



Occurrence of *Schistosoma hermatobium* amongst L.E.A. Primary School Pupils in Giri village, Abuja, Federal Capital Territory, Nigeria.

Balarabe-Musa, B. Abiodun, O. P. Onyeagba, K. D.

Department of Biological Sciences, University of Abuja, P. M. B. 117,
Abuja, FCT, Nigeria

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ABSTRACT

*The epidemiological studies and clinical features of *Schistosoma hermatobium* were carried out on 100 pupils of Local Education Authority (L.E.A) Primary School in Giri Village, Abuja. The result of this study showed a total prevalence rate of 33%. The prevalence of *Schistosoma hermatobium* in relation to gender showed that the male pupils 33.9% were more infected than the female pupils 31.8%. But there was no significant relationship between prevalence and gender ($p > 0.05$). However, the prevalence rate in relation to age group showed that age group 14-16 had the highest rate of prevalence (43.5%). Statistical analysis also showed that there is positive correlation between prevalence and the various age groups ($p < 0.05$). This study showed that Primary six pupils had the highest prevalence of *Schistosoma hermatobium* in relation to class of study. (37.7%). However, there was no positive relationship between prevalence and class of pupil ($p > 0.05$). This study reveals that *Schistosoma hermatobium* parasite is a concern in Giri area, Abuja, FCT. Therefore, this study recommends that the government should create awareness on the impact of this disease and to enlighten the children through health education programs on the mode of transmission of this parasite and how to control Schistosomiasis.*

Keywords: *Schistosomiasis; *Schistosoma hermatobium*; Prevalence; Pupils.*

***Corresponding Author**

Onyeagba Kosisochukwu Dematus,
Email: onyeagbakosi001@gmail.com
Tel: +2348103611556

INTRODUCTION

Human schistosomiasis or bilharzias is a chronic parasitic disease, causing morbidity and mortality with over 200 million people infected globally.[1] About 700 million people worldwide may be at risk of this infection due to their agricultural, domestic and recreational activities, which exposes them to contaminated water bodies [1].

The distribution of schistosomiasis has changed in over the last 50 years and there have been successful control programs, however, the number of people estimated to be infected at risk of infection has not been reduced in sub-Saharan Africa, where the population has increased by approximately 70% over the last 25 years. [2] The disease is also considered as one of the most frequently occurring parasitic infections globally [3]. Schistosomiasis is of great public health importance. especially in 44 countries in Africa Nigeria inclusive, where the disease is endemic.[4]. It is also of major public health importance in Brazil and China. In Egypt, schistosomiasis is prevalent, affecting 60-65% of the Fellahin people in Lower Egypt where canal irrigation practice is common [5]. Schistosomiasis is a disease condition which is of great public health and major medical importance in countries such as Brazil and China where it has a prevalent rate of 60-65% amongst the fellahin people who practice canal irrigation. Nigeria is among the 44 countries in Africa where this disease is endemic. In Cross River State, the agrarian population and the availability of large population of the snail intermediate host has contributed to the prevalence rate of *Schistosoma haematobium* [10]. A national prevalence survey carried out in 1990/91 among school children aged 5-14 years, reported the presence of Schistosomiasis in all 36 state of Nigeria including Abuja, Federal Capital Territory, with an estimated number of 20 million people infected [11].

The species of the flatworms that cause the disease schistosomiasis in man includes: *Schistosoma mansoni*, *Schistosoma japonicum*, *Schistosoma mekongi* (intestinal schistosomiasis). While *Schistosoma haematobium* and *Schistosoma intercalatum* causing urinary schistosomiasis [6]. The intermediate hosts of urinary schistosoma are various species of fresh water snails, while the

Oncomelonia species of fresh water snail is the intermediate host of *Schistosoma haematobium* and *Schistosoma intercalatum*.

Schistosoma haematobium is transmitted by Cercariae, the infective stage of the parasite. Cercariae penetrates the skin of the host (Man) when people bath, washing of clothes, fishing, or engaged in agricultural activities such as snail hunting or other activities involving contact with contaminated water [7]. In most endemic areas, a large proportion of children and teenagers become infected and re-infected. Therefore, this study was nurtured to investigate the occurrence of *Schistosoma haematobium* among Local Education Authority (L.E.A) Primary school pupil in Giri village, Abuja, FCT.

MATERIALS AND METHOD

Study Area

The study was carried out in L. E. A Primary school, Giri village, Gwagwalada Area Council, Abuja, Federal Capital Territory, Nigeria. The school is located within the University of Abuja Staff Quarters. The area is dominated largely by Gbagyi and Bassa tribes who are predominantly farmers. A river called Wuye, passes through the village, which attracts several activities such as bathing, swimming, laundry and irrigation for farming activities during the dry season.

Sample Collection.

A total of 100 urine samples were collected from children between age 8 – 16 years. The urine samples were collected into a well labeled, sterile, plastic specimen container for each student and were properly labelled, stored and taken to laboratory for further analysis.

Parasitological Survey (Urine Analysis)

Laboratory analysis was conducted at the microbiology laboratory, National Hospital Abuja. 10 milliliters of the urine sample was transferred into a conical tube and centrifuge at 3000 rpm for 5 minutes. The supernatant was discarded leaving about 0.6ml of residual urine (the sediment) at the bottom of the tube. The sediment was then pipetted onto a clean microscopic slide, covered with a cover slip and was examined under the microscope using

Table 1: Showing the prevalence of *Schistosoma hermatobium* in relation to gender among the pupils.

