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Schistosoma Haematobium Infection in School Children in Rural Communities of Ebonyi State, Nigeria

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Abstract: *The study on the prevalence of Schistosoma haematobium among school children was conducted in Ezza North Local Government of Ebonyi State, Nigeria to determine the prevalence of urinary schistosomiasis infection. Of the total of 812 pupils examined using the centrifugation method, 375(46.18%) were infected with Schistosoma haematobium, out of which 249 (48.06%) were males and 126 (42.85%) were females. The chi-square test revealed that difference was not statistically significant (P>0.05). The prevalence of infection was highest among the ages of 11-15 years, 250 (52.52%) while 5-10 years and ≥ 16 years had 82 (40.80%) and 43 (31.85%) respectively. Though, there was no significant difference (P>0.05) between the ages recorded. The prevalence of light infection 254 (49.90%) versus heavy infection, 121 (39.93%) was recorded, although there was no significant difference in the trend (P> 0.05). Urinary schistosomiasis is a disease of the poor that typically affects rural communities, especially school-aged children, who lack information, access to safe water, sanitation and whose daily activities bring them into direct contact with several species of fresh water snails. There is urgent need for a renewed commitment to control urinary schistosomiasis among the school age groups in the study area.*

Keywords: *Schistosoma haematobium, children, water contact, haematuria.*

I. Introduction

Human schistosomiasis is an important and widespread infection in the tropics which gives rise to a complex of acute and chronic disease with widely differing signs and symptoms (World Bank, 1993). Information on schistosomiasis from a number of different geographical settings indicates that infection intensity and immunological responses to infection are related in some ways to age (King, et al., 2000, Butterworth, et al., 1992, Roberts, et al., 1993).

Infection levels are normally highest in children, and following chemotherapeutic cure, they are more rapidly re-infected (Butterworth et al., Korve, 2002, Bundy, et al., 1992)

Urinary schistosomiasis is widely distributed with a huge impact on public health and socio-economic development. Based on the recent extrapolations, it is estimated that 652 million lives are at the risk of infection and that 193 million people are actually infected with schistosomiasis of which 85% are concentrated in Sub-Saharan Africa. It is believed that there are 120 million symptomatic cases, of which 20 million are suffering from severe diseases (World Bank, 1993). According to WHO, 1993), the disease is currently endemic in 76 countries.

In Nigeria, the disease constitutes a public health problem particularly in children (Awogun, 1990) Highest prevalence was observed among children aged 5-19 years who constitute 60 – 70% of all persons infected in the areas studied. The disease is at most times related to water development schemes such as irrigation projects, rice/fish farming and dams.

In Ebonyi State, several works have been carried out. In 1998, a survey of S haematobium infection was conducted, which involved children from 98 primary schools (representing 98 villages) including Ohaukwu, Ikwo, Ishielu and Izzi. The prevalence ranged from 1.7% to 70%.

The main focus of prevention of the disease is by eliminating the water-borne snails, which are natural reservoirs for the parasite. The control of schistosomiasis has received considerable attention partly because of increasing evidence that treatment can improve the physical and cognitive development of school-aged children, who are usually used as index for assessing community prevalence (Guyatt, et al., 1999)

Urinary schistosomiasis is still endemic in Ebonyi State, as no sustainable control programme has been implemented. Although long-term mass chemotherapy campaigns targeting school age children have been implemented in the past, human treatment interventions have had only limited success in stopping transmission in the highly endemic areas, where the re-infection rate varies between 9% and 21% per year.

II. Materials And Methods

Study Area: The study was carried out in the rural district of Ezza North Local Government Area in Ebonyi State, South-Eastern Nigeria from January through March 2011. The climate and vegetation of the area has been described (Uneke, et al., 2007, Anosike, et al., 2006). The main transmission sites of schistosomiasis were identified as man-made pools, quarry pits, streams, as well as road ditches which intersect the villages as their main source of water supply (Anosike, et al., 2006).

Sample Collection: With the approval of Education secretary of the Local Government Parent Teacher Association and the teachers, three schools were sampled. 812 pupils from these three schools; Uwaoma primary school, Azunworiyi Okposhi ($n_=$ 286), Unity Primary School, Ogharaugo ($n_=$ 287) and Community Primary School, Ogharaugo ($n_=$ 259) were registered after explanation of the objectives of the study to them, which was done by their different school heads. Each participant was given a universal container for sample collection.

