From the result obtained in the current study, 135 children out of 450 were found to be infected with *S. Intercalatum* giving a prevalence level of 30.0% though the value is lower compared with the study in Sankwala, Cross River State with 37.90% [10]. Previous studies have attributed this high prevalence to poor environmental and personal hygiene, shortage of good water supply and indiscriminate defecation and poor sewage system [10]. The very deplorable state of environmental hygiene and inadequate supply of good water prevalent in the study area may be responsible for the observed high prevalence of *S. intercalatum* infection.

The prevalence and distribution of intestinal schistosomiasis depend upon a number of important factors which include among others: availability of contaminated water surfaces that harbor the intermediate snail hosts, ecological factors such as temperature and rainfall as well as various forms of water contact activities. The children (among the various age grade studied) in the study area were habitually seen swimming in the only available black water. They visited the water freely to fetch water, wash their clothes, swim and sometimes agricultural activity. This could be strongly related to the higher prevalence rate among these age groups in the study area. Again, this may be the determinant factor, why there was no significance difference (P>0.05) among the percentage infected of the different age grade.

The prevalence level with regards to age structure was apparently highest in the 9-11 years age group and lowest in the 6-10 years age group. This agree with what was reported by Bassey [11], Ahmad and Getso [12] and Bichi *et al.* [13], who reported similar pattern among children

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who participated fully in water contact activities in contaminated waters as was observed in the present studies. Furthermore, the trend in prevalence based on sex is comparable to the findings of Otuneme et al. [14] who reported prevalence rate of 55.7% (male) and 50% (female) among patient with urinary schistosomiasis in in a rural community of Ogun State. Also, Okwori et al. [1] reported prevalence rate of *S. haematobium* as 50% and 28% for male and female respectively among primary school children in Gadabuke District, Toto LGA, North Central, Nigeria.

5. CONCLUSION/RECOMMENDATION

A total of 450 stool samples were collected and examined to determine the prevalence of intestinal schistosome infections. The results showed that 30.0% of the children had *S. intercalatum* infection. Children in the 9-11 years age group of were recorded apparent highest prevalence of 35.48% followed by the 12-14 years, 30.70%. The apparent lowest infection was recorded in the 3-5 years age groups with 20.0% intercalatum infections. But significantly, no variation among the various age grade. Males had higher prevalence of 44.08% than females, 13.17%. As a result, there is need for public enlightened programmes that will change the behavioural attitudes of the children, provision of basic amenities such as good and potable drinkable water, adequate safe waste disposal and probably, a mass deworming programme for all the school-aged children.

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