Prevalence of Urinary Schistosomiasis among Adults in three Communities in Shonge, Shongom Local Government Area, Gombe State-Nigeria

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Abstracts
This study was carried out to determine the prevalence of Urinary schistosomiasis in Shonge area of Shongom LGA, Gombe State between January and June 2015. Three hundred urine samples were examined microscopically for Schistosoma haematobium eggs using sedimentation method. The overall result showed (28.0%) prevalence of infection in the study area. Bangunji community had the highest (12.3%) infection rate and Burak community had the least infection (6.0%) rate. Infection rate in relation to Gender showed that males (19.3%) were more infected than their females (8.7%) counterparts. There was significant difference between infection and gender (p < 0.05). Farmers were the most infected (19.0%) and those that were civil servants (1.7%) had the least incidence rate of infection. There was significant difference between infection and the peoples’ occupation. The incidence was highest (14.0%) among those that used water from Dam; the least infection (0.6%) rate was those that used Borehole. There was significant difference between infection and source of water supply (p<0.05). High infection rate (12.0%) was observed in age group 30-35 years old. There was significant difference between infection and age group (p<0.05). The high incidence (47.4%) in age group 36-41 and (66.7%) in 30-35 years old was found in males and females respectively. There was high incidence of urinary schistosomiasis among the inhabitants in the study area.

KEY WORDS: Prevalence, Urinary Schistosomiasis, Community, Shonge, Shongom, Gombe-Nigeria.

INTRODUCTION

Urinary Schistosomiasis is caused by Schistosoma haematobium whose intermediate host is the freshwater snail of the genus Bulinus (WHO, 2013). Usually called bilharzia which rank second to malaria in terms of socio-economic and public health significance in tropical and sub-tropical areas. It is the most prevalent of the water-borne diseases, with a very great risk on the health of rural populations (Biu et al., 2000). Previous studies on the incidence and surveys of Schistosomiasis in Nigeria, described the prevalence in some towns and communities varies between 32% to 98% according to Adewumiet al., (1990); Emejulu et al., (1994); Edungbola et al., (1998); Adeyeba and Ojeaga, (2002). The geographical distribution of the infection and of severe morbidity is restricted to specific areas. Several studies indicate that a lot of research work need to be carried out to determine new endemic areas and to harness the predictive potential of schistosomiasis to enhance cheaper community diagnosis and preventive measures (Mbata et. al., 2009). The disease transmission occurs where freshwater snail intermediate host, the genus Bulinus is present and where there is contact between the human population and infested water (Uwaezuoke, 2005). Subjects who lived close to bodies of water are more exposed and therefore, more vulnerable to Schistosoma haematobium infection than those who lived further from the water (Ugboroiko, et al., 2010). A study conducted in Ebonyi state revealed that 235(26.8%) people were infected with Schistosoma haematobium.
(Chigozie, et al., 2007). A study conducted in Zuru, Kebbi State, Nigeria (Daniel 2001) reported that prevalence rate was highest in males (67.5%) and (52.2%) in females. Nale et al (2002) reported a prevalence rate 19.4% in males, which was significantly higher than prevalence observed in females 3.11%. A study of prevalence and intensity of urinary Schistosomiasis conducted in Bauchi, showed that infection rate were higher among children under 15 years than adult, and males (25.2%) had higher infection rate than females (21.2%) (Elekeh, 2006). In another study Biu et al., (2000) reported on the incidence of the disease in north-eastern Nigeria but there was little data available in Shonge area, Shongom Local Government Area.

This study was to investigate the prevalence of urinary tract Schistosomiasis in Shonge, Shongom Local Government Area, Nigeria, and to determine the predisposing factors of the disease, thus to identify methods of preventing and controlling the disease.

