



## PREVALENCE AND INTENSITY OF URINARY SCHISTOSOMIASIS AMONG PRIMARY SCHOOL PUPILS IN MINJIBIR LOCAL GOVERNMENT AREA OF KANO STATE

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### ABSTRACT

Urine samples were collected from 493 pupils (5-16 years) at Wasai and Dingim wards in Minjibir Local Government Area of Kano State. The samples were examined for urinary Schistosomiasis infection. 218 (44.2%) of the pupils were infected. The prevalence rate was higher in Dingim (52.5%) than in Wasai (41.55%). The rate of infection among males in Wasai was (56.28%) and 2.7% among females and no female was infected in Dingim. Haematuria was found in more than half (52.75%) of the infected pupils. The prevalence of infection are as follows (71.88%), (51.83%), (35.46%) for the age range 14-16, 11-13, and 5-16 years respectively. This study gives the latest information on the rate of *Schistosoma haematobium* infection in the area and the need for an urgent intervention.

**Key words:** Urinary Schistosomiasis, pupils, Minjibir Local Govt Area, Kano

### INTRODUCTION

Schistosomiasis is a parasitic infection caused by certain species of blood flukes of the genus "*schistosoma*." The impact of schistosomiasis, long underestimated, rivals that of malaria and tuberculosis (Bergquist, 2002). It has been observed that the vast majority of current schistosomiasis is found in sub-Saharan Africa. Like most parasitic disease, schistosomiasis prevalence is related to poverty and poor living conditions (Engels *et al.*, 2002)

School aged children are mostly infected with this silent destructive disease because it is easily contracted while bathing or swimming in water contaminated with the parasite which is shed from snails and infect by penetrating human skin (Kabatereine *et al.*, 2004). Because of their play habits and hygiene, children are particularly at risk for infection. With each passing year, a child's risk of infection increases, peaking between the ages of 10 and 20 (Kabatereine *et al.*, 2004). However, the intensity of their infection, as measured by quantitative egg counts of feces or urine, shows the heaviest burden in the youngest age group. The morbidity associated with childhood infection can result in cognitive and growth stunting that is irreversible (Nokes *et al.*, 1999).

*S. haematobium* can cause dysuria, hematuria, and urinary frequency but in highly endemic areas, more than 50% of children show moderate-severe urinary pathology. Genital disease is present in approximately one third of infected women (Poggensee *et al.*, 2001), resulting in a variety of vulvar and perineal disease, including ulcerative, fistulous, or wart-like lesions. Vulvar schistosomiasis may also facilitate the transmission of HIV (Feldmeier,

1995; Stephenson *et al.*, 1989). The study was designed to determine the prevalence and intensity of urinary schistosomiasis in Dingim and Wasai, two villages near dam site in Minjibir Local Government Area of Kano State.

### MATERIALS AND METHODS

#### Study Area

The study was conducted in two villages, Wasai and Dingim both in Minjibir Local Government Area of Kano state, between January 2005 to December 2006. Nigeria. The people of Wasai town are predominantly farmers. However, due to seasonality of rainfall, some do engage in other activities such as trading, livestock rearing and fishing as alternative means of livelihood.

Wasai town is 1.5 km to the dam and 3km to Dingim but both are located along the Gezawa road. Primary school pupils were examined because they were more assessable.

#### Collection and Analysis of samples

The consent of the school authority, parents and guardians of the pupils was obtained before the commencement of the research. Using structured questionnaires, information were obtained from the pupils on age, sex, water supply, whether they passed blood in urine and whether they had been given any antischistosomal drug or not.

Other information obtained were whether they visited the dam to fish, swim or swam in stagnant pools. The subjects were chosen randomly by selecting them every fourth male and every second female.

Ethical approval was obtained from the Biological Science Department of Bayero University Kano before the research was conducted. The pupils were then told to provide urine in the specimen bottles given to them. About 50ml of urine specimen was collected in a urine specimen bottle between 10am-2pm. The volume of each urine specimen was measured, observed for haematuria and examined under the microscope after centrifugation for *S.haematobium* eggs .All the eggs were counted. The intensity of infection was expressed as the number of eggs /10ml of urine or EPC(Eggs per centiliter,1 centiliter=10ml).

**Statistical Analysis**

The data obtained in this study was statistically analysed using the chi square test.

**RESULTS**

Out of the 493 pupils, examined, 218 were found to be infected with *S.haematobium* giving a prevalence rate of 44.22% and the overall intensity of infection was 107.3 EPC of urine.

The prevalence rate was higher in Dingim (52.5%) but the intensity of infection here was lower (66.51 EPC urine) than in Wasai where the prevalence rate was 41.55% and the intensity of infection was

148.9 EPC of urine (Table1). The differences in prevalence and intensity of infection in the two villages were significant (p<0.05).

