

Full Length Research Paper

Status of urinary schistosomiasis among primary school children in Abeokuta, Nigeria

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Accepted 11 January, 2013

A study was carried out to determine the current status of urinary schistosomiasis on 552 pupils from seven primary schools in Abeokuta North and Abeokuta South Local Government Areas of Ogun State, Nigeria using haematuria and parasitological tests. Males that complied were 75% to 25% females. Children within the age-group of 10 to 14 years were more (65%) when compared with other age groups. Out of the 552 samples examined, 35 (6%) tested positive for blood in urine while 20 (3.6%) tested positive for *Schistosoma haematobium* ova. The percentage of the females that tested positive were higher than male; however, the difference in prevalence was not significant ($p>0.05$). Though, the prevalence of the infection was relatively low, there is still need for coordinated public enlightenment of the pupils on the danger of contacting the infection from contaminated rivers and streams in their surrounding areas. Government also needs to provide more social amenities to reduce or eradicate the infection in the study area.

Key words: Schistosomiasis, school children, Abeokuta, Nigeria.

INTRODUCTION

Schistosomiasis is a human disease condition which is caused by infection from one of several species of parasitic trematodes of the genus: *Schistosoma* (WHO, 1993). Schistosomiasis affects about 200 million people and poses a threat to 600 million people in more than 76 countries of the world, including Nigeria (Ekpo and Mafiana, 2004). Schistosomiasis is next to malaria as a source of human morbidity and mortality in Africa, South America, the Caribbean, the Middle East and Asia with varying prevalence's (WHO, 1993).

Water contact activities and traditional agricultural practices are reported as the factors in the distribution of the disease and its snail vectors (Ukoli, 1990). Humans become infected when they come in contact with the water containing the cercaria that penetrates through the

skin. The larva then attaches itself to the nearest blood vessel where it undergoes larval migration.

For a large population, the efficacy of the reagent strip might be low. However, in screening of communities, reagent strip-detected haematuria might be a reliable predictor for a *Schistosoma haematobium* infection than previously reported, although stratification by sex and age tends to increase their validity (WHO, 1993). Therefore, the objective of this study was to determine the prevalence and intensity of urinary schistosomiasis among primary schools children in some selected schools in Abeokuta North and Abeokuta South Local Government Areas of Ogun State. This will provide information for preventive chemotherapeutic treatment towards elimination of the disease.

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Table 1. Demographic data of pupils.

Description	Frequency	%
Age (years)		
10 - 14	361	65
15 - 19	180	33
>19	11	2
Total	552	100
Sex		
Male	415	75
Female	137	25
Total	552	100

Table 2. Prevalence of haematuria among the study participants.

Blood	Frequency	%
Negative	517	94
Positive	35	6
Total	552	100.0

MATERIALS AND METHODS

Study area

This study was carried out in Abeokuta, Ogun State, Nigeria. The city is located on approximately 7°11'N and 3°21'E in the rain forest belt, with an annual rainfall of 963.3 mm. 552 pupils were selected from 5 primary schools in Abeokuta North Local Government Area and 2 primary schools in Abeokuta South Local Government Area based on a previous survey for urinary schistosomiasis by Ekpo et al. (2008) that classified primary schools in Abeokuta areas into high risk, low risk and negative. Eighty pupils from each school in primary 4 to 6 classes of aged 10 to 20 years were enrolled for the study.

The schools in Abeokuta North Local Government Area are NUD Primary School, Ago Ika, Abeokuta North Local Government Primary School; Iberekodo, Abeokuta North Local Government Primary School; Olomore, Abeokuta North Local Government Primary School, Oke Ago-Owu, and Muslim Primary School, Ago-Oko. The schools in Abeokuta South Local Government Area are St Paul's Primary School, Igbore and Methodist Primary School, Ogbe. These schools are situated in areas of Abeokuta that are close to Ogun river that people utilized for domestic, agricultural and recreational activities.

Ethical consideration

Consent was obtained from the local government authorities before the commencement of the study. Letters were obtained from the Ogun State Primary Education Board (SPEB) which granted the request for permission to conduct the study in the schools. The letters were tendered at the Abeokuta North and Abeokuta South Local Government Education Authorities. These letters were approved and the approved letters were distributed to the schools accordingly before the study began.

Specimen collection

Dark (black), sterile, plastic universal containers (labelled) were given to the pupils to collect terminal urine samples. This was done between the hours of 11.00 am to 1.00 pm. The collected urine was then taken immediately to the laboratory for analysis. A total of 552 pupils from the 7 schools returned their samples for the study.

