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PREVALENCE OF INTESTINAL HELMINTHIASIS IN PARTS OF IMO STATE, NIGERIA.

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ABSTRACT

Three thousand and eighty seven (3,087) respondents comprising of 1994 females and 1093 males aged between 1 to 60 years were examined for intestinal helminthiasis in three Local Government Areas (Orlu urban; Orsu and Oru East) in Imo State. Direct wet smear and sedimentation techniques were used. Percentage infection was found to be 31.5% affecting 20.0% and 11.5% of female and male population respectively. Amongst the 972 infected respondents, 301(31%); 211(21.7%); 147(15.1%); 93(9.6%); 78(8.0%); 64(6.6%); 51(5.3%); and 25(2.6%), were infected by *A. lumbricoides; N. americanus; A. duodonale; T. trichiura; T. saginata; S. stercoralis, E. vermiscularis, and T. solium* respectively. Whereas 2(0.2%) were infected with both A. *lumbricoides and N. americanus.* Statistical analysis revealed no significant difference in the prevalence of infection between the two sexes ($p > 0.05$). The prevalence of the infection was found to be highest among the younger age group than the older groups for all the helminths except for Taeniasis that was found to be higher among the older age group. This study reveals the prevalence and the relationship between intestinal helminthiasis and age groups in the area.

KEY WORDS: Intestinal Helminthiasis Prevalence in Imo State

INTRODUCTION

The epidemiology of human intestinal helminthiasis in Nigeria has been widely reported (Cowper, 1967; Reinthaler *et al*, 1988; Okpala, 1961 and Agugua, 1983). However while most of these reports are based on selected groups or institutional survey (Onabamiro, 1957; Okpala, 1961; Ejezie, 1981; Awogun, 1985; Ogbe and Odudu 1988; 1990; Alo, *et al*, 1993), others are based on hospital records (Obiamiwe, 1977). Besides most of these published studies were carried out in the Northern and Western parts of Nigeria (Ramsay, 1934; Ejezie, 1981; Adeyeba 1984; Akogun 1989; Alo *et al*; 1993). While the greater part of the studies carried out in the South East were centred on Urban areas (Obiamiwe, 1977; Onubuogu, 1978, Udonsi, 1979, Udonsi *et al* 1980). Presently, there is obvious paucity of published materials on the prevalence of intestinal helminthiasis in rural parts of Imo State.

The rampant and widespread nature of intestinal helminthiasis cannot be over emphasized. Previous reports have traced this to our poor sanitary condition. The incidence of helminthiasis in Benin and amongst urban children in Imo and Anambra states and post primary school pupils in Adamawa State have been eloquently documented (Obiamiwe 1977; Onubuogu 1978, Alo *et al*, 1993). These reports associated the high incidence of helminthiasis with customary habit of indiscriminate defaecation and poor personal hygiene. Udonsi (1984) associated the high prevalence of *Necator americana and Ancylostoma duodonale* in the riverine and coastal communities with similar enabling environmental conditions. Although several studies on human helminthiasis have been reported in Nigeria (Okpala, 1961; Hinz, 1968, Onubuogu, 1978; Udonsi, 1984; Alo *et al* 1983), these studies, which were on urban areas, have not covered a wide range of population in a single study and their periods of study have been very short. Only very few studies have spanned through a reasonable length of time (Obiamiwe, 1977; Nwosu, 1981).

Generally, the attitude of health workers towards intestinal parasites and helminthiasis in South–Eastern Nigeria appear to be indifference. While severe and widespread anaemia especially in the rural areas could be traced largely to intestinal heminthiasis, such as hookworm infection (Pawlowski *et al*, 1991), no one can be exact on the state of prevalence of intestinal helminthiasis in Imo State. The present study which is aimed at determining the prevalence of intestinal helminthiaisis in Urban and rural parts of Orlu Zone, Imo State has been designed to cover three vastly populated Local Government areas for a period of 12 months to fill the needed missing link.

MATERIALS AND METHODS

Samples were collected from May 2001 to April 2002 from Orlu Urban, Orsu and Oru-East Local Governement Areas, which share common boundaries, and with other Local Governments (Ideato North, Nkwere, Njaba, Oru West and Oguta in Imo State and

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Ihiala in Anambara State. Orsu and Oru-East L.G. A. are rural communities, with high population densities, while Orlu urban consists of approximately 50% urban dwellers and 50% sub-urban centre. The samples were collected with sterile wide - mouth screw capped universal specimen bottles which were labelled with codes and distributed to the respondents in the study area with questionnaires bearing the same labelled code number with the sample bottle. The respondents were instructed to collect a little sample of their early morning faeces into the specimen bottles, using swab sticks. Further instruction was also given on how the questionnaire should be filled. The samples and the questionnaires were collected for analysis between 8 and 9a.m for analysis in the Parasitology Laboratory, Department of Animal and Environmental Biology, Imo State University.

