Prevalence of Schistosoma Haematobium Among Selected Tsangaya School Children In Nguru, Local Government Area, Yobe State, Nigeria

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***Abstract*— *Schistosoma haematobium* infection among Tsangaya School Children in Bulabulin Ward, in Nguru Town, was carried out between July to August 2013. A total of 200 samples were collected and examined for egg and ova of S.*haematobium* using sedimentation techniques in 4 selected schools, A Structured questionnaires were administered to the subjects of the target population in order to determine infection in relation to sources of water and toilet facilities. *Schistosoma haematobium* was found in 110 (55%) of the urine samples examined. The prevalence of 21% of s*chistosoma haematobium* was recorded in Mallam Basiru's school while the lowest rate was 8% in late Mallam Ishaq's school other are Mallam Sidi and Mall. Bello with infection rate of 62 and 32 % respectively. The age group between 11-13 years recorded the highest rate of infection with24.5%, while the least were demonstrated in age group of 17-19 with 5.6%. However, the infection in relation to source of water, those who use hand pump a total of 26% were infected of which MSIT recorded high rate of infection with 50% the least was reported in MBST and LMIT both with 33.3%.Infection rate of children who use lake was 76% with MBST had infected with 73% while 40% was recorded in MBLT, high rate of infection were found in children who use nearby bush for defecation with 67%, and 45% in MBST and LIMT respectively. While 11% were infected out of 41examined among those who use pit latrine for defecation among Tsangaya School, children that were studied. The findings of the study revealed that inadequate provision of potable water poor toilet facility contribute to the spread of *S. haematobium* among the Tsangaya school children. It was recommended that public enlightenment and sensitization program on environmental sanitation should be intensified, this will help to reduce the burden of *schistosoma haematobuim* infection in the area.**

***Index Terms*— Prevalence, *Schistosoma haematobium*, infection, samples, Tsangaya, school children**

I. INTRODUCTION

Schistosomiasis is refers(ed) to infection cause(d) by trematode flatworms or flukes that are transmitted by fresh water snails .Blood in urine signifies infection by *Schistosoma haematobium* and blood in stool by *Schistosoma mansoni*, each has its intermediate host which facilitate the transmission of the infective stage in man. *Schistosoma haematobium* is the causative agent of the disease called urinary schistosomiasis which is the most prevalent water borne (related) parasitic disease (Arora *et al.*, 2005) reported that about 5% of the world's population, and more than 200 million people in the tropical Asia, Africa, Latin America, and Middle East. About 800,000 people die each year from the infection of this disease that is *schistosomiasis* or bilharzias (Raven *et al.,* 2011). In Egypt, approximately 20% of the populations wereinfected; prevalence rates in some villages have been estimated to be 85% (Arora *et al.,* 2005) .Urinary *schistosomiasis* is common in the Nile River valley and has been found in the kidneys of Twentieth Dynasty Egyptian mummies (Lynne *et al.,* 1993). *Schistosomiasis* is more prevalent among children than adult males especially in most parts of Africa and Nigeria (that is, northern part of the country) in particular (Nanvya *et al.* 2011).*Schistosoma haematobium* infection is sometimes referred to as male menstruation, which has been regarded erroneously as normal phase of life in many parts of Nigeria (Ademola *et al.* 1998). *Schistosoma haematobium*causes ulceration of the bladder wall (Hickman *et al. 2008*), bladder stones, skin disease and haematuria (Jordan *et al.* 2000) (not in ref pg). Transmission of *schistosomiasis*is is attributed with to the presence of an aquatic snail that serves as an intermediate host for the *schistosoma* parasite (Eugene *et al.,* 2009). Unfortunately, some projects intended to raise the standard of living in some tropical countries, such as Aswan High Dam in Egypt, have increased the prevalence of schistosomiasis by creating more habitats for the snail intermediate hosts (Hickman *et al.* 2008).However, life cycle studies are important in designing disease control programmes in the northern part of Nigeria, such as elimination of the source of infection, interruption of the pathway of transmission and protection of the susceptible hosts (Olubunmi, 2007) The aim of drug treatment (chemotherapy) of infected individuals of *schistosomiasis* is to reduce the number of worms indirectly, this reduces transmission as the number of viable eggs entering the environment will be less. Health education helps to enlighten people in endemic areas on how to improve sanitation so as to reduce risk of infection (Ademola, prevalent in Nigeria with more than 20% are being infected with either *S.mansoni* or *S. haematobium*. In the tropics like Yobe state, the following factors have been implicated for the and increasing incidence and spread of *S. haematobium*: favorable climate factor in the area for the development of the infective stage of the common parasite. Prevalence of *Schistosomiasis* was reported among school children in boarding school in Potiskum (Bigwan *et al.*, 2012), among patients in Fune local government area (Biu *et al.,* 2012) and primary school pupils in Nguru local government area of Yobe state (Judah, 2002). (not in ref pg)The aim of this study is to determine the prevalence of urinary *schistosomiasis* and the risk factors among the children of Tsangaya School in Nguru local government area of Yobe State.. and also help to understand the route of transmission of the disease among the people in the area

