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INTESTINAL SCHISTOSOMIASIS AND OTHER INTESTINAL HELMINTH INFECTIONS IN ESIE A RURAL COMMUNITY IN KWARA STATE, NIGERIA.

BY

Abolarinwa, S. O.

ABSTRACT

A survey of intestinal schistosomiasis and other intestinal helminth infections was conducted among primary school pupils in Esie, a rural community in Irepodun Local Government Area of Kwara State, Nigeria. Sedimentation parasitological examination of stool specimens from the pupils reveal an overall infection rate of 6.4% for Schistosoma nansoni. More males (9.2%) than females (2.7%) were infected. The most prevalent intestinal helminth infection in the population was Trichuris trichiura, (63%). Multiple infections were common with various combinations of Trichuris trichiura, Ascaris lumbricoides, Hookworm, Enterobius vermicularis (as double, triple or quadruple infections). Simultaneous infection by I. T. trichiura and Hookworm was highest (23.1%). There was no significant relationship between infection rate and sex, age or socio economic status of the pupils.

INTRODUCTION

Schistosomiasis is endemic in many African countries, though its importance as a public health problem lacks sufficient recognition (Ekejindu *et al* 1999). Those infected develop serious chronic disease usually after years of intensive exposure and infection.

The intestinal form of the disease caused by Schistosoma mansoni and other intestinal helminth infections constitute a major cause of morbidity in many rural communities in Nigeria (Adewumi *et al* 1993).

In Nigeria, review of literature by Cowper (1973) reveal that Schistosomiasis particularly the urinary form caused by *S. haematobium* has received considerable attention over the years. Recent data on the prevalence in different part of the country are also available (Mafiana and Beyioku 1998; Okoli and Odaibo 1999; Useh and Ejezie 2000) . nevertheless, recent documented data on *S. mansoni* infections and other intestinal helminth infections, particularly concerning worm load are not readily available except for a few (Nwaorgu *et al* 1998). It is against this background that this study was carried out among children in rural Esie community with the aims of:

Abolarinwa, S. O. is with Fed. Univ. of Tech., Minna, Nigeria. Dept. of Biological Sciences.

(1) assessing the status of intestinal schistosomiasis and helminthiasis in the community.

(2) providing additional epidemiological data required for the formulation of sound control programme for these infections.

Esie was chosen as a study location based on unpublished hospital record revealing occurrence of helminthiasis in the community. The choice of school-aged children was based on the finding that they are most representative of a community and least prone to migration. (Nwosu 1981).

MATERIALS ND METHODS

STUDY AREA.

Esie is a rural community located 53km south east of Ilorin, the capital city of Kwara State, Nigeria. It is a typical guinea savannah community with a population of about 10,000 people comprising mostly of old farmers, Civil servant, artisans and children. There are four primary schools, two secondary schools and a comprehensive health centre. Members of the community depend on streams, wells, harvested rainwater and occasionally tap for their water needs. Pit toilet and refuse dump are common. (Fig. 1) (Map of Esie).

PARASITOLOGICAL EXAMINATION

The objectives of the study were discussed with the Head teacher, teachers and the school children before embarking on the survey in order to get their cooperation. Pupils from all the four primary school were targeted for the survey. The survey involved parasitological examination of stool specimens oral interview and administration of questionnaires. The age, sex and socio-economic background of the children as well as sanitary facilities in their homes were investigated. All selected pupils were given labelled stool containers the day before the survey and told to collect stool specimen at home the next morning and to bring the container with stool specimen to school. On return, the stool, specimens were macroscopically examined for consistency, mucous, blood and visible parts of helminth using method by W. H. O. 1991.

The collected specimen were thereafter transported to the laboratory where they were examined microscopically using the formol-ether concentration method. (Ritchie 1948).

STATISTICAL ANALYSIS

Prevalence and intensity of infection (expressed as arithmetic mean egg count per gram of faeces) were estimated for each age group and sex. The X^2 test was used to assess differences in proportions.

RESULT

A total of 173 pupil (99 males and 74 females) returned their stool containers with stool specimen, while others returned empty container.

SCHISTOSOMA MANSONI: A total of 11 (6.4%) of the pupils screened parasitologically were detected to be excreting eggs of *S. mansoni* in their stools. More males 9(9%) than females 2(2.7%) were infected. Frequency of infection was higher among the 11-14 years age group. The mean arithmetic egg count /gm of faeces was higher among males than females.