All the samples were examined in the laboratory using the direct smear (Iodine and Saline preparation) and formalin – ether concentration (Sedimentation) method described by Njoku *et al.*, (2000). All samples were examined within 3 hours of collection.

RESULTS

A total of 3,087 respondents comprising of 1994 females and 109 males were surveyed in the three Local Government Areas. Infectivity level revealed that 972 (31.49%) of the population were infected while gender related infectivity rate revealed 618(30.99%) and 354(32.39%) for females and male population respectively. Study area specific analysis (Table 1) revealed that of the 714 and 380 female and male respondents examined in Orlu urban, 207 (28.99%) and 106 (27.89%) of the female and male population respectively were infected. Studies in Orsu and Oru-East Local Government Areas revealed that of the 649 females and 353 males from Orsu and 631females and 360males from Oru East respectively, 211 (32.51%) females and 113(32.01%) males in Orsu and 200(31.70%) females and 135 (35.5%) males in Oru East were infected.

The prevalence of the intestinal helminths and their gender specific occurrence is as shown in Table 2. Isolation studies revealed 968 infected individuals had single infection of *A. lumbricoides, A, duodonale, N. americanus, T. trichiura, T. saginata, S. solium, S. stercoralis* and *E. vermiscularis*. While only 4 had mixed infection of *N. americanus* and *A. lumbricoides*. The results revealed that of the 972 infected respondents *Ascaris lumbricoides* accounted for the highest percentage occurrence of 301 (31%). This was followed in that order by *N. americanus* 211(21.7%) *A. duodonale* 47(15.1%), *T. trichiura* 93(9.6%), *T. saginata* 78(8.0%), *S. stercoralis* 64(6.6%), *E. vermiscularis* 49(5.0%) and *T. solium* 25(2.6%), *Necator americanus and Ascaris lumbricoides* accounted for a mixed infection of 4(0.4%).

The relationship between the prevalence of helminthiasis and sex/age of respondents (Table 3) revealed that while *A. lumbricoides, T. trichiura* and *E. vermiscularis* occurred more amongst infants and adolescents aged between 1 – 30yrs. *T. solium, T. saginata* and *A. duodonale* were more rampant amongst the older respondents above 30years of age. However the trend in the prevalence of *N. americanus* and *S. stercoralis* revealed that infestation is more amongst respondents between 11 and 50 years. Gender related trend in the prevalence of helminthiasis revealed more percentage rate of infestation amongst female than male respondents. Generally respondents aged 11 – 20 years had the highest rate of infection. This was followed by 1 – 10years, 41 – 50years, 21 – 30years, 31 – 40years and 51 – 60 years in that order.

DISCUSSION

This study has unraveled the extent of prevalence of intestinal helminthiasis in Orlu zone of Imo State, Nigeria. The report of Obiajuru *et. al.*, (2001), discussed eloquently the socio-economic and health implications of parasitic helminthes which justifies the huge sum of scarce resources spent annually in the control and treatment of parasitic helminth infections and has contributed to the high rate of anaemia, fever and malnutrition. Besides, a worry – some high mortality rate especially amongst children has been associated with intestinal helminths infections (Sasson, 1990). Studies by Pawlowski *et al.*, (1991) associated increasing cases

Table 1: PREVALENCE OF INTESTINAL HELMINTHASIS IN THE STUDY AREA.

L.G.A	SEX	NUMBER EXAM.	NUMBER INFECTED	% INFECTED
ORLU URBAN	M	380	126	27.89
	F	714	207	28.99
ORSU	M	353	113	32.01
	F	649	211	32.51
ORU - EAST	M	360	135	37.5
	F	631	200	31.70

Table 2: PREVALENCE OF INDIVIDUAL HELMINTHS AMONGST INFECTED RESPONDENTS IN THE AREA.

L.G.A	SEX	NO. OF INF. IND.	NO INFECTED BY DIFFERENT HELMINTHS.								
			A.l	*A.d*	*N.am*	*T. tri*	*T.sag*	*T.sol*	*S. st.*	*E.v*	*A&N*
ORLU URBAN	M	106	33	16	28	9	8	1	3	7	1
	F	207	57	37	38	16	28	5	17	9	0
ORSU	M	113	42	19	24	9	10	3	4	2	0
	F	211	59	26	50	25	19	6	10	13	3
ORU-EAST	M	135	61	12	29	11	5	5	5	6	8
	F	200	51	37	42	23	8	5	24	10	0
Tot. No of Ind. Infected		972	301	147	211	93	78	25	64	49	4
% Helminth Infection		100%	30.97	15.12	21.71	9.6	8.02	2.57	6.6	5.04	0.41

Table 3: HELMINTHIASIS AND AGE/SEX RELATION IN THE AREA.

