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OCCURRENCE OF URINARY SCHISTOSOMIASIS AMONG PRIMARY SCHOOL PUPILS IN EGBU COMMUNITY, OWERRI NORTH LOCAL GOVERNMENT AREA, IMO STATE NIGERIA

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ABSTRACT

Urinary schistosomiasis is one of the neglected tropical diseases, the ignorance of the disease among communities and infected individual is of Public Health concern. Infection occurs when skin comes in contact with contaminated freshwater in which certain types of snails that carry the parasite inhabit. The infection is common in tropics and subtropics, mainly in poor communities without access to safe drinking water and adequate sanitation. A cross sectional study was designed to determine the prevalence of urinary schistosomiasis among primary school pupils in Egbu community in Owerri north local government, Imo state. Urine samples was collected from 216 students that volunteered for the study. Chemical examination of the urine was carried out on the urine samples collected using commercially prepared test strips (combi 11 urine test strip) to detect the presence of haematuria and bilirubin, membrane filtration method and microscope were used in detecting the *S. haematobim* eggs. Out of 216 urine samples examined, 72(33.3%) were infected. This shows a high prevalence of urinary schistosomisis. Higher prevalence 38.3% was recorded in the age range of ≤10, while a lower prevalence of 30.4% was found among the age range of 11-20. Prevalence was higher in male than in the female 34.9%) and 30.4% respectively. Comperism between the urine that tested positive hamaturia and non haematuria urine shows 88.9% and 14.8% prevalence respectively. The level of awareness of Schistosomiasis is poor in the study area. The result obtained from this study indicates endemicity of urinary schistosomisis in the area.

KEYWORDS: Public Health, Ignorance, Schistosomiasis, Pupil.

BACKGROUND

The impact of schistosomiasis has long been underestimated and neglected (Dawaki, Francis *et al*., 2017). It ranks second only to malaria as the most common parasitic disease, killing an estimated 280,000 people each year in the African region alone (WHO, 2013). The prevalence of schistosomiasis, like most parasitic disease is related to poverty and poor living conditions (Dawaki *et al*., 2017).

ETHICAL CLEARANCE

Ethical clearance was gotten from the University's ethical and research committee before the commencement of the study. The consent of the teachers and respondents were gotten.

METHODOLOGY

Area of Study

Egbu is a village in Owerri North Local Government Area of Imo state in southern Nigeria, it is the first physical source of the Otamiri River in the city of Owerri. The geographical coordinates of this community is 5° 29' 0" North, 7° 4' 0" East. Egbu is the first physical source of Otamiri River which flows to Owerri Nchi Ise, Nekede, Ihiagwa and then pass through many other communities in Imo State to Rivers State. The choice of this area by the researcher is facilitated by the presence of the Boreholes, Tap, and the Otamiri River in the community, thus this prompted the conduct of this study. The selections of the primary schools were based on pupils' attendance, location and school environments.

Experimental Design

A cross sectional study design was used as well as urine specimen collection Mechanism for experimental study for a school-based Survey to determine the prevalence of urinary Schistosomiasis among primary school pupils in Egbu community. The study was conducted on July 2021, Sampling was completely randomized, as there was no restriction whatsoever as to age, class, or sex.

The research was conducted on every student that volunteered. A total of 216 students of those who volunteered were sampled at random from the three different classes.

Sample size: sample size 216 was determined using Raosoft calculator,
Sampling Technique and Procedure: Simple random sampling selection technique was used for this study.

Questionnaire Survey: A questionnaire was used in the primary school as the pupils were interviewed to provide information such as age, sex, class, the source of drinking water, bathing water and parental occupation.

Specimen Sample Collection procedure: A total of 216 urine samples was collected randomly from the pupils with the assistance of their teachers. Twenty to twenty-five millilitres (20- 25ml) of Urine specimens were collected, using clean and sterile, wide-mouthed, screw containers between the hours of 9 a.m. and 11 a.m. Each urine sample poured into a clean 25ml test tube was properly labelled.

