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Survey of Urinary Schistosomiasis among school-aged children in the rural communities of Mayo-belwa Local Government Area, Adamawa State, Nigeria.

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Abstract

Background & objectives: Schistosomiasis is a major health risk in the rural areas of developing countries where it continues to rank high and second behind malaria in terms of socio-economic and public health importance in Tropical and Subtropical areas. To provide information on the incidence of urinary Schistosomiasis among school-aged children of Mayobelwa and create awareness of the disease to the rural populace of Mayobelwa.

Methods: A survey on the incidence of urinary Schistosomiasis was carried out on primary school children between the ages of 5-15 from April to June 2011 in some community schools in Mayobelwa Local Government of Adamawa State North-eastern Nigeria. A total of 346 pupils volunteered and responded to the questionnaire previously developed and these same pupils' were subject to urine samples.

Results: The microscopic examination of urine sediments revealed overall prevalence of 32.4% (n= 112) for *Schistosoma haematobium*. The age group most heavily infected was 11-15 years 68 (35.6%) both sexes have close prevalence with males having 72 (32.3%) and females 40 (32.5%). Majority of the subjects (54.6%) rely on the stream water as the only source of water supply and do not visit hospital (88.2%) even when symptom is observed.

Interpretation and conclusion: The findings of this study show that majority are still ignorant of the disease hence the need for more public enlightment and effective community-based treatment programs. The prevalence of 34.2% in Mayobelwa and neighbouring communities is of great public health concern and poses a threat or problem to important socioeconomic activities in the area.

Keywords: Adamawa, Mayobelwa, school-aged, Nigeria, Urinary schistosomiasis.

Introduction

Schistosomiasis also known as bilharziasis, Is a parasitic disease that leads to ill health. It is a major health risk in the rural areas of developing countries where it continues to rank high[1]. The disease affects some 200-300 million people across Africa, South Africa, The Caribbean, Middle East, China and South East Asia[2, 3].

Schistosoma haematobium is the causative agent of urinary Schistosomiasis, it is a platyheminthes a member of the digenetic blood trematodes commonly called blood flukes, in the genus *Schistosoma.* Urinary Schistosomiasis had been found in many parts of this country with varying intensities and prevalence rates and incidence is believed to be on the increase[3, 4].

Among human parasitic diseases, Schistosomiasis ranks second behind malaria in terms of socio-economic and public health importance in Tropical and Subtropical areas[5]. The disease is the most prevalent water-borne disease and one of the greatest risks to health in developing countries, yet one of the most rejected tropical diseases. In Nigeria, several studies have revealed the presence of this parasitic infection with prevalence varying from one locality to another.

The health of school-aged children in developing countries is a concern that has received increasing attention over the last few years[6]. Although death rates among this age group are low compared with other age groups, it

has recently been estimated that school-aged children experience a considerable burden of disease which may have both immediate and long-term consequences on their health, growth and education [6, 7, 8]. This study aims specifically to reach the following objectives (i) To provide information on the incidence of urinary Schistosomiasis among school-aged children of Mayobelwa (ii) To make a breakdown of prevalence by sex and age (iii) To create awareness of the disease to the rural populace of Mayobelwa.

1. Materials and Method

Study Area

Mayobelwa Local Government area of Adamawa State; North Eastern Nigeria, lying between Longitude 9° 3" North and Latitude 12° 3" East. The sites chosen for this study are communities within Mayobelwa Local Government Area. From the ethnic point of view, the population is mainly Fulani**.**

Study design The study was conducted in six (6) primary schools within the following communities; Masaganare, Binkola, Gadamayo, WowuNelbi, Gengle and Tugga. The inclusion criterion was the child born and lived in the community to the time of entry to school.

Data collection and analysis April to June (2011), a team of three investigators provided survey forms, universal containers, note book and a marker has visited the targeted schools. The students randomly selected met the criterion for inclusion. The urine of each student interviewed is taken after the interrogation. Standard questionnaire was designed and standardized and administered by the researcher. The purpose of the study was very carefully explained to the subjects and their consents were individually obtained before the questionnaire was administered. Questions asked include demographic information of volunteered pupils. Also, presence of visible haematuria, contact with water bodies with reasons for that, parents / guardian's occupation, source of drinking water, visitation to hospital / clinic and knowledge of the disease were asked. The characteristic of each urine container are noted on a note book and the container is numbered accordingly. 10 ml of each urine sample was collected into a 10 ml centrifuge tube and subjected to centrifugation at 2000 rpm for 5 minutes. The supernatant was decanted and sediment was transferred to a microscope slide covered with cover slip and examined under X10 objective. The characteristic egg of *S.haematobium* was sought for three times for each sample and total number of eggs present in each 10ml urine sample was counted using a Talley-hand counter[9]. Presence of visible haematuria was observed and recorded. The questionnaire elicited from this study were statistically analysed using GraphPad InStat and the baseline data includes information on sex, occupation of parents, water contact behaviour and the level of significance was determined**.**

Ethical approval

Before the survey began, the Education officer of Mayobelwa Local Government, School Headmasters were fully briefed on the objective of the study. Thereafter, the pupils were given an informed consent forms translated to them in the local language (Fulani) by the second author. The pupils took the forms home for their parents/guardians approval.

