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SHORT COMMUNICATIONS

THE INCIDENCE OF AMOEBIASIS AMONG SECONDARY SCHOOL STUDENTS IN CALABAR, NIGERIA

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Abstract. A study was conducted among 2 500 secondary school students in Calabar, in order to determine the incidence of amoebiasis caused by *Entamoeba histolytica*. Microscopic examination of faecal sample smears showed higher percentage infections in the males than in the females; 61 out of 1 250 males were infected (4.8 %), while 52 of 1 250 females were infected (4.1 %). Among infected persons, asymptomatic carriers (64.6 %) and symptomatic cases (35.4 %) were recorded. Infection was lower among students using water flush toilet facilities than those using pit and bucket latrines. The infection was attributed to poor sanitation and inadequate health facilities.

Amoebiasis due to *Entamoeba histolytica* is a disease that is prevalent in various parts of the world. In some areas where increased number of cases of the disease were observed, surveys were carried out in order to identify the source (Brooke et al. 1963, Cross et al. 1977).

In Nigeria, *E. histolytica* infection has generally been included in some intestinal parasitic surveys conducted at Ibadan (Ikejiani 1959, Cowper and Woodward 1960, 1961, Oduntan 1974), at Lagos (Okpala 1956, 1961), and at Benin (Obiamiwe 1977). Some surveys for amoebiasis have been carried out among hospital patients at Lagos (Nnochiri 1965), and in northern Nigeria (Atakpa et al 1978).

Calabar is the capital of Cross River State of Nigeria, and is located in the rain forest belt, near the Atlantic Ocean. The present population of about 100 000 continues to increase due to migration of the rural inhabitants to the urban areas in search of economic opportunities. Information on parasitic surveys from this part of the country is lacking in the literature. The present study was undertaken to examine the incidence of amoebiasis among secondary school students who come from various homes in Calabar.

MATERIALS AND METHODS

Stool samples were obtained from 2 500 secondary school students (1 250 males and 1 250 females) from September 1980 to June 1981 for the present study. These students attended schools from their homes due to inadequate boarding facilities. Two of the schools were day schools in which classes were held from 8.00 a. m. to 1.00 p. m., while other two were evening schools having classes from 5.30 p. m. to 9.00 p. m. The students in the day schools were younger in age (12 to 17 years) and most of them continued their education straight from primary schools. On the other hand, those in the evening schools were older (15 to 30 years) since most of them consisted of low income workers who wanted to improve their qualifications, in addition to a few students who could not gain admission into day schools.

Labelled faecal containers were distributed to the students, together with questionnaires. Each questionnaire was numbered and requested the following information: name, sex, age, local address, number in household, type of toilet facility used and home town.

Fresh stool samples were obtained and taken to the laboratory immediately. Smears of each sample were made on two sets of glass slides; one set with physiological saline and the other with Lugol's iodine solution. These were examined microscopically for identification of *E. histolytica*.

A small portion of each positive faecal sample was placed into McCartney bottles containing 10 % formalin for further analysis. About 30 samples were obtained per visit to the institutions.

RESULTS

The prevalence of *E. histolytica* infection among the secondary school students in Calabar is shown in Table 1. A total of 61 out of 1 250 faecal samples from male students were positive for *E. histolytica* (4.8 %), while 52 of 1 250 samples from female students were positive (4.1 %). The overall percentage infection from the entire survey of all the schools was 4.5 %. In all cases, the figures for the individual schools showed generally higher percentage infections in the males than in the females. The percentage infection in the day schools did not show any remarkable difference from those in the evening schools. In the day schools, the percentage infection ranged from 3.2 % to 5.0 % for the males and from 2.5 % to 4.8 % for the females. In the evening schools, the figures were 5.0 % to 6.0 % for the males, and 4.3 % to 4.4 % for the females.

Table 1. Prevalence of *Entamoeba histolytica* infection among secondary school students in Calabar, Nigeria

		Males		Females		
School number	Number examined	Number positive	Percentage infection	Number examined	Number positive	Percentage infection
1	250	8	3.2	200	5	2.5
2	200	10	5.0	250	12	4.8
3	300	18	6.0	350	15	4.3
4	500	25	5.0	450	20	4.4
TOTAL	1 250	61	4.8	1 250	52	4.1

Schools no. 1 and 2 are day schools; schools no. 3 and 4 are evening schools.

