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Research Article

EPIDEMIOLOGICAL STUDIES ON URINARY SCHISTOSMIASIS IN ILE OLUJI/OKE IGBO LOCAL GOVERNMENT AREA OF ONDO STATE.

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ABSTRACT

This study was carried out to determine the current prevalence of urinary schistosomiasis in relation to epidemiological factors in two communities in Ile Oluji/Oke Igbo Local Government Area (LGA) of Ondo state. A total of 760 individuals comprising 356 males and 404 females were examined and of the number examined, 126(16.6%) were infected with *S. haematobium*. Oke Igbo community had more infected individuals than Ile Oluji. Infection peaked at individuals in the age groups 10-19 and 20-29 years. The secondary school category with respect to the highest level of education had the highest prevalence. High prevalence was recorded among individuals who had knowledge of schistosomiasis and have had prior infection. Statistical analysis showed that age, sex, highest level of education, knowledge and history of schistosomiasis infection were significant demographic and socio economic factors. These findings show that the study area is endemic to urinary schistosomiasis despite school children chemotherapy.

KEYWORDS: Epidemiology, urinary schistosomiasis, prevalence, ondo state, nigeria.

INTRODUCTION

Schistosomiasis is a disease acquired through contact with water containing cercaria – the infective stage of the parasite *Schistosoma haematobium*. The disease can be asymptomatic and many people live their lives without knowing they are infected. It is widespread among poor people in less developed countries who live in conditions that favours the transmission and with limited access to proper health care (SCI, 2008). Globally, over 153 million people are infected with urinary schistosomiasis and an estimated 120 million are asymptomatic (WHO, 1998). The disease is endemic in most African countries including Nigeria with an estimated population of 101.28 million people at risk and 25.83 million people infected (Chitsulo et al., 2000). Various socio epidemiological factors are responsible for the transmission of the disease and levels of infection which includes human water contact behaviors, socio economic status and poor hygiene amongst others. The occurrence of the disease is also linked to agricultural sand water development schemes. School age children and special occupation groups such as famers, fisherman and irrigation workers are at the most risk because they are easily infected while carrying out domestic, recreational or occupational activities. (Carter Centre). In Nigeria, the epidemiology of schistosomiasis varies amongst the different ecological zones. The introduction of mass chemotherapy in schools is believed to have contributed little to the control of schistosomiasis in Nigeria because of

the lack of epidemiological data before and after chemotherapy.

This study was therefore carried out to in order to provide epidemiological data for schistosomiasis in Ile Oluji / Oke Igbo Local Government Area of Ondo State, Nigeria. . These can be used to access the efficacy of control programs.

MATERIALS AND METHODS.

Study area

Ile Oluji/Oke Igbo is one of the Local Government Administrative Areas of Ondo state. It is situated in the heartland of the tropical rainforest belt of Western Nigeria. The climate is humid with small seasonal and daily variations in rainfall. It lies between latitude 5045N and 8o15N and longitude 4030E and 6oE. The rainfall is concentrated during the months of May to October with a short break in August and considerable variations from year to year.

Ethical approval and awareness

Ethical approval was obtained from the Ondo State Ministry of Health. Awareness of the survey was done by writing the local heads of the two communities sampled in the Local government area.

Sample collection and analysis

Sample collection done by giving each individual a clean screw-capped specimen bottles to provide terminal urine during midday. Each bottle was labeled to correspond to the number of the person on a pre-designed questionnaire. The demographic and socio economic characteristics of the individuals were obtained using the questionnaire on submission of the urine samples. The samples were preserved on collection by adding 5ml of 10% formalin at the point of collection.

In the laboratory, parasitological analysis was carried out using sedimentation techniques. The sediment was transferred on slides and examined under the 10x objective for *S. haematobium* eggs.

Statistical analysis

The relationship between demographic, socio economic and disease data was analyzed on SPSS using Chi-square analysis. P values less than 0.05 were considered significant.

RESULTS

Prevalence of s. Haematobium infection in the study area.