Manuscript received September 23, 2014.
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among children aged eight to eighteen years of tsangaya schools in Bulabulin ward Nguru town, Yobe state

II. MATERIALS AND METHOD

A. Study Population

The study was carried out in four selected tsangaya school in Bulabulin ward Nguru local government area of Yobe state, Nigeria. Nguru was is located at 12° 52′ 48″ N x 10° 26′ 59″ (latitude: 12.88000, longitude: 10.45000) World beachlist, (2013),(not in ref pg) with area of 916km and a population of 150,632 at (2006 census). The inhabitants involve in farming, fishing, trading and civil services. There is a variety of landscape types in the area including the protected Hadejia-Nguru wetland of Nguru (NPC, 2013).(not in ref pg)

B. Ethical approval

Ethical Approval for this study was granted by obtained from the Ethical committee on infectious Disease of the federal medical center in Nguru local government .The consent of the head of the schools were sought and obtained.

C. Sample collection

A total of 200 urine samples were collected among children of Tsangaya School by stratified random sampling method. A Structured questionnaires were used to collect some information on age, source of drinking water for drinking, type of toilet facility was obtained from the children while collecting the samples. Each child was given a cleaned, driedy wide mouthed screw-capped universal bottles which were appropriately labeled and instructed by demonstration on how to collect mid-stream catch terminal of early morning diurnal urine samples used for this study. The samples were collected from 10am-12pm during the period of the sampling that is, from between July and August 2013. The samples were placed in black polyethylene bag to prevent the ova of *Schistosomahaematobium* from hatching during transportation to the laboratory.

D. sample processing

The samples were examined macroscopically before microscopic examination for macro haematuria The sedimentation method was used by centrifuging 10ml of the urine sample at 5000rpm for 5minutes.the supernatant was discarded and the sediment were transferred onto clean grease free glass slide, covered with coverslip and examined microscopically using ×10 and ×40 objectives (Cheesbrough, 2000) for analysis and the sediments were examined for eggs of *S. haematobium*. Urine samples containing egg or eggs of *Schistosoma haematobium* were recorded as positive while those without egg or eggs were recorded as negative.

III. STATISTICAL ANALYSES

The data obtained were interpreted by using the descriptive statistic by simple percentages.

A. Results

PREVALENCE OF S.HAEMATOBIUM AMONG THE SCHOOLS EXAMINED.

The prevalence of s*chistosoma haematobium* as shown in table 1. The infection in Mallam Basiru**'**s tsangaya school was 21%, and 15.5% was recorded in Mallam Sidi's School. Others were 10.5% and 8.0% in Mallam Bello school and Mallam Ishaq Tsangaya School respectively.