MATERIALS AND METHODS

The study was conducted in Shonge, Shongom Local Government Area, Gombe State - Nigeria, which comprises of three (3) communities-Burak, Bangunjì and Kushi. The relief of the area provides uplands, hills and mountains that give rise to streams and vegetation of the savannah. It occupies a fertile land, which has much rainfall and used for agricultural purposes, several streams, ponds, and few earth dams mostly used for dry season farming. However, the streams overflow their banks during the rainy season and dries up during the dry season. The populace make use of streams, ponds and dams as their source of water for domestic purposes which as a result become infected and re-infected.

The General Hospital Kaltungo, Kaltungo LGA Gombe State, Nigeria approved the procedures for sample collection. The information on age, sex, community, occupation, and source of water supplies was obtained from the subjects.

A total of 300 urine samples comprising samples from adult males and adult females each were collected randomly and examined from January to June 2015. The urine samples were collected in 50ml universal sample bottles between 10am and 2pm (WHO, 2003) and taken to General Hospital Kaltungo laboratory in a box of Ice pack for analysis within 1 hour. Each urine sample was observed for evidence of turbidity. Urinalysis was carried out with reagent strip meditest combi-9 manufactured by Machery-Nagel according to themanufacturer’s instructions to detect haematuria and proteinuria in the urine samples and subsequent color change compared with the standard color scale provided by the manufacturer (Nnoruka, 2000).

The samples were analyzed by centrifugation and sedimentation techniques (WHO,
Twenty milliliters (20ml) of urine samples were centrifuged for 2 minutes at 2000rpm and the deposit of each sample bottle collected while the other samples were allowed to sediment for about 1 hour. The deposit were separately examined microscopically with x10 and x40 objectives to identify Schistosoma haematobium ova or egg(s) which appears as golden yellowish and elliptical in shape with a terminal spine. The urine samples containing ova or egg(s) of Schistosoma haematobium and without eggs were recorded. The data obtained were analyzed using Chi-Square statistic.

Water reservoirs, streams and rivers were visited in all the three communities to search for intermediate host snails in these areas. Snails found were handpicked and put in small plastic bucket, transported immediately to the laboratory and dissected for sporocyst after exposure to sunlight for about 3 hours (Emejuluet al., 1994).

Results

The result of this study shows that out of the 300 urine samples examined from three wards in Shonge, Shongom LGA, Gombe State, the overall number of people infected with Schistosoma haematobium eggs was 84 (28.0%).

The prevalence of Schistosoma haematobium in the urine samples among the communities, 100 urine samples were examined in each community. Table 1 indicates that Bangunjji had the highest infection rate of 37 (12.3%) followed by Burak with rate of 30 (10.0%) while Kushi 17 (6.0%) was found to be the least infected. Chi square analysis indicated that there was significant difference in infection between the communities (p< 0.05).

Table 2 shows the prevalence of infections in relation to gender, which indicated that 58 (19.3%) were males while 26 (8.7%) were females and there was a significant difference in infection between sexes (p<0.05).

The highest prevalence rate of infection was recorded among subjects belonged to age group 30-35, 36 (12.0%) years old, while the least rate of infection was observed in those within age bracket 40-above, 2 (0.6%) years old. Others were 18-23 years old with prevalence rate 14 (4.7%), 24-29 years old had the prevalence infection rate.

| Table 1: Incidence of Schistosoma haematobium among Communities in the Study Area |
(66.7%) in age group 30-35 years old in males and females respectively (Table 3).

Table 4 showed the distribution of urinary schistosomiasis in relation to occupation which revealed that farmers 57(19.0%) were mostly infected by Housewives 18(6.0%). Civil servants 5(1.7%) and others 4(1.3%) who did not specified their occupations had the least incidence rate of infection due to Schistosoma haematobium. There was a significant difference in infection between the inhabitant occupation (p<0.05).

The prevalence of infection in relation to sources of water supply (Table 5) indicated those that used Dam 42(14.0%)

The distribution of age group and gender among inhabitants of the study area shows that high infection rate (47.4%) was found in age group 36-41 years old and had the highest infection rate followed by those that used stream 40(13.3%) and Borehole 2(0.6%); those that used pipe borne had no infection. There was a significant difference in infection between sources of water supply (p<0.05).