A total number of 760 individuals comprising 371 and 389 individuals from Ile Oluji and Oke Igbo respectively were examined and of the number examined, 126(16.6%) were infected with *S. haematobium.* (Table 1)

Prevalence with Respect to Gender.

The sex specific prevalence showed that males had the highest infection rate of 21.3% while the females had 12.4%. The numbers of females were more than males in the study population. Statistical analysis indicates that there was significant difference between the sexes ($P < 0.05$). (Table 2)

Prevalence with Respect to Age Groups

The individual's respondent age ranged from 2 to 80 years and was categorized into seven age groups. The larger percentages of the study population were made up of children and adolescents. The age groups 10-19 and 20-29 years had the highest prevalence (23.5%) followed by the <10 years (16.5%). The least prevalence of 3% occurred within the 50-59 years age group. There was no infection in the ≥59 years age group. Statistical analysis showed that infection is age dependent ($P < 0.05$). (Table 3)

Prevalence with Respect to Highest Level of Education.

In relation to highest level of education, statistical analysis revealed that there was significant difference between the categories of level of education ($P < 0.05$). The highest prevalence of 21.5% was recorded in the secondary school category followed by the primary school category (14.3%) and the least prevalence of 4.2% was observed in the No Formal education category. (Table 4)

Prevalence with Respect to Knowledge of Schistosomiasis.

Among the 760 individuals screened for *S. haematobium* infection, 469 (61.7%) claimed to have no knowledge of schistosomiasis. A high prevalence of 30.9% was discovered among the remaining 291 individuals who had knowledge of schistosomiasis. Statistical analysis indicated that infection is knowledge specific ($P <0.05$). (Table 5)

Prevalence with Respect to History of Schistosomiasis.

Table 6 showed that a large number of the study population asserted that they have had no history of schistosomiasis of which 7.2% tested positive for *S. haematobium* infection. A high percentage of 95.1% was recorded among those who have had schistosomiasis before. This result was statistically significant ($P < 0.05$).

DISCUSSION

The prevalence of urinary schistosomiasis (16.6%) as shown in this research proved that Ile-oluji/Oke-igbo LGA of Ondo state fell within the WHO classification as endemic. This result is in line with earlier studies conducted in the study area by Odaibo *et al.*, (2004). The

study also corroborates other studies conducted in different parts of Nigeria which have shown schistosomiasis to be endemic in rural areas (Houmsou *et al.*, 2012). In a preliminary investigation of the prevalence and intensity of urinary schistosomiasis in Abarama village, Gusau, Bala *et al.*, (2012) recorded a prevalence of 74%.

The main factors responsible the endemicity of urinary schistosomiasis in the area includes presence of infected water bodies, continuous visit to contact sites where daily activities like fetching of water, washing, and fishing takes place, lack of proper hygiene and poor adherence to health education. These factors have been constantly incriminated in the epidemiology of schistosomiasis.

The infection pattern showed that males are more infected than females. This could be attributed to the fact that male children are more involved in water contact activities such as swimming, fishing, playing in water apart from domestic chores like fetching water and washing than females. It is also notable that there are differences in male and female behavior at puberty stages. This leads to differences in exposure levels. This finding agreed with earlier reports by Houmsou *et al.*, (2012) and Odaibo *et al.*, (2004) who found higher prevalence in males than females in Benue and Ondo States respectively.

It is also reflected in this study that early adolescent are the most susceptible to infection. This is expected from the study area as most schools are located close to infected water bodies where children swim, play and fish after school hours. Also, it was observed that most of the solar powered boreholes in this community were not functional, so the streams and rivers still remain a constant source of water supply for the community. The differences in infection rates between the age groups with the usual age group 10-19 years being most susceptible to infection is a common feature of urinary schistosomiasis. Similar trend have been recorded before in various research on urinary schistosomiasis in Nigeria (Odaibo *et al.*, 2004; Ekwunye and Okafor, 2004; Bala *et al.*, 2012; Oniya and Odaibo, 2006).