Table 1 Prevalence of*Schistosomahaematobium* among the three selected Schools examined

Schools	No Ex	No Infected	% prevalence
MBST	50	42	21.0
MSIT	50	31	15.5
MBLT	50	21	10.5
LMIT	50	16	8.0
Total	200	110	55

Key No: Number, Ex=Examined, INF=Infected,
MBST=MallamBasiru'sTsangaya,
MSIT= MallmSidiTsangaya
MBLT=Mallam Bello Tsangaya
LMIT=Late MallamIshaqTsangaya

PREVALENCE OF S.HAEMATOBIUM IN RELATION TO AGE

The prevalence of *schistosoma haematobium* in relation to age groups, is shown in table 2 where children at the age of11-13 had 24.4%. However children at the age of 17-19 had less infection of 5.13% among the four selected Tsangaya schools.

Table 2. Prevalence in relation to Age group among the schools examined

Age group	No. Ex	No. Inf.	% Prevalence
8-10	63	35	22.05
11-13	68	36	24.48
14-16	42	20	8.40
17-19	27	19	5.13
Total	200	110	60.06

Key No: Number, Ex=Examined, Inf=Infected

Table 3 shows the association between the presence of blood in the urine of the infected person (that is haematuria) and *S.haematobium* infection. Of the 110 infected children, about 60 children were found to have bloody urine in the study area.

Table 3: prevalence of *schistosoma haematobium*in relation to present of haematuria

Schools	No Ex	No with haematuria	% prevalence
MBST	50	26	52
MSIT	50	19	38
MBLT	50	07	14
LMIT	50	8	16
TOTAL	200	60	

The prevalence of the infection among the Tsangaya schools children in relation to the source of water used drinking and washing for domestic purposes is shown in table 4. Of which a total of the190 children examined in relation to the bore hole from LMIT had the highest rate of infection with 28.6% while 16.7% was found in MSIT. Out of 67 children examined in relation to use of hand pump 26 persons were infected , MSIT and LMIT both had 33.3% of infection each while 50%, 39% infection rate were shown by MSIT and MBLT respectively. Of 107examine in relation to lake as source of water MBST had 86.4% of infection, 38% while LMIT had 40% of infection among those children that Use Lake 76% were infected MBST children used lake for these purposes. While within these numbers, 67 children were infected with the disease. Out of which 67 had opportune to used hands pump for the same purposes and out of them 26 children also had the same infection rate. The infections were also recorded among those that use borehole water. 16 children had access to use such type of water and it was found that 3 of them also were infected with *S. haematobium*.

Table 4: Prevalence of *Schistosoma haematobium* in relation to source of drinking water

Source Water	Bore hole		Hand pump		Lake		Pond		Well	
Schools	No Ex	No inf/%	No Ex	No inf/%	No Ex	No inf/%	No Ex	No inf/%	No Ex	No inf/%
MBST	1	0(0%)	3	1(33.3%)	44	38(86.4)	0	0(0.0)	0	0(0.0)
MSIT	6	1(16.7)	14	7(50.0)	26	19(73.1)	0	0(0.0)	0	0(0.0)
MBLT	2	0(0%)	23	9(39.1)	22	13(59.1)	0	0(0.0)	0	0(0.0)
LMIT	7	2(28.6)	27	9(33.3)	15	6(40.0)	0	0(0.0)	0	0(0.0)

PREVALENCE OF SCHISTOSOMIASIS IN RELATION TO TYPE OF TOILET FACILITIES

Table 5, shows the prevalence of *schistosomasis* in relation to the type of toilet facilities used. The disease has high prevalence among children that defecate in the nearby bush MBST had 67% while LMIT had the least infection with 45%, other wer MSIT and MBLT with 56 and 59 % respectively. Only MBLT and LMIT had recorded 56 and 49 % of infection for those that use pit latrine as means of defecation. No any child has the opportunity of using water cistern in the study area

Table 5 Prevalence of *schistosomasis* in relation to the type of toilet facility

Toilet type	Water Cistern			Nearby bush			Pit latrine		
Schools	No Ex	No Inf	%Prvln	No Ex	No Inf	% prvln	No Ex	No Inf	% Prvln
MBST	0	0	0%	43	38	67%	0	0	0.0%
MSIT	0	0	0%	29	19	56%	0	0	0.0%
MBLT	0	0	0%	23	8	59%	17	7	56%
LMIT	0	0	0%	11	2	45%	24	4	49%
	0	0	0%	106	67	100%	41	11	