Parasitological Techniques: About 20ml of clean-catch mid stream urine samples were collected in 50ml capacity autoclaved wide mouthed, leak proof universal containers by the study subjects themselves, who were previously subjected to a little exercise to agitate their bladder and carefully instructed with illustration aids. Samples were obtained between 10.00am and 2.00pm (Bradley, 1993). Samples with visible haematuria were noted. Each urine sample were appropriately labeled with identification numbers and placed in a cold box with ice packs. The samples were then transported to the departmental laboratory of Applied Biology, Ebonyi State University Abakaliki for analysis. The urine specimens were thoroughly agitated and 10ml of each sample were centrifuged (Model HNS//CFC 301) at 1000.pm for 5 minutes. The supernatant was discarded and the sediment examined for eggs of S. haematobium and counted under the microscope (Model BO45781). The results were analyzed as eggs/10ml urine according to schools, age, and sex, heavy and light infections.

Statistical Analysis The data analysis was done using the chi-square test to determine the difference in proportion, ($P>0.05$) achieved statistical significance.

III. Results

A total of 812 pupils were examined between January and March 2011, from the three primary schools in Ezza North Local Government Area of Ebonyi State, Nigeria. Out of the 812 pupils examined, 375 (46.18%) were infected with S. haematobium. The prevalence of S. haematobium was higher in Community Primary School Ogharaugo, (51.74%) than in Unity Primary School Ogharaugo and Uwaoma Primary School Azunwoniyi Okposhi (43.82%) and (43.35%) respectively. This was found to be statistically insignificant ($P>0.05$).

Table 1: Schools examined for prevalence of Schistosoma haematobium infection

Schools	Number Examined	Number Infected	% of Infection
Uwaoma primary School Azunwaniyi	286	124	43.35%
Unity Primary School Oharaugo	267	117	43.82%
Community Primary School Oharaugo	259	134	51.74%
Total	812	375	46.18%

The males were more infected than the female in all the schools (48.06% vs 42.85%) respectively, although the difference was not statistically significant ($P<0.05$)

Table 2: Number of pupils infected by sex

	No. Examined	No. Infected	% Infected
Male	518	249	48.06%
Female	294	126	42.83%
Total	812	375	46.18%

The prevalence of infection decreased among the ages of ≥ 16 years and 5-10 years (31.85%) and (40.80%) respectively and increased among the age groups of 11-15 years (52.52%) although there is no significant difference in the rate of infection ($P<0.05$) table 3.

Table 3:Number of pupils infected according to their age groups

Age Groups	No Examined	No Infected	% Infected
5 – 10	201	82	40.80%
11 – 15	476	250	52.52%
11 – 16	135	43	31.85%
Total	812	375	46.18%

The prevalence of heavy infection (7150 ova/10ml of urine) was higher among the females 40.52% than the males 39.5%. The prevalence of light infection was higher among the males 56.12% than the females 41.40%. Within the study area, the prevalence of light infection was higher among the males 56.12% than the females 41.40%. Within the study area, the prevalence of light infection was higher than heavy infection 49.90% and 39.93% respectively. Statistical analysis showed a significant difference between light and heavy infection P>0.05 table 4

Table 4: Prevalence of light and heavy infection according to their intensity

Intensity	No. Examined	No. Infected	% Infected
< 50	509	254	49.90%
≥ 50	303	121	39.93%
Total	812	375	46.18%

IV. Discussion

The prevalence of Schistosoma haematobium infection is high (46.18%) which suggest that the disease is endemic in the study area. The present study supports a number of previous reports, which have consistently shown that Schistosoma haematobium endemicity in Nigeria is on the increase particularly in the rural areas with school children at greatest risk of injection (Uneke, et al., 2007).

The result showed that the prevalence of Schistosoma haematobium infection was higher among the males than the females (48.06% and 42.85%) respectively. This is presumably due to higher water – contact activities by male pupils particularly in the swamp- rice farming and fishing, where fathers engage every male in their household in the profession. In addition, other regular water – contact activities such as swimming and bathing in cercariae- infected streams and rivers are male dominated. This is similar to the observations made within the state by (Anosike, et al., 2006)