Gender	Number Examined	Number of pupils infected	Number of pupils not infected	Percentage of Pupils infection
Male	56	19	37	33.9%
Female	44	14	30	31.8%
Total	100	33	67	33.0%

P =0.0824

Prevalence of *Schistosoma hermatobium* in relation to age groups

Six (6) pupils of age group 8-9 years were examined and two (2) tested positive giving a prevalence rate of 33.3%. Twenty eight (28) pupils of age 10-11 years were examined and six (6) tested positive, while one of them was observed with mixed infection of *Schistosoma mansoni* giving a prevalence rate of 21.1%. Forty-three (43) pupils of age 12-13 years were

examined with fifteen (15) pupils testing positive and one was observed with a mixed infection of *Schistosoma mansoni* giving a prevalence of 34.9%. Twenty three (23) pupils of age 14-16 years were examined with ten (10) positive which gave a prevalence rate of 43.5%. Nevertheless, Pearson's chi square indicated that there was no relationship between age and prevalence of *Schistosomiasis hermatobium*. ($p > 0.05$).

Table 2: Showing Age distribution of *Schistosomiasis hermatobium* among pupils

Age Group	Number Examined	Number positive	Number Negative	Prevalence positive (%)
8-9	6	2	4	33.3%
10-11	28	6	22	21.9%
12-13	43	15	28	34.9%
14-16	23	10	13	43.5%
Total	100	33	67	33.0%

P =0.406

Prevalence of *Schistosoma hermatobium* in relation to class

There was no positive case reported from the three (3) pupils examined in primary Four class. Thirty-six (36) pupils were examined in primary Five class, ten (10) were positive with a prevalence of 27.8%, while sixty-one (61)

pupils in primary six class were examined and twenty-three (23) were tested positive with a prevalent rate of 37.7%. However, there was no significant relationship between the pupils classes and *Schistosoma hermatobium*. ($p > 0.05$).

Table 3: Showing the Prevalence of *Schistosoma haematobium* in relation to class among pupils

Class	Number Examined	Number Positive	Number Negative	Prevalence positive (%)
Pry 4	3	0	3	0.0%
Pry5	36	10	26	27.8%
Pry 6	61	23	38	37.7%
Total	100	33	67	33.0%

P = 0.282

DISCUSSION

This study shows an overall prevalence rate of 33.0% for the *Schistosoma haematobium* infection among the pupils of L.E.A primary school, Giri, Abuja, Nigeria. Previous studies revealed that in Abeokuta and Ibadan, South Western Nigeria, a prevalence rate of up to 54% and 73% were recorded respectively [8]. However, the result of this study is relatively higher than the infection rate of about 13% reported among children in Lagos state [9].

This study shows a higher prevalence rate of 33.9% in male pupils than the female pupils with (31.8%) as related to gender sensitivity. This finding could be attributed to the fact that males are engaged in activities such as swimming, bathing and playing in contaminated water. The 31.8% prevalence rate of infection observed with females in this study could also be attributed to the fact that females are also engaged in water related activities such as washing of clothes and dishes, routine fetching of water for domestic use, bathing and cleaning which expose them to the risk of infection via the contaminated water containing the cercariae of the parasites. In relation to age group, the results obtained from this study showed the age distribution of urinary schistosomiasis among the various age groups examined. It showed the prevalence rate between age and the infection with children between the age ranges of 8-9, 10-11, 12-13 and 14-16. Age ranges from 10-11 had the least prevalence of 21.4% while the age ranges from 14-16 had the highest prevalence of 43.5%. This suggests that children within the various age ranges has similar tendency of getting infected and this observation could be attributed to the fact that children of the age ranges may have similar behavioral pattern such as involving themselves in activities that

bring them in contact with contaminated water source. Children within this age ranges are considered to be adventurous, therefore this study support previous studies that schistosomiasis infections can be generally common in children of all ages (3).

In relation to class, the prevalence rate of infection was higher in Primary 6 (37.7%) than primary 5 with prevalence rate of (27.8%), while there were no cases in primary 4. In Biase Local Government Area of Cross river state, a prevalence of 35.95% and 30.5% prevalence of Schistosomiasis was reported respectively, while a prevalence rate of 35% and 45.3% were reported respectively from parasitological examination of urine sample from school children [3]

Conclusion

This study showed that *Schistosoma haematobium* is still actively transmitted in the studied population with high prevalence of (33.0%) and this study also establishes the non significant relationship between the prevalence rate, gender, age and class.

Recommendation

Based on the findings in this study, the following recommendations are made.

1. Schistosomiasis control programs should be more on health education so as to enlighten the children about the mode of transmission of the parasite and the changes of regular contact by bathing in contaminated water.
2. Introduction of molluscicide to pond and rivers to destroy the intermediate host of the parasite.

3. Government and non-governmental organization should hasten the provision of the safe drinking water to rural areas (Borehole), which is very fundamental to schistosomiasis control.
4. Wearing of protective wears such as boots and gloves by individual who get in contact with water bodies especially during irrigation farming, washing and fetching water.

Conflict of Interest

The authors have no conflict of interest to declare.

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