IV. DISCUSSION

The prevalence of schistosomiasis infection among Tsangaya school children, resident in Bulabulin ward, Nguru local area of Yobe Sate was evaluated. Some factors associated with schistosomiasis infection among the children were also analyzed. The disease was found to exist at overall prevalence rate of 55 % (table 1). This result is however, higher than those observed 30.5%, among school children in keffi, Nassarawa state as reported by **(**Ishaleku *et al.,* 2012), 41.6% observed in Danjarima community, in Kanoas documented by (Faruk *et al.,* 2009), 24.3%, was reported from school aged children in Konduga, Borno (Biu *et al.*, 2012) . However contrary 20% reported in one primary school Nguru, Yobe state, Nigeria. And equally lower than those observed; 58.1% among school children in Ilewo-Orile community in Abeokuta (Anosike *et al.*, 2001), 71.8% in settlements near a dam reservoir in Ogun (Van der Werf *et al.* 2003), and 79.4% observed in Ezze-North LGA of Ebonyi, Nigeria (Uneke*et al.,* 2010). The differences in the overall prevalence rates may be influenced by peculiar ecological characteristics and level of contact of individuals with water bodies and the degree of exposure to infective *schistosoma*cercariae in different location. The infection rate was highest between the children in the age group of 17-19 years with 70.4%, followed by 8-10age group 55.6 %, (Table 2). These two set of age groups that were mostly affected, probably because they frequently involve themselves fully in activities that bring them to the contact with the source of infection. Out of 110 children (60%) were infected, this is an indication that, haematuria is a characteristic symptom of urinary *schistosomiasis* in an endemic area which requires clinical attention. Lack of portable water and proper toilet system in the study area may expose many people to the risk of infection. Water contamination pattern and physico-chemical characteristics of locally available water influencing snail breeding in different ecological areas (Nnoruka *et al.*, 2002). Because, of the total 200 children interviewed during sample collection 174 (87%) were observed to take bath and wash their cloths in the lake that is probably the source of infection in the area. The prevalence of *schistosomiasis* in relation to the type of toilet facilities used in the study area revealed that out of the 147 respondents none is opportune to use the water cistern as a toilet facility. 106 children defecate in the nearby bush and 41 used pit latrines. The prevalence is high among those that use nearby bush for defecation with (45.6%) infection, whereas 11(7.5%) children were found to be infected among those who use the pit latrine. Ishaleku *et al.,* (2012), reported who obtained 30.5% in his study which stated that, urinary *Schistosomiasis* occurs early in life through exposures to contaminated water bodies by the school children since it is difficult to prevent children in this study area from visiting the streams for various activities such as bathing, and washing. However, Schistosomiasis is known to be associated with water-contact activities [8] like recreational (swimming) or specific agricultural activities (e.g. rice farming) [9], washing of clothes and cooking utensils [10], fishing and with the proximity of homes or communities to sites harbouring cercariae shedding *Bulinus* and *Biomphalaria* snail species [11] it was established that lack of proper disposal of human excreta, inadequate sewage system equally worsen the rate of infection among tsangaya school children in tsagaya school children in Nguru, Yobe State.

V. CONCLUSION

The findings of this study suggest that urinary *schistosomiasis* is endemic in Nguru, Yobe, with a high prevalence rate of infection particularly among Tsangaya children. The lack of proper knowledge of the causes and source of infection of the disease and inadequate water supplies were found to influence the infection rate and distribution of the disease in the area coupled with poor toilet facility and inadequate health care facilities, lack of public enlightenment and poor drainage system in

the area had contributed to the spread of *S. haematobium* . In this vein, there is the need to put in place concrete measures including regular treatment of all Tsangaya school children and other at risk groups in the communities.

ACKNOWLEDGEMENT

My sincere appreciation goes to the Laboratory technicians of the federal Medical Centre Nguru gave all the necessary support in handling and processing of the samples

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