Table 1 Prevalence and intensity of *S. mansoni* infection by age group and sex.

	MALE			FEMALE			TOTAL		
AGE	No Exam	No & % +ve	Mean egg count	No Exam	No & % +ve	Mean egg count	No Exam	No & % +ve	Mean egg count.
7 – 10	42	1(2.4)	4	32	1(3.1)	2	74	2(2.7)	3±1
11- 14	57	8(14.0)	3.13±1.6	42	1(2.4)	3	99	9(9.1)	3.13±1.5
TOTAL	99	9(9.2)	3.2±1.6	74	2(2.7)	2.5±0.5	173	11(6.4)	3.1±1.4

OTHER INTESTINAL HELMINTH

The commonest intestinal helminth infection was *T. **trichiura*** with an overall prevalence of 63.01%. A total of 59 pupil (34.1%) were infected with ***A lumbricoides***, while the prevalence of hookworm infection was 32.4% Table II. Many of the children were moderately infected as revealed by the egg count per gram faeces (Table III). However, mixed infection was common particularly the combination of *T. **Trichiura*** and Hookworm (23.1% Table IV).

Table II:Frequency of Intestinal Helminth Infection among school aged children in Esie

INTESTINAL PARASITE	NUMBER INFECTED	PERCENTAGE INFECTED
T. trichiura	109	63.0%
A. lumbricoides	59	34.1%
Hookworm	56	32.4%
E. vermicularis	20	11.6%
Strongyloide	5	2.9%

Table III: Frequency distribution of classes Intensity of infection relation to frequency of infection

	No of infrcted per class of egg counts/gm faeces			
Intestinal helminth	≤10	11-50	51-100	>100
T. trichiura	60	40	8	1
A. lumbricoides	28	16	10	5
Hookworm	25	24	5	2
E. vermicularis	20	-	-	-
Strongyloides	5	-	-	-

TABLE IV: Distribution of mixed infection with intestinal helminth among school aged children.

MIXED INFECTION	NUMBER INFECTED	PERCENTAGE INFECTED
Trichuris/Hookworm	40	23.1%
Ascaris/Trichuris	27	15.6%
Ascaris/Trichuris/Hookworm	20	11.6%
Ascaris/Trichuris/Hookworm/ Enterobius	1	0.6%

DISCUSSION

The present study indicates that infection with *S. mansoni* as well as other intestinal helmith among school aged children in Esie cannot be considered infrequent. The low prevalence rate of 6.4% obtained for *S. mansoni* in the study is in agreement with most of other previous surveys in Nigeria (Cowper 1973). Akogun and Amos (1997) recorded prevalence of 6.4% in North Eastern Nigeria, while Adewumi *et al* (1993) recorded prevalence figure ranging from 11.0% - 13.6% in South Western Nigeria. The generally low infection rate of *S mansoni* particularly when compared with *S. haematobium* has been attributed to the distribution as well transmission capability of *B. omphalia* snail host of *S. mansoni.* However high prevalence rate has been recorded in some endemic areas (Cowper, 1973). Differences in infection rate in relation to sexes in this study is similar to that of parallel study on *S. haematobium* in the same study area Abolarinwa, (1999) and is consistent with general report on schistosomiasis surveys. W.H.O (1985).

High prevalence rates of single as well as combined double or triple intestinal helminthiasis has been reported in different rural communities in Nigeria, (Nwosu 1981; Holland *et al* 1989, Adewumi *et al* 1993; Nwaorgu *et al* 1998) and other developing countries. (Ferreira *et al* 1994). Result obtained in this study lends further credence to this trend. Poor environmental sanitation and inadequate sewage disposal ensure continual seeding of the soil with eggs of parasitic helminth. This trend, coupled with poor personal hygiene and ignorance result in persistent infection and consequent high prevalence particularly among children (Nwosu 1981).

Though not investigated in this study, the impact of heavy intestinal helminth infection on the nutrition and growth of preschool and school children from developing countries have been investigated in several field surveys (Cook 1986, Ferreira et al 1984). Cooper and Bundy, 1988, Cooper et al 1992), have reported severe consequences particularly in relation to *T. **trichiura*** infection. In this study, the commonest parasite prevalent among the school children was ***T. Trichiura.*** Nokes *et al* (1992) reported that moderate or heavy infection with ***T. Trichiura*** affected the cognitive function in Jamaican school children. In view of the aforementioned consequences on the children and the community, a constant de-worming of the school children and improved sanitation is suggested. This will reduce egg load in the environment and worm burden in the community.