Examination: The urine samples were examined for colour changes also chemical examination of the urine was carried out on a sample using commercially prepared test-strip (Combi 11 urine test-strip) noting the various parameter Glucose, Protein, Blood, Urobilinogen, Nitrite, Bilirubin, pH, Ketone, density, Ascorbic acid, and Leukocytes (Obisike et al., 2019).

Polycarbonate membrane filters (Millipore Comp.) of 13 mm diameter and 12-14 µm pore size were used for filtration of *Schistosoma haematobium* eggs from urine. The filters were removed at the laboratory from filter holders using a blunt-ended forceps and transferred to a microscope slide, face upwards and stained with lugos iodine. (Obisike *et al*., 2019).

The entire filter was systematically examined for eggs of *Schistosoma haematobium*. The number of eggs in the preparation was counted and recorded. On examination of the samples using the microscope, the parasite, *Schistosoma haematobium*, was identified by the presence of its ova or egg. The eggs or ova of *S. haematobium* have a characteristic terminal spine, are large, oval in shape and pale yellow-brown in color. In most cases, the presence of the ova in urine is associated with the presence of pus cells and red blood cells (RBCs).

Data Analysis: Data was analyzed using statistical software package (SPSS version 22) for statistical analysis.

REPRESENTATION OF RESULTS

A total of 216 urine samples were examined for the prevalence of *Schistosoma haematobium*, the urine colour observed were amber, clear and yellow shown in Table 1. A total prevalence of 33.3% was observed in this study. The prevalence was higher in urine samples that tested positive to haematuria than non haematuria urine, 88.9% and 14.8% respectively.

The highest prevalence of 34.9% was found in the age range ≤10 while the least prevalence of 31.3% was recorded in the age range 11-20 years (Table 2).

Males recorded a higher prevalence of (23.8%) while females had (20%). (Table 3)

The study on the socio-economic activities indicated various sources of water contact and various parental occupation in the. study area. Parental occupations of this study, showed that children of professional workers have low prevalence of (12.5%), and (0%), while children of hand-working parents with little or no educational background have the highest prevalence of (28.5%) and (50%). (Table 4).

Table 1: Prevalence of *Schistosoma haematobium* in relation to urine colour.

Urine	Colour	Haematuria And Bilirubin		No Haematuria And Bilirubin	
		No. Ex	No. Inf (%)	No. Ex	No. Inf (%)
Amber	63	15	14 (93.3)	48	8 (16.7)
Yellow	75	12	10 (83.3)	63	7 (11.1)
Clear	78	27	24 (88.9)	51	9 (17.7)
Total	216	54	48 (88.9)	162	24 (14.8)

$P < 0.05$

Table 2: Age Related Prevalence of Urinary Schistosomiasis.

Age Group (years)	Number Examined	Number Infected	Prevalence (%)
≤10	81	31	38.3
11-20	135	41	30.4
TOTAL	216	72	33.3

$P > 0.05$

Table 3: Sex related Prevalence of Urinary Schistosomiasis.

SEX	Number Examined	Number Infected	Prevalence (%)
MALE	126	44	34.9
FEMALE	90	28	31.1
TOTAL	216	72	33.3

P>0.05 There is no significant difference.

Table 4 Prevalence of Urinary Schistosomiasis in relation to water contact activities.

Source of Water Contact	Number Examined	Number Infected	Prevalence (%)
Washing	75	37	49.3
Swimming	57	11	16.7
Others	66	20	15.2
Non	16	7	43.8
TOTAL	216	72	33.3

P>0.05

DISCUSSION

Schistosomiasis remains endemic and a major public health problem in tropical and medium income countries characterized by poor sanitary conditions and among people with little or knowledge of the disease. It is one of the neglected tropical diseases. The results of this study shows that the area studied is endemic with urinary schistosomiasis, with a prevalence of 33.3%, The result observed in this study is lower than the findings in Wamakko Local government Sokoto State (Ahmed *et* al., 2018), which reported a prevalence of 48% but higher than what was reported in Baenue Stsate Nigeria by Obisike *et al*. (2019).