AGE GROUP	SEX	INFECTING HELMINTHS										
		Ascaris lumbri.	*A. duo.*	*N. ameri.*	*T. tri*	*T. sag.*	*T. sol.*	*S.st.*	*E. ver.*	*Ascaris/ N. amer.*	% gender	Total % Inf.
1 – 10	M	55	0	6	7	0	0	0	2	1	7.3	18
	F	74	4	3	13	0	0	5	3	2	10.7	18
11 – 20	M	66	3	26	14	0	0	5	11	0	12.9	34.8
	F	86	11	41	37	3	0	19	15	1	21.9	34.8
21 –30	M	8	4	17	7	2	0	2	3	0	4.4	14.8
	F	2	12	49	14	7	1	9	7	0	10.4	14.8
31 - 40	M	5	2	12	1	9	1	3	1	0	3.5	10.2
	F	2	24	5	0	22	1	6	5	0	6.7	10.2
41 – 50	M	0	31	15	0	10	2	1	0	0	6.1	15.7
	F	3	29	26	0	17	7	9	2	0	9.6	15.7
51 – 60	M	0	7	5	0	2	6	2	0	0	2.3	6.6
	F	0	20	6	0	6	7	3	0	0	4.3	6.6

of Iron deficiency anaemia and concomitant morbidity and mortality in the tropics and Sub - tropics to *Ancylostoma duodenale* and *Necator americanus*.

A total percentage prevalence of 31% of intestinal helminth was obtained in the present study. This record although lower, corroborates the report of other workers in some other parts of Nigeria (Ejezie, 1981; Akogun, 1989; Alo *et al*, 1993). Similar trend in the prevalence of helminthiasis was obtained in the urban and sub – urban environments studied. This could equally be as a result of similar factors and conditions such as climatic, socio-economic, population, hygiene *etc* which favour the transmission of helminthiasis. Non - the – less, the trend in the prevalence of helminthasis in the area is a good signal for both the public health worker in the Local and State government to evolve adequate intervention measure to control the spread of infection.

The higher trend in the prevalence of helminthasis amongst children of primary and post- primary school age of 1 –20 years is not a surprise as these children are more prone to the several predisposing factors. Children of this age group appear to eat more outside their homes. These foods include contaminated fruits and vegetable, which are their only snacks when they go to school. These fruits and vegetables are collected from bushes around the schools during break periods and most times eaten without washing. The children in the semi urban area also go to school bare - footed and this also may account for the high prevalence of hookworm and *S. stercoralis*, which are known to penetrate the bare skin to infect its victim. The isolation of some helminths reveals the very poor public health state of the area of study. Specifically, the isolation of *Taenia saginata* and *Taenia solium* from the survey area suggests that there is no proper inspection of meat sold in the area by public health workers. Higher incidence of helminthiasis recorded amongst female than male respondents may likely be due to gender related exposure in the area where the boys either stay idle at home or play football and the girls go to farm, market, feed animals, cook, dispose waste etc., thus exposing themselves more to the risk of infection.

Personal communication revealed that the hygienic standard and feeding habit of the people may account for the higher prevalence of *T. Saginata* (8.02%) than *T. solium* (2.5%). This high level is not surprising because most of the pork sold in the area were fed with untreated animal feed/waste and may have been consumed without adequate heat treatment. Also most the cattle sold and killed for meat in the area were reared by normadic Fulanis whose method of rearing is by moving the cattle from place to place through grassland contaminated with human excreta and poultry waste. Thus most of the cattle and pigs are likely to be infected with *Taenia saginata and T. solium* respectively. The fact that such cattle and pigs are slaughtered and sold with little or no inspection by Veterinary inspectors makes the selling of infected beef and pork to the public a common thing. Beside, the increasing habit of taking roasted beef (suya) as snack by youths and young adults makes infection by *T. saginata* more rampant

than *T. solium*. The discovery of mixed helminth infection in this area is lower (0.41%) than that observed by (Alo, *et al.* 1993) in Adamawa, Nigeria. This parity in the level of mixed infection can be accounted by the socio-economic peculiarity of the two studied environments in question. Although faecal examination for eggs of *Taenia* species is not very reliable, more than 60% of the respondents in this study infected with taeniasis produced the proglottids of the Taenia in their faeces. Those who showed positive *Taenia* eggs in the faeces without producing proglottids were given single dose of Niclosamide (Yomesan) 500 mg – chewed tablet and repeated after one hour. Most of them produced the proglottids of the worm the next day after the administration of the drug. This was employed in the identification and classification of the *Taenia* as *T. saginata* or *T. solium* species.

Statistical analysis revealed significance difference in the prevalence of helminthiasis between children and young adults of 1 – 30yrs and adults of 30 – 60years. Also significant difference ($p<0.05$) was discovered in the prevalence of helminthiasis amongst males and females irrespective of age. While no significant difference in the prevalence of infection in the urban and sub – urban areas of the study was observed. Public enlightenment and increased public health practice is recommended as a step towards the reduction of the prevalence of helminthiasis in the area.

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