Table 2. Relationship between *E. histolytica* infection and toilet facilities used by the students

Toilet facility	Number of users	Number infected	Percentage infection
Flush toilet	1 499	21	1.4
Pit latrine	397	30	7.5
Bucket latrine	604	62	10.2

The relationship between *E. histolytica* infection and toilet facilities used by the students is shown in Table 2. A total of 21 out of 1 499 students using flush toilets were infected (1.4 %), 30 of 397 using pit latrines were infected (7.5 %), while 62 of 604 using bucket latrines were infected (10.2 %). From these figures, it can be seen that infection was lowest among students using flush toilet, whereas higher figures were obtained among pit and bucket latrine users.

DISCUSSION

The present survey of 2 500 secondary school students for amoebiasis showed an overall percentage infection of 4.5 % (4.8 % for males and 4.1 % for females). This result can be compared with the results of other workers. Okpala (1956) obtained 0.4 % *E. histolytica* infection from students in Lagos, while Oduntan (1974) in Ibadan obtained 0.2 % infection from urban school children and 6.1 % infection from rural school children. In contrast, higher figures were obtained in surveys in which schools were not involved, for example Okpala (1961) obtained 10.9 % infection among government workers in Lagos, while Cowper and Woodward (1960) obtained 12 % infection among plantation employees in Ibadan.

From Table 1, it can be seen that the percentage infection was greater in all cases in the males than in the females. The eating habits of both sexes might be a factor in explaining this result. In Nigeria, many roadside hotels and palm wine bars are patronized more by the males than by the females. Sometimes, foods eaten in these places are prepared and served in unhygienic surroundings. The house fly is greatly attracted to palm wine and many flies sometimes drown inside the drink depositing the parasites. Unwashed fruits bought and eatenat schools and at places of work also contribute to the increase in the rate of infection.

In a follow-up study, the infected students were contacted at their local addresses and asked whether they have recently experienced any symptoms of amoebiasis such as diarrhoea, dysentery, blood and mucus in faeces. About 40 of the 113 infected students (35.4 %) have had such problems and only 10 students actually went to the hospital for treatment of amoebiasis. In this part of the world where health facilities are inadequate, many people with minor sickness prefer to administer self-treatment by purchasing drugs from nearby medicine stores, instead of standing on long lines all day in government hospitals to see a doctor.

E. histolytica exist in a large number of people as harmless commensal in the lumen and sometimes cease to be harmless and become pathogenic invading the mucosa (Singh 1975). In the present study, 73 of the 113 infected students (64.6 %) have not experienced any symptoms of amoebiasis recently. Hence, they appeared to be asymptomatic *E. histolytica* carriers. In a related survey in Nigeria, Nnochiri (1965) found 96 % *E. histolytica* cysts in mothers whose children were suffering from acute amoebic dysentery, and none of these mothers admitted that they have had the disease. These carriers act as sources of infection to other people.

The incidence of amoebiasis among secondary school students in Calabar was not very high and no epidemic has been reported. However, the availability of a few symptomatic cases increases the possibility that infection may spread from time to time by house fly and through contamination of food and water, unless adequate control measures are undertaken. Such measures should include improved health education, adequate sanitary facilities and prompt treatment of symptomatic cases. A step in the right direction can be seen from Table 2 in which more than half of the students surveyed were using modern flush toilets, instead of outmoded pit and bucket latrine facilities.

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РАСПРОСТРАНЕНИЕ АМЕБИАЗА СРЕДИ СТУДЕНТОВ В КАЛАБАРЕ, НИГЕРИЯ

Н. Умеке

Резюме. Изучали встречаемость амебиаза, вызванного *Entamoeba histolytica*, среди 2 500 студентов в г. Калабар. При микроскопическом обследовании фекалий обнаруживали более высокую зараженность у мущин, чем у женщин: у 61 из 1 250 мущин (4,8 %) и у 52 из 1 250 женщин (4,1 %). Среди зараженных лиц обнаружены асимптоматические (64,6 %) и симптоматические (35,4 %) носители. У студентов, пользующихся промывной уборной встречалась более низкая зараженность, чем у студентов, применяющих неканализированную уборную. Зараженность приписывается недостаточным санитарным обстановкам.

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