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Prevalence of Urinary Schistosomiasis among Primary School Children in Afikpo North Local Government Area of Ebonyi State

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ABSTRACT

This study was conducted to determine the prevalence of urinary schistosomiasis among primary school children of 5-15 years old in Afikpo North Local Government Area of Ebonyi State. Out of five hundred (500) pupils that were randomly selected for the study, 236 pupils were males and 264 were females. The samples collected for the study were urine. The samples were analyzed in the laboratory using sedimentation/centrifugation technique. The prevalence of infection of *S. haematobium* in the area was 49 (9.8%); out of which 33 (14.0%) cases were recorded for males and 16 (6.1%) was recorded for females. The prevalence of the infection in the study area was moderate. The highest prevalent rate of *S. haematobium* infection was observed in age bracket 8-10 years (14.5%), whereas 5-7 years had the lowest prevalent rate of 5.8%. No case of infection was found the pupils using borehole water. Two (2) and 10 cases of infection were found among the pupils using well, and pond water respectively, giving the prevalence of 2.0% and 16.7%, respectively. Thirty-seven (37) cases of infection were found among the pupils using stream water with the prevalence of 18.5%. To control urinary schistosomiasis, it is therefore recommended that Schistosomiasis Control Program in the state should be geared towards creating awareness in the people in order to reduce the infection rate.

Key words: Urinary schistosomiasis, prevalence, *S. haematobium*, primary schoolchildren, Afikpo North LGA.

INTRODUCTION

Schistosomiasis is a parasitic disease caused by several species of trematodes (platyhelminth infection, or flukes), a parasitic worm of the genus *Schistosoma* [1]. Schistosomiasis remains an important public health problem globally with an estimated 200 million cases reported each year (Engels et al., 2000). Schistosomiasis occurs in about 250 million people worldwide, and along with malaria is considered one of the major parasitic diseases afflicting humans [2] and [3]. The form of Schistosomiasis affecting the urinary tract involves *Schistosoma haematobium*. The other forms; *S. japonicum*, *S. mansoni*, *S. mekongi* affect the gastrointestinal tract [4].

Although, urinary schistosomiasis is endemic in Nigeria, it is usually a neglected common parasitic disease of childhood [5] and [6].

Primary schoolchildren are particularly vulnerable to schistosomiasis because of their habitat of playing in water, where they may contract the infection. As such, they are the ideal target group to investigate the prevalence of

schistosomiasis and the data collected from this age group can be used to assess not only whether schistosomiasis threatens the health of schoolchildren, but can also be used as reference for evaluating the need for community intervention [7], [8], [9] and [10].

The present study aimed to ascertain the prevalence of urinary tract schistosomiasis among primary school children in Afikpo North Local Government Area (LGA) of Ebonyi State and also to help the Ministry of Health in evaluating whether a deworming exercise should be carried out in the LGA.

MATERIALS AND METHODS

Study Area

This study was conducted in Afikpo North Local Government Area of Ebonyi State. The choice of the zone was based on reports from local hospitals, clinics and health centres of cases of urinary schistosomiasis in the rural communities particularly among school children. The climate of the area is tropical and the vegetation characteristic is predominantly the rainforest with an annual average rainfall of about 1,300 mm and average atmospheric temperature of 30°C. There are two distinct seasons, the wet and dry seasons. The former takes place between April and October, while the later occurs from November to March.

The areas are transverse by streams and rivers which constitute the major sources of water supply to all the communities in the area. Water contact activities like bathing, swimming and washing are generally the norm. Agriculture, especially the swamp-rice cultivation and fishing are the main stay of the economy of the inhabitants.

Selection of Subjects

Subjects were selected from five different primary schools (Amaizu-Amangballa Central School, Ohaisu Community Primary School, Ndibe Community Primary School, Amurao-Mgbom Primary School and Government Primary School) in Afikpo Local Government Area using a systematic random sampling. A stratified sample of 500 subjects comprised 236 males and 264 females within the age range of 5-15 years.

Sample Collection

Ethical approval for conducting the study was sought from the authorities of Afikpo LGA, followed by mobilization of the school children through the Headmasters/Headmistress. An interviewer-administered structured questionnaire was used to obtain the following information from the school children with the help of their class room teachers: Age, sex and sources of water supply.

Parasitological Examination

From each subject a 10 ml sample of mid-stream or terminally voided urine was collected in a properly labeled clean and sterile specimen container containing 0.1g of boric acid with the help of their teachers. The specimen preserve and prevent the ova of *S. haematobium* from hatching during transportation to the laboratory.

Microscopic examination of the urine samples was performed at the Laboratory of Applied Microbiology, Ebonyi State University, Abakaliki using the sedimentation method described in Cheesbrough [11]. Urine deposits were examined under a light microscope using 10X and 40X objectives. Urine samples containing egg(s) of *S. haematobium* and without eggs were recorded. The data obtained were analyzed using Chi-Square statistics.

