

PREVALENCE OF HUMAN GASTRO-INTESTINAL PARASITES IN BIU, BORNO STATE, NIGERIA

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ABSTRACT

Coprological study of gastrointestinal helminths of Biu Local Government residents was conducted between 2001 and 2002 using sedimentation, formol-ether concentration and floatation techniques. Of the 100 stool samples examined, 20(20.0%) harboured various species of gastrointestinal helminths. Hookworm infection was the most prevalent 10(50%) followed respectively by *Schistosoma mansoni* 6(30%); *Hymenolepis nana* 3(15%) and *Ascaris lumbricoides* 1(5%). The prevalence of the gastrointestinal helminths however, varied according to the age of the people examined with those aged between 7-24 years being most commonly infected 13(24.5%) compared to >24- 36, and >36- 50 ages with 5(15.1%) and 2(14.2%) respectively ($p < 0.05$). Similarly, females had a higher prevalence of 8(20.5%) compared to their male counterparts with 12(19.6%) ($p > 0.05$).

Keywords: Gastro-intestinal Parasitic Helminthes, *Schistosoma mansoni*, *Hymenolepis*, Hookworm and *Ascaris lumbricoides*

INTRODUCTION

Gastro-intestinal parasitic helminths consist of nematodes, trematodes and cestodes, reported to be either specific parasites of man or are zoonotic or affecting both man and animals (Fabiya, 1991). Information on gastro-intestinal helminths of man is useful in planning any reliable public health program especially where the target population is more vulnerable to infection (Onubugu, 1978). In Nigeria, there are a number of surveys (Ikejiani, 1959; Okpala, 1961; Gilles, 1965; Okpala and Njoku-Obi, 1978; Biu and Harry, 2001) which have indicated that the pathological effects of most of these parasites are enormous and grave especially in children. For instance Onubugu (1978) showed that abnormalities such as mental retardation occur in children of school age due mostly to intestinal nematode infections. About one third of the worlds

population have helminth infections, while about one million school children in Africa, Asia and Latin America especially the rural dwellers have multiple helminthic infections (WHO, 1980).

Biu and Harry, (2001) provided a review study on the GIT parasites of school children in Maiduguri, a semi-arid zone of Borno State without any data on the southern Sudan savannah zone of the State, thus this study was designed to determine the prevalence of these parasites among local residents of Biu Local Government Area with reference to the influence by sex and age on the infection and to suggest control and preventive measures if any.

MATERIALS AND METHODS

Study Area

Biu is a town in the southern part of Borno State enjoying a Sudan Savannah climate. The population is dense and the people's main occupation includes crop farming, animal husbandry and trading.

Patients Consent and Ethical Consideration

Before the commencement of this study, an approval was sought and obtained from the administrative authority of the Biu Local Government and of Biu General Hospital, and patients clearly informed on the objectives, design and merits of the study.

Sample Collection

Stool samples were collected randomly from selected wards and also patients who came for tests in the laboratory. This was done between November 2001 to January 2002. Specimen bottles were given to individuals involved. The town has residents from these wards; Galdimare, Mbulamel, Dizza, Tashan Danfulani and Nasarawa. Freshly passed stool samples from suspected individuals were collected into sterile specimen bottles, which were then well labeled to indicate the source, age and sex of the patient.

Examination of Stool Sample

The techniques employed in the examination of the samples collected were direct microscopy and formol ether concentration method as described by Cheesbrough, (1987). 1 gram of each stool specimen was emulsified in 7 ml of 10 % formalin into a centrifuge tube. The mixture was strained using a wire sieve and the filtrate poured into a test tube to which 3 ml of ether was added and well mixed for 5 seconds. The formol emulsion suspension was put back into a

centrifuge tube and centrifuged at 3000 rpm for 1 minute. The fatty plug was then loosened using an applicator stick and the tube quickly inverted, discarding the supernatant, allowing a few drops of the deposit to remain which was well mixed and a drop of it made on a clean glass slide covered under a cover slip and examined at x 40 objective of the light microscope to identify the helminth eggs.

Statistical Analysis

The various data obtained were analyzed statistically using the student paired t- test with "P" values equal to or less than 0.05 regarded as significant (Compell, 1986).

RESULTS

The results of this study revealed that out of the 100 patients examined 20 (20.0%) harboured at least one gastrointestinal helminth. As shown in table 1, the percentages of positive samples were as follows: hookworms 10(50%) representing the most prevalent followed by *Schistosoma mansoni* 6(30%), *Hymenolepis nana* 3(15%), and *Ascaris lumbricoides* 1(5%) ($P < 0.05$). Infection was however not significantly different ($p > 0.05$) between male and female patients, while the age groups between 7-14, >14-36, and >36-50 obtained 13(24.5%), 5(15.1%), and 2(14.2%) prevalence rates respectively (Table 2).

Table 1: Prevalence of Gastrointestinal Helminths According to the Parasites Isolated

Parasites Isolated	Number (%) Infected N=20
Hookworms	10(50.0)
<i>Schistosoma mansoni</i>	6(30.0)
<i>Hymenolepis nana</i>	3(15.0)
<i>Ascaris lumbricoides</i>	1(5.0)

Table 2: Distribution of Gastrointestinal Helminths According to the Sex and Age of the Patients Examined

	Number Examined (%) Infected	
All patients	100	20(20.0)
Sex:		
Male	61	12(19.6)
Females	39	8(20.5)
Age group in years:		
7 - 24	53	13(24.5)
>24 - 36	33	5(15.1)
>36 - 50	14	2(14.2)

DISCUSSION

The various species of gastrointestinal helminths recorded in this study have earlier been reported (Ikejiani; 1959: Okpala, 1961, Gilles, 1965, Njoku-Obi, 1978 and Biu and Harry, 2001). However, the relative abundance of these species varies; for instance the hookworm was the commonest gut parasite with a prevalence rate of 50.0%. Onubugu (1978), and Okpala and Njoku-Obi (1978) reported 58.4% and 63.8% prevalence rates respectively in other rural communities in Eastern Nigeria and observed that food hawking and poor sanitation are outstanding factors promoting infection and re-infection.

The pattern of infection with sex and age of patients was uneven. The females harboured more parasites than the males, though not significant statistically might probably be due to socio-economic deposition of people in the study area. The difference in infection rate in the various age groups is similar to the observations by other workers (Obiamiwe and Nmorsi 1991; and Biu and Harry 2001).

In this survey gut helminths like *Trichuris trichiuria*, *Taenia* Spp. *Diphyllobothrium latum*, *Strongyloides stercoralis*, *Enterobius vermicularis*, and *Endolemes nana* which were reported by Obiamiwe and Nmorsi (1991) were not recorded. This could be attributed to the late rainfall observed at the period of study, or the complete absence of infective forms of the parasites in this locality.

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