Bangunji had (12.3%) infection rate this could be due to their closeness to
stream and other water bodies that came from the highlands in the area. Subjects who lived close to bodies of water or irrigation canals were more exposed and therefore, more vulnerable to urinary schistosomiasis than those who lived further from the water (Ugbomoiko et al., 2010).

Infection rates in the area varied with their ages; age group 30-35 years had the highest incidence rate (12.3%). This age group formed part of the workforce in the study area which was farming. This might be associated with frequent water contact since ages engaged in activities that involve contact with water.

Discussion and conclusion

The results of this research indicated Schistosoma haematobium infection was prevalent in the study area with an overall incidence rate (28.0%), males (19.3%) were more infected than females (8.7%), this result agrees with Nalee et al., (2001) who reported a prevalence of 19.4% in males which was significantly higher than prevalence observed in females (3.11%). The study supports a number of previous reports that have consistently shown Schistosoma haematobium infection endemicity in Nigeria is on the increase particularly in rural areas (Okoli, et al., 2006).

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Infection rates in the area varied with their ages; age group 30-35 years had the highest incidence rate (12.3%). This age group formed part of the workforce in the study area which was farming. This might be associated with frequent water contact since ages engaged in activities that involve contact with water. Prevalence rate in age group 42-above (0.6%) was low in the study area this could be likely that they were ageing and would venture going near such water bodies to get infected with Schistosoma haematobium. The low prevalence in age people may be due to progressive increase in the level of natural acquired immunity against Schistosoma haematobiumless water contact (Dawet et al., 2012). The high incidence (47.4%) in age group 36-41 years (66.7%) in 30-35 years were found in males and females respectively, this does not agree with (Ombugeadu, 2012).

The occupation of the inhabitants of the three communities showed greater influence on the prevalence of infection, farmers and housewives had (19.0%) and (6.0%) respectively. This could partly be due to the constant exposure to contaminated water bodies on their farmlands at work or on their ways to farm as they cross the streams. Also housewives go out to fetch water and wash household utensils in the slow moving stream which might expose birth to infection.
with Schistosoma haematobium. This does not agree with Olusegun et al., (2011) who reported the highest prevalence of 0.7% in artisan which there was no infections among household in HIV positive patient attending university of Benin teaching hospital Benin City Edo state, Nigeria.

The incident rate of infection in civil servant study area was low (1.7%). The low infection rate among civil servant could associated with fact that neither go to farms nor streams because they have alternative means of livelihood. This contradicts (Pukuma et al., 2006) who reported a high prevalence 38.9% among civil servants or shelleng town Adamawa state, Nigeria.

Those that used stream (13.3%) were more infected, followed by those that used dam (14.0%) as their sources of water supply, this could be that the inhabitant of the community used stream water and dam for domestic activities such as drinking and washing of pots and dishes or engaged in agricultural and recreational activities, thereby had contact with infested water bodies (Chigozie et al., 2007).

Conclusion

In conclusion, the study has indicated high prevalence of Schistosoma haematobium infection among the inhabitant in the study area. The high infection recorded could probably be due to reasons like unhealthy environment, socio-cultural practices, poverty, that the inhabitants in study area were ignorant of the mode of transmission of this disease and improper sanitation increase contamination of area and so infecting the available snail host.

The overall number of people infected with schistosoma haematobium ova was (28.0%) in the study area. Infection may be possibly higher because it was only a single sample obtained from each person and very light infections might have been missed. In a study (Engels, 1997) suggested duplicate samples on three or more days increase the chances of finding ova.

Prevention of Schistosoma haematobium includes basically the destruction of intermediate host snail; infective stage with molluscicides and larvicides respectively (Nwagu, 1998). The control of snail intermediate host would reduce the rate of transmission, thereby reduction in prevalence of infection in the study area. Subjects in the study area should be educated by the Local government health care workers on proper means of waste disposal, and construction of sanitary latrines in their homes so as to reduce the act of urinating or defecating in the open surroundings. The communities in the study area should embark on routine environmental sanitation.

REFERENCES