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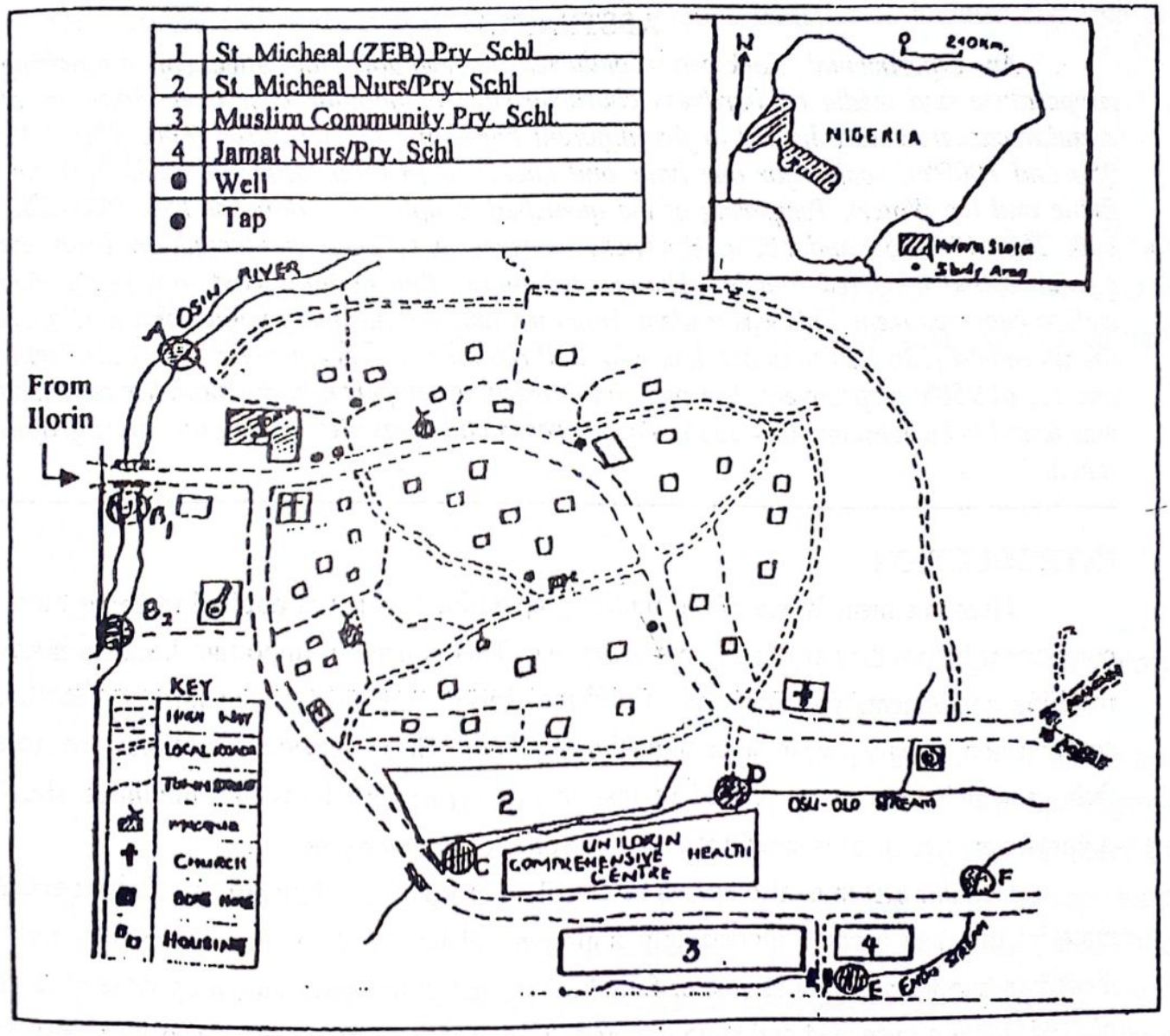

Fig. 1: Map of study area (with an inset) showing school locations (1-4), and sites of malacological study (A-F)