The age bracket with the highest rate of infection was the 14-16 year age group (71.88%) in both villages followed by the 11-13 year age group (51.83%) and the 8-10 year age group (35.46%) respectively. Intensity of infection was highest in the 14 -16 year age group (217.55 EPC) and followed by the 11-13 year age group (109.73 EPC). Table 2 shows the prevalence and intensity of infection in relation to sex of the study population. It was observed that males had higher prevalence (56.28%) than females (2.7%) and also a higher mean intensity of infection (113.36 EPC ) than females (33.67) EPC urine. These differences in prevalence and intensity of infection between males and females were highly significant. (p<.05) ).

Table 3 summarizes the age related distribution of visible haematuria among the infected members of the study population. Out of the 218 infected school children 115 (52.75%) had visible haematuria. Haematuria was most pronounced in the 11-13 year age group (64.63%) , the 14-16 year age group (43.48%) . The least was the 8-10 year age group (42%).

**Table 1: Some features of the study population**

Features	Wasai	Dingim	Total
<b>Ethnic groups:</b>			
Hausa	373	120	493
Others	-	-	-
<b>Water Contact:</b>			
Canal /Dam	90 (24.1)	30 (40.0)	120 (24.3)
Seasonal ponds	100 (26.81)	60 (50.0)	160 (32.5)
None at all	183 (49.06)	30 (40.0)	213 (43.0)
Knowledge of Schistosomiasis	200 (53.62)	12 (10.0)	212 (43.0)
Therapy (previous)	10 (2.68)	0 (0)	10 (2.0)
Haematuria (aware of presence)	29 (7.77)	2 (1.6)	31 (6.3)
<b>Knowledge of Source of infection</b>			
Salt Water	31 (8.31)	6 (5.0)	37 (7.5)
Canal/Dam	50 (13.4)	1 (0.83)	51 (10.34)
No idea	292 (78.28)	113 (94.17)	405 (82.15)

Values in parenthesis ( ) are percentages

**Table 3: Prevalence and Intensity (EPC) of Infection in Relation to Age of the study population.**

Age (years)	Wasai			Dingim			Total		
	No. Examined	No. Infected	Intensity (Mean EPC)	No. Examined	No. Infected	Intensity (Mean EPC)	No. Examined	No. Infected	Intensity (Mean EPC)
5 – 7	55	0	0	10	0	0	65	0	0
8 – 10	101	39(38.61)	63.07	40	20(50)	140.8	141	50	101.94
11 – 13	146	73(50)	156.4	45	26(57.78)	63.04	191	99(51.83)	109.72
14 – 16	71	52(73.2)	372.92	25	17(68)	62.18	96	69(71.88)	217.55
<b>Total</b>	<b>373</b>	<b>155(41.55)</b>	<b>148.09</b>	<b>120</b>	<b>63 (52.5)</b>	<b>66.51</b>	<b>493</b>	<b>218 (44.22)</b>	<b>107.3</b>

Values in parenthesis ( ) are percentages

**Table 3: Prevalence and intensity (Mean EPC of urine) of infection in relation to sex of the pupils**

SEX	WASAI			DINGIM			Total		
	No.Exam	No.inf.(Prev.)	Intensity (Mean EPC)	No.Exam	No.inf.(Prev.)	Intensity (Mean EPC)	No.Exam	No.inf.(Prev.)	Intensity (Mean EPC)
Male	283	152(53.71)	51.8	99	63 (66.64)	51.48	382	215 (56.28)	113.36
Female	90	3 (3.33)	66.17	21	0(0)	0	111	3(2.7)	33.67
<b>Total</b>	<b>373</b>	<b>155(41.6)</b>	<b>58.99</b>	<b>120</b>	<b>63 (52.5%)</b>	<b>25.74</b>	<b>493</b>	<b>218(44.22)</b>	<b>73.52</b>

Values in parenthesis ( ) are percentages

**Table 4: Age related distribution of visible haematuria among those with *S.haematobium* infection in the study population.**

Age	No. examined	No. infected	Hematuria
5-7	65	0	0
8-10	141	50	21 (42%)
11-13	191	99	64 (64.65%)
14-16	96	69	30 (43.48%)
<b>Total</b>	<b>493</b>	<b>218</b>	<b>115 (52.75%)</b>

## DISCUSSION

Schistosomiasis remains one of the major health problems in tropical and sub tropical countries with school aged children usually the most affected. The prevalence of infection is very high among the pupils examined. The observed mean intensity of 107.3 EPC in the current study exceeds the WHO threshold (50 EPC) for heavy infection and so calls for some form of intervention such as the school based annual treatment with a single dose of Praziquantel.

A high intensity of infection implies repeated exposure to infection (Betterton *et al.*, 1988) which may be the case in the present study. This view is supported by the fact that children from Wasai who live in the immediate vicinity of the dam had a significantly higher mean egg count (234.35 EPC) than those from Dingim situated 3km away (114.05 EPC). Duwa,(2000) also recorded a higher prevalence among children in villages closer to the dam (Jakara dam) than in villages farther away from the dam in Minjibir local government area of Kano state.

This implies that proximity and easy access to the dam encourage more frequent visits and so greater and repeated contacts with the contaminated water of the dam.

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