From the highest level of education aspect, the group with no formal education had the least prevalence while the highest prevalence was recorded in the secondary school category although the result was not statistically significant. The reason may be that most people with no formal education are traders, farmers or artisans. Most of the individuals in the secondary school categories are students or school dropouts who still engage in water contact activities for fun. A similar result was also discovered by Rine *et al.*, (2013) who recorded a high prevalence of 30% among the secondary level of education and least prevalence of 2.5% in the group with no formal education.

About one third of the study population are aware of schistosomiasis and a high prevalence of 30.9% was recorded among them. Statistics showed the relationship between knowledge and infection rate to be significant. Infection among those who have knowledge may be due to the fact that they still continue to visit infected water bodies either for domestic or recreational purposes since that is the main source of water supply. This finding agreed with that of Nkechi *et al.*, (2012) who investigated perception, attitudes and practices on urinary schistosomiasis in Delta state. The high prevalence of infection among those who are knowledgeable about schistosomiasis may also indicate a careless attitude of the people to the disease and gaps in the knowledge of the transmission and prevention of the disease which may necessitate constant and systematic health education. It is also important to note that education may not necessary lead to a change in behavior as the people may still have to return to infected streams and rivers for water supply. A study in southern Ghana showed that highly symptom aware children were heavily infected with urinary schistosomiasis (Wagatsuma *et al.*, 2003).

With respect to history of schistosomiasis, a high percentage of those who had schistosomiasis before were positive for infection. This may be attributed to constant reinfection due to unstopped visits to contact sites which is a common observation in endemic communities. A 7.2% prevalence among those who had never had schistosomiasis before also shows that new infections are taking place and may leads to an increase in prevalence of infection. This result agrees with that of Oniya and Odaibo, (2006) who observed a prevalence of 59% in a south western village in Nigeria. After treatment with praziquantel, a prevalence of 52% was recorded a year later and there was no clear cut pattern of infection. The high rate of reinfection was attributed to high water contact activities and possibly drug resistance.

In conclusion, the present research found a high prevalence of infection in Ile Oluji/Oke Igbo LGA with the highest level of infection among adolescents despite the yearly school based chemotherapy. Therefore, there is need for integrated control of urinary schistosomiasis in the study area.

Table 1: *Prevalence of S. haematobium infection in the communities. No examined No (%) infect*

	No examined	No (%) infected
Ile Oluji	*371*	32(8.6)
Oke Igbo	389	94(24.2)
Total	760	126(16.6)

Table 2: *Prevalence of S. haematobium infection in relation to gender (P < 0.05)*

Sex	No examined	No (%) infected
M	*356*	76(12.4)a
F	404	50(21.3)b
Total	760	126(16.6)

Table 3: *Prevalence of S. haematobium infection in relation to age (P < 0.05).*

Age	No examined	No (%) infected
<10	*200*	33(16.5)a
10-19	251	59(23.5)b
20-29	102	24(23.5
30-39	76	6(7.9)d
40-49	55	3(5.5)e
50-59	33	1(3.0)f
>59	43	0(0.0)g
Total	760	126(16.6)

Table 4: *Prevalence of S. haematobium infection in relation to educational status (P < 0.05)*

Highest level of Education	No examined	No (%) infected
***pry**	342	49(14.3)b
***sec**	312	67(21.5)c
***tet**	58	8(13.8)d
Total	760	126(16.6)

*non=no formal education, pry=primary, sec=secondary, tet=tertiary

Table 5: *: Prevalence of S. haematobium infection in relation to knowledge of schistosomiasis (P < 0.05)*

Knowledge of Schistosomiasis	No examined	No (%) infected
No	469	36(7.7)[a]
Yes	291	90(30.9)[b]
Total	760	126(16.6)

Table 6*: Prevalence of S. haematobium infection in relation to history of schistosomiasis (P < 0.05)*

History of Schistosomiasis infection	No examined	No (%) infected
No	679	49(7.2)[a]
Yes	81	77(95.1)[b]
Total	760	126(16.6)

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