RESULTS

Table 1: Distribution of *Schistosoma haematobium* infection according to age

Age (years)	Number Examined	Number Positive	% Positive
5-7	120	7	5.8
8-10	200	29	14.5
11-13	150	11	7.3
≥14	30	2	6.7
Total	500	49	9.8

The result obtained from the analysis of the samples collected showed that 49 (9.8%), out of 500 samples collected were positive for *Schistosoma haematobium* (Table 1). Also, the result in Table 1 showed that 7(5.8%) cases were

recorded out of 120 pupils screened within the age of 5-7. In addition, pupils within the age of 8-10 years had the highest prevalence of 29 (14.5%). Out of 150 pupils screened within the age of 11-13, 11 (7.3) cases were recorded and 2 (6.7%) was recorded for the age of 14 and above out of 300 pupils screened.

Table 2: Distribution of *S. haematobium* infection with reference to sex

Sex	Number Examines	Number Positive	Percentage (%)
Male	236	33	14.0
Female	264	16	6.1
Total	500	49	9.8

Table 2 showed that out of 236 male pupils, 33 (14.0) males were infected with *Schistosoma haematobium*, while out of 264 female pupils screened, 16 (6.1%) cases were recorded. The result showed that male pupils had the highest prevalence rate.

Table 3: Prevalence of *S. haematobium* infection according to sources of water supply

Sources of Water	Number Screened	Number Positive	%
Borehole	140	0	0.0
Well	100	2	2.0
Pond	60	10	16.7
Stream	200	37	18.5
Total	500	49	9.8

From the result above (Table 3), 2, 10 and 37 positive results were recorded from pupils that get from well, pond and stream domestic use, with the prevalence rate of 2.0%, 16.7% and 18.5%, respectively. Number positive result was recorded from pupils that obtained water from domestic use.

DISCUSSION

From the result obtained in Table 1, out of 500 pupils screened for urinary schistosomiasis, 49 (9.8%) showed positive. This present study supports a number of previous reports which have consistently shown that *S. haematobium* endemic in Nigeria in on the increase, particularly the rural areas with school age children at greatest risk [12]. For instance, Uneke et al. [13] recorded prevalence rate of infection of 47.9% in Ohaukwu and 11.0% in Onicha respectively among primary school children in Ebonyi State.

The major factors that may be responsible for the endemicity of urinary schistosomiasis infection in these study areas are low literacy level, lack of basic amenities, the inadequate and indiscriminate disposal of human sewage and high water contact activity with snails infested well, ponds and streams.

In relation to sex, thirty three (33) out of 49 cases of urinary schistosomiasis were males and the remaining 16 (sixteen) cases were females. The respective prevalence rates of infection were 14.0% and 6.1% for male and female respectively. Higher prevalence was recorded among the male children. This observation agrees with earlier reports by Okoli and Odaibo [12], who did a work in urinary schistosomiasis among school children in Ibadan, that males are more infected due to the fact that males are more involved in activities that have to do with water bodies e.g. swimming, washing, padding of canoes and irrigation. However, there is significant ($P < 0.05$) relationship between sex and *S. haematobium* infection as recorded in this study.

In relation to age, seven (7), twenty (29), eleven (11), and two (2) cases of urinary schistosomiasis were found in the age group of 5-7, 8-10, 11-13 and ≥ 14 years respectively, giving a prevalence of 5.8%, 14.5%, 7.8% and 6.7% respectively. Those in the age range group of 8-10, and 11-13 years were mostly affected probably because they are frequently involved in activities that bring them in contact with the sources of infection [14]. Statistical analysis for test of no relationship between age and *S. haematobium* infection showed that there is a significant ($P < 0.05$) relationship between age and *S. haematobium* infection.

In relation to sources of water supply, no case of infection was found among the pupils using borehole water. Two (2), and ten (10) cases of infection were found among the pupils using well, and pond water, respectively, giving the prevalence of 2.0%, and 16.7% respectively. Thirty-seven (37) cases of infection were found among the pupils using stream water with the prevalence of 18.5%. The observation showed that the infection depends on sources of water

supply. Okpala et al. [14] states that the transmission of schistosomiasis takes place in the place where fresh water snail vector is present and where there is contact between the population and infected water. These observations were proved statistically as the results recorded in this study showed a significant ($P < 0.05$) relationship between *S. haematobium* infection and sources of water supply. Therefore, the recorded cases of infection among pupils using well, pond and stream water may be as a result of contamination of wells, ponds and streams in the area with cercariae.

Generally, the observed prevalence of urinary schistosomiasis in the study area is moderate as a result of low literacy level, lack of basic amenities, inadequate and indiscriminate disposal of human waste, high water contact activity with snail infested wells, ponds, and streams as well as deplorable personal and environmental hygiene in the area.

CONCLUSION

Based on the findings of this study, which showed that the prevalence of infection in the areas is moderate and the infection depends on sex, age and sources of water supply, it is hereby recommended that schistosomiasis control program in the state should be embarked upon to educate the populace on risk factors that predispose one to urinary schistosomiasis, and the need for proper sewage disposal, the state government should provide toilet facilities at certain junctions in the area and in the market found within the area, and also pipe borne water to rural areas to reduce the observed rate of infection with *S. haematobium* in the study area.

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