The colour of the urine samples collected for this study was observed and noted, to detect the exact colour of the urine samples, some of urine sample colour were clear, some yellow, while some were amber from the appearance of the urine observed. The test strips indicated that the yellow urine colours had the highest prevalence of 83.3%, the Amber urine colour had a prevalence of 93.3%, while the low prevalence showed on the clear colour urine samples with prevalence of 88.9%.A comparism of the rate of infection between the urine samples that were positive to haematuria and those that were negative to shows a very high prevalence in haematuria urine samples than in non haematuria urine samples. This indicates that urine test strip alone is not enough to conclude on the prevalence of urinary schistosomiasis. The 14.8% prevalence observed in non haematuria samples shows that.

In this study, among sex groups, males have a higher prevalence than females. Similarly, a high prevalence of 63% among male and 36.7% among female was reported among primary and secondary school children in oju L.G.A. Benue state, (Chikwendu *et al*., 2019). The high prevalence observed in males could be due to the fact that males tend to spend more time with water bodies, such as fetching water for domestic use, play or bath in dirty contaminated water, thus increasing their chance of contact with *S. haematobium* cercariae and so, increasing their chances of infection, unlike the females that may not attach any importance to such water contact activities but will prefer to always be at home attending to house chores. Similarly, in another study carried out by Obisike etal.(2018) among school children in Makurdi Metropolis, the sex distribution of *S. haematobium* infection among school children in makurdi LGA showed a higher prevalence rate in males 30(25.6%) than in females 19(22.9%), which generally, prevalence of urinary schistosomiasis is known to be higher among males than females. Similarly, in another study carried out in Otukpo communities in Otukpo local government area of Benue state Nigeria, a total of 139 urine sample was obtained from 81 males and 48 females to determine the intensity of *Schistosoma haematobium* in relation to age, the males had a higher infection (7.1%) rate than the females (6.5%) (Obisike et al., 2021) which may be because boys have more contact with water bodies that are likely to harbor effective cercariae.

Among age groups of this study, The highest prevalence of 25.9% was found in the age range ≤10 while the lower prevalence of 20% was recorded in the age range 11-20 years, The low prevalence recorded within 11-20years age groups may be due to less exposure to Socio-Economic activities that predispose school children to the infection, this could be as children grow older, they tend not to engage with socio-economics activities that affects health, such as playing in dirty and contaminated water, and reduced contact with water bodies, thereby making the worms within then to die naturally, as *S. haematobium* adult worms have been reported to live on the average of 3-10 years. Comparatively, in a cross sectional study carried out in Oju, Benue state, Nigeria, on the prevalence of *schistosoma haematobium* infection among school children in relation to age, students aged 11-15 had higher incidence of *Schistosoma haematobium*, with prevalence of 53.3, while the lowest prevalence of 10% was among the age group of 21 and

above. (Chikwendu, Atsuwe, Obisike, Igbor, 2019). Hence this average age group are not often associated more frequently with schistosomiasis problems, because the tend to know the risk factors involved due to their majority of age.

According to the parental occupations of this study, the children of professional workers have low prevalence of 12.5%, and 0%, while children of hand-working parents with little or no educational background have the highest prevalence of 28.5% and 50%.

The result obtained in this study has proven the endemicity of urinary schistosomiasis in the study area. Poverty and ignorance are contributory factors to the spread of the infection in the study area.

CONCLUSION

This study has identified a poor level of awareness about urinary schistosomiasis among pupils in Egbu community of Owerri North Local Government Area Imo-state. The poor level of awareness and knowledge about schistosomiasis need to be addressed through intensive health education. Such campaign should focus on the cause and means of transmission as well as the consequences of untreated infections. The construction of boreholes has provided suitable habitats for the survival of schistomiasis thereby enhancing the effective sustenance of transmission cycle which is capable of leading to further increase and severity of infection. The role of the vectors in the transmission of the disease should be emphasized likewise strengthening of school health programmes related to schistosomiasis in particular should be advocated.

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