Results

Urinary schistosomiasis reported showed that 112 (32.4%) of the respondents who had their urine samples examined harboured *S.haematobium* ova in their urine samples examined with males having a prevalence rate of 72 (32.3%) and females 40 (32.5%) (Table 1). Males within the age group 11-15 had the highest prevalence rate of 43 (36.1%) compared to the female within the same age group with 25 (34.7%). The demographic analysis in this study showed that there were more males respondents 223 (64.4%) than females 123 (35.5%) from the six (6) schools under study. Assessing the occupation of parents/guardians of respondents, 169 (44.8%) were farmers, 58 (16.8%) were petty traders, 27 (7.8%) were business men, 60 (17.3%) were public servants and 32 (9.2%) were private servants.

Table 1. Prevalence of urinary Schistosomiasis among school aged children by age group and in Mayobelwa L.G.A.

Parameters	Total		Infected		Prevalence (%)		P-value
	Male	Female	Male	Female	Male	Female	
Age							
5-10	104	51	29	15	27.8	29.4	
11-15	119	72	43	25	36.1	34.7	0.225
Total	223	123	72	40	63.9	64.1	
Sex							
Female	123		40		32.5		
Male	223		72		32.3		0.88
Total	346		112		32.4%		

Table 2. Respondents' demographic information I

		Freq.	%	p-value
Age (years)	5-10	155	44.8	
	11-15	191	55.2	0.16
Gender	Male	223	64.5	
	Female	123	35.5	0.00002
Occupation of Parents/ guardians				
	Farming	169	44.8	
	Petty trading	58	16.8	
	Business	27	7.8	
	Public service	60	17.3	
	Private services	32	9.2	<0.00001

Table 3. Respondents' demographic information II

	Response	Frequency	%	P-value
Reasons for visitation to water body	Swimming	87	25.1	
	Washing	93	26.9	
	Fishing	51	14.7	
	Fetching	75	21.7	0.0031
	Total	306	88.4	
Observation of blood during urination	Yes	44	12.7	
	No	302	87.3	<0.0001
	Total	346	100	
Source of drinking water	Pipe borne	51	14.7	
	Borehole	106	30.6	
	Stream/river	189	54.6	<0.0001
	Total	346	100	
Visitation to clinic / hospital	Yes	41	11.8	
	No	305	88.2	<0.0001
	Total	346	100	

Discussion

The result of this study shows a prevalence rate of 34.2% of urinary schistosomiasis in among the school aged children in Local communities of Mayobelwa Local government area of Adamawa State, Nigeria. The prevalence rate of 34.2% is comparable to 49.4% in Maiduguri and 5.7% in Delta State[3, 10]. The comparably wide differences in prevalence among these studies could be attributed to types of water bodies and water contact practices which need further investigation[11]. All ages studied had infection, meaning that infection with urinary schistosomiasis occurs very early in life through exposure to infested water bodies by individuals. As the stream is the main source of water supply to the communities, it is difficult or even impossible to prevent the rural populace from visiting the infested stream.

The result of the study showed that the prevalence of urinary schistosomiasis did not vary with gender or age which is in contrast with previous works by [9, 12]while it was in agreement with[3, 13, 14]. Statistical analysis showed that neither age nor sex had a significant influence on the prevalence of the disease in the area. The slightly higher prevalence rate male (36.1%) and female (34.7%) observed among the age group 11-15 years is expected as that is the age that appears to be more adventurous in terms of fishing, swimming, snail hunting and washing clothes[3, 15]. Furthermore, this age group are less confined by parents/guardians hence more likely to visit water bodies for recreation than the younger age group[10]. These age group contribute significantly to the potential contamination of the environment and consequently to the transmission of the disease[3].

It is also evident from this work that those whose water contact activities are through swimming (25.1%) and washing (26.9%) could be infected and reinfected. Thus 44 out of 112 respondents found with *S.haematobium* ova observed blood (12.7%) during urination. This number is capable of infecting other children and to be reinfected within a short period. This observation has been supported by[3, 13]. The report of this study was also supported by previous findings by [1, 10] that the majority of the subjects do not visit the hospital or use the drug of choice Praziquantel following infection or symptoms. Thus, only 41 (11.8%) claimed to have visited hospital in this study. This observation could be due to the poor economic status of the parents or guardians of these subjects who are mostly subsistence farmers with low or no education.

Conclusion

S.haematobium is one of the neglected tropical diseases with increasing incidence and prevalence. The findings of this study show that school children harbour the infection and therefore contribute to the transmission of the disease in endemic communities. Majority are still ignorant of the disease hence the need for more public enlightment and effective community - based treatment programs (using praziquantel as the drug of choice) be organized in school, market places and community halls. Government should provide adequate pipe-borne water or treated bore-holes the community. The prevalence of 34.2% in Mayobelwa and neighbouring communities is of great public health concern and poses a threat or problem to important socioeconomic activities in the area.

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