Among the age groups examined the prevalence of Schistosoma haematobium infection was highest between the ages of 11 – 15 years, followed by 5 – 10 years and lower in ≥ 16 years, 52.52%, 40.80% and 31.85% respectively. This supports other similar works by (Awogun,1990, Uneke, et al., 2007, Korve, 2002) The prevalence of heavy infection was higher among the females than the males 40.52% and 39.57% while that of light infection was higher among the males than the females 56.12% than the females 41.40%. Experience from other studies suggests that genital lesions probably also exists (Awogun, 1990). The overall prevalence of light infection was higher than heavy infection 49.90% and 39.93%. This also supports other works done by (Bandy, et al., 1992, Uneke, et al., 2007, Anosike et al., 2006), Korve, 2002) From the results, the proportions of males (48.06%) and age groups 11 -15 years (52.52%) who had high rate of infection, showed that they lacked awareness of the infection and its mode of transmission as they were always engaged in infected water bodies, when they accompany their parents to fishing, bathing and washing. The recognition of schistosomiasis as a major health problem is still limited in these communities, as was previously observed by (Uneke, et al., 2007, World Bank, 1993). Any control measure that is to succeed here must involve the communities, such as developing participatory health education programme with community members to effect behavioural change by parents who expose their children to Schistosoma haematobium infection. Involving the community in providing safe water and sanitation facilities would reduce contamination of the water bodies.

V. Conclusion

In conclusion, strategic control of schistosomiasis in Nigeria consists of morbidity control through treatment, supported by health education targeted at school children and adults to reduce the risk of re-infection. In areas where the disease is endemic as results of water resource projects and where fishing is a major source of income, the schistosomiasis control strategy should be extended to include school children to achieve drop in prevalence and incidence of certain health problems.

References

[1]. Anosike, J.C, Nwoke, B.E.B, Okere, A.N., Alozie, J.I., Okoro, U.O. and Nwosu, D.C. (2001). Endemicity of Uninary Schistosomiasis in the North Central Zone of Abia State Nigeria. International Journal of Environmental Health and Human Development 2 (2): 5 -12

[2]. Anosike, J.C. Oguwuike, T.U., Nwoke, B.E.B, Asor J.E., Ikpeama, C.A., Nwosu, O.C. and Ogbusu, F.L. (2006). studies on Vessical Schistosomiasis among Rural Ezza Farmers in the South East border of Ebonyi State, Nigeria. Ann Agric Environ Med. 13:13-19

[3]. Awogun, I.A. (1990). A comparison of S. haematobium and S. mansoni among Secondary School Students in Ilorin, Kwara State, Nigeria. Journal of Parasitology. 9(11): 51-54.

[4]. Bradley, D.J. (1993). A Quantitative Approach to Bilhaziasis. East African Medical Journal 40:240-249

[5]. Bundy, D.A.P., Hall, A., Medley, G. F. and Savioli, L. (1992). Evaluating measures to control intestinal Parasitic Infection. World Health Stat. Quart. 45:/68-179.

[6]. Butterworth, A.E., Dunne, O.W., Fulford, A.J.C., Throne, K.J.L., Gachuhi, K., Ouma, J.H. and Sturrock, R.F. (1992). Human Immunity to S. mansoni observation on mechanism and Implications for control. Immunol Invest 21:391-395.

[7]. King, C.H., Muchiri, E.M. and Ouma, J.H. (2000). Evidence against rapid emergence of praziquantel resistance in Schistosoma haematobium, Kenya. Emerg Infect Dis. 6:585-594.
[8]. Guyatt, H.L., Brooker, S. and Donnelly, C.A. (1999). Can prevalence of infection in school-aged children be used as an index for assessing community Prevalence? Parasitology. 118:257-268.
[9]. Korve, K.N. (2002). Report of Schistosomiasis control activities in the South Eastern Nigeria. 1nsted. Frontiers publishers Ltd, Lagos. 438Pp.
[10]. Roberts, M., Butterworth, A.E., Kimani, G., Kamau, T., Fulford and Sturrock, R.F. (1993). Immunity after treatement of Human Schistosomiasis association between cellular response and resistance to re-infection. Infect. Immune. 61:4984 – 4993.
[11]. Uneke, C.J., Oyibo, P.G., Ugwuoru, C.D.C., Nwanokwai, A.P. and Ilogbunnam, R.O. (2007). Uninary schistosomiasis among school age children in Ebonyi State, Nigeria. The internet Journal of Laboratory Medicine 2 (1):15 – 19.
[12]. World Bank (1993). World Development Report, Investigating in Health. Oxford University press. 329Pp.
[13]. World Health Organization. (1993). The control of Schistosomiasis: second Report of the W.H.O. expert Committtee, Geneva. Technical Report Series 830.