Urine examination

The terminal urine samples collected were immediately tested for blood using reagent test strip, combi-9-screen made by Analyticon Biotechnologies AG, Germany. The reagent strip was carefully dipped into the sample bottle and the readings were recorded within 60 s. Ten millilitres of the urine sample (which was duly labelled) was measured into the centrifuge tube and spun for 5 min at 500 rpm. Afterwards, about 9 ml (the supernatant) was removed from the spanned sample using a syringe. The other 1 ml (the deposit) left was prepared for microscopy. Small quantity of the deposit was placed at intervals onto a clean, grease-free slide; a cover slip was placed gently on it in a slanting form to avoid air-bubbles. It was then observed under the microscope and viewed with different magnifications. The haematobium eggs were identified, analyzed, counted and recorded as eggs/10 ml of urine (Sam-Wobo et al., 2011).

RESULTS

A total of 552 pupils were enrolled which consist of 415 (75%) males and 137 (25%) females. The ages of the pupils range from 10 to 20 years with the mean age of 15 years. The 10 to 14 years group had the highest number of pupils (65%) (Table 1).

Prevalence of microhaematuria and *S. haematobium* ova

Out of the 552 samples examined, 35 (6%) tested positive for blood in urine while 94% were negative (Table 2). The results of the prevalence of *S. haematobium* ova in the urine samples showed that 20 (3.6%) were positive with higher prevalence in females than males. Though, the difference in prevalence was not significant ($p > 0.05$) (Table 3). The age-wise consideration showed that there was no significant difference in the infection across the age, even though, the pupils in age group 10 to 14 were more infected than the other groups (Table 3). Only 2 pupils (15%) of the 20 infected pupils passed out more than 20 eggs per 10 ml of urine at a time. Majority of the infected pupils (55%) had the least occurrence or intensity of the egg, excreting 1 to 10 eggs per 10 ml of urine (Table 4).

DISCUSSION

The results of the present study showed reduction in the prevalence of *S. haematobium* in Abeokuta from 11.9%

Table 3. Prevalence of *S. haematobium* by age and sex.

Age	Male			Female			Total		
	Number examined	Number infected	%	Number examined	Number infected	%	Number examined	Number infected	%
10-14	292	9	3.1	69	5	7.2	361	14	3.9
15- 19	115	4	3.5	65	2	3.1	180	6	3.3
>19	8	0	0	3	0	0	11	0	0
Total	415	13	3.1	137	7	5.1	552	20	3.6

Table 4. Egg Counts by sex among the infected persons.

Egg count/10 ml of urine	Male	Female	Total
	No. infected (%)	No. infected (%)	No. infected (%)
1-10	7 (53.8)	4 (57.1)	11 (55.0)
11-20	4 (30.8)	2 (28.6)	6 (30.0)
>20	2 (15.4)	1 (14.3)	3 (15.0)
	13 (100.0)	7 (100.0)	20 (100.0)

(Mafiana and Beyioku, 1998) to 3.6%. The reduction in the prevalence of the infection may be due to the availability of alternative sources of water for domestic uses and improved waste disposal system. The degree of prevalence of schistosomiasis has been known to depend largely on frequency of man contact with contaminated water and the environmental sanitation activities (Hassan et al., 2012).

Though, females infected were higher than males, statistical analysis showed no significant difference in the occurrence of the infection in both sexes. This result is at variance to previous results (Mafiana and Beyioku, 1998; Akinwale et al., 2009) and the pattern of the results may be due to variation in the number of participating sexes as more males participated than the females. The higher infection among pupils of the 10 to 14 years group could be attributed to degrees of exposure. This result is in agreement with previous studies that the prevalence of urinary schistosomiasis usually increases with age, reaching a peak at age 15 (Fajewonyomi and Afolabi 1994, Hassan et al., 2012). This is because children within the age of 10 to 15 usually engage in many outdoor activities including swimming and fishing due to the youthful exuberance.

Despite the prevalence, the average count was relatively low as only 3 (15%) of the total infected persons had more than 20 eggs per 10 ml of urine. The study observed that the number of pupils that tested positive for microhaematuria using the reagent test strip were higher than those who were actually infected with disease. This result shows that the positive haematuria may not necessarily signifies the presence of urinary schistosomiasis. The pupils may also be infected with other urinary-tract diseases. This therefore calls for caution when using

haematuria results to interpret the level of endemicity of a community to urinary schistosomiasis.

In conclusion, this study showed that the prevalence of urinary schistosomiasis has reduced in Abeokuta metropolis. However, there is still need for more concerted efforts in public enlightenment of the pupils on the route on the danger of contacting contaminate rivers and streams in their surrounding areas. Government also needs to provide more social amenities to reduce or eradicate the infection in the study area.

ACKNOWLEDGEMENTS

The authors thank the Heads and pupils of all the